

Prenatal development, newborn

IIE 366: Developmental
Psychology
Greg Francis
Lecture 07

Chapter 3: Prenatal Development, Birth, and the Newborn



Module 3.1 From Conception to Birth
Module 3.2 Influences on Prenatal
Development
Module 3.3 Happy Birthday!
Module 3.4 The Newborn

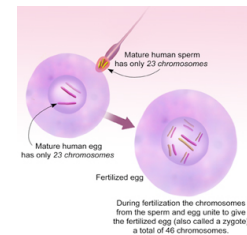
Children and Their Development, 4/e by Robert Kail

3.1 From Conception to Birth

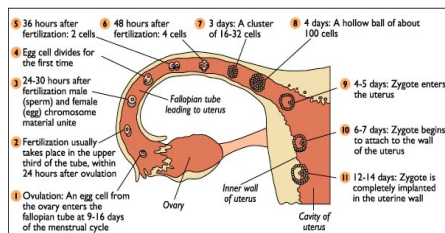
Period of the Zygote (Weeks 1-2)
Period of the Embryo (Weeks 3-8)
Period of the Fetus (Weeks 9-38)

3.1 Period of the Zygote

- Begins when egg is fertilized in the fallopian tube
- Period of rapid cell division
- Ends 2 weeks later when the zygote is implanted in the wall of the uterus



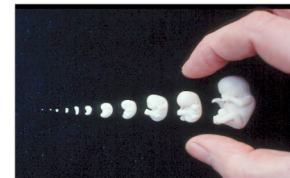
Period of the Zygote



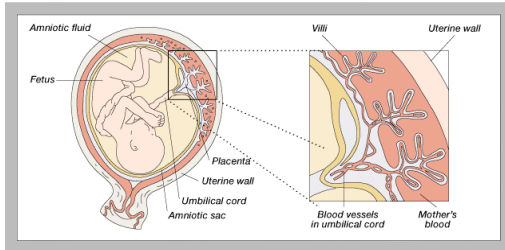
3.1: Period of the Zygote

3.1 Period of the Embryo

- From 3 to 8 weeks after conception
- Body parts are formed during this period
- Embryo rests in the *amnion* filled with *amniotic fluid*
- Umbilical cord* joins embryo to *placenta*



Prenatal Structures



3.1: Period of the Embryo

3.1 Period of the Fetus

- From 9 weeks after conception to birth
- Increase in size and systems begin to function
- *Age of viability*: occurs at 22 to 28 weeks and fetus has a chance to survive



3.2 Influences on Prenatal Development

General Risk Factors

Teratogens: Diseases, Drugs, and Environmental Hazards

How Teratogens Influence Prenatal Development

Prenatal Diagnosis and Treatment

3.2 General Risk Factors

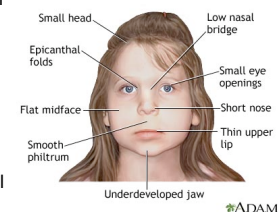
- Nutrition: adequate amount of food, protein, vitamins, & minerals
- Stress: decreases oxygen to fetus, weakens mother's immune system, and leads to unhealthy behaviors such as smoking or drinking alcohol
- Mother's Age: neither too young, nor too old is best

3.2 Teratogens: Diseases, Drugs, and Environmental Hazards

- Many diseases pass through the placenta directly and attack the fetus; others attack at birth
- Potentially dangerous drugs are not limited to cocaine but include alcohol, caffeine, and aspirin
- Environmental hazards are treacherous because we're often unaware of their presence

3.2 Teratogens: Diseases, Drugs, and Environmental Hazards

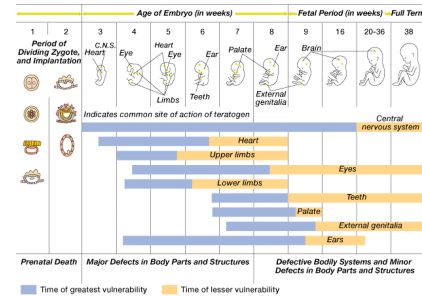
- Infants may be born with fetal alcohol syndrome
- Even modest amounts of alcohol can introduce these problems
- Growth retardation, mental retardation, facial features



3.2 How Teratogens Influence Prenatal Development

- Teratogens are not universally harmful
- Teratogens harm particular structures at a particular point in development in particular animals

Effects of Teratogens



3.2: How Teratogens Influence Prenatal Development

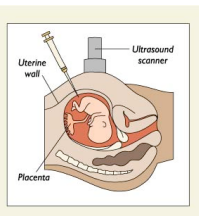
3.2 How Teratogens Influence Prenatal Development

- Teratogens are not universally harmful
- Teratogens harm particular structures at a particular point in development in particular animals
- Impact depends on the dose
- Damage is not always evident at birth

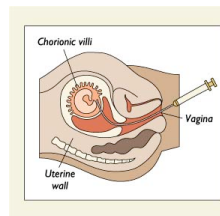
3.2 Prenatal Diagnosis and Treatment

- Diagnosis: *ultrasound*, *amniocentesis*, and *chorionic villus sampling* can detect physical deformities and genetic disorders

Prenatal Diagnosis



Amniocentesis



Chorionic Villus Sampling

3.2: Prenatal Diagnosis and Treatment

3.2 Prenatal Diagnosis and Treatment

- Diagnosis: *ultrasound*, *amniocentesis*, and *chorionic villus sampling* can detect physical deformities and genetic disorders
- Treatment: fetal medicine and genetic engineering are experimental

3.3 Happy Birthday!

Labor and Delivery

Approaches to Childbirth

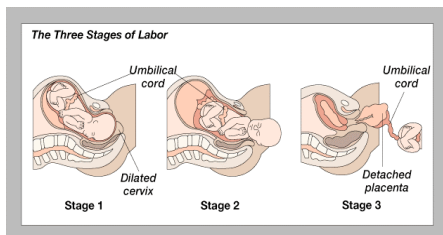
Adjusting to Parenthood

Birth Complications

3.3 Labor and Delivery

- Stage 1: starts when the muscles of the uterus contract and ends when the cervix is fully enlarged (about 10 cm)
- Stage 2: baby is pushed through the birth canal
- Stage 3: placenta is expelled

Three Stages of Labor



3.3: Labor and Delivery

3.3 Approaches to Childbirth

- Childbirth classes provide information about pregnancy and childbirth
- Childbirth classes teach pain control through deep breathing, imagery, and supportive coaching
- Mothers who attend classes use less medication during labor and feel more positive about labor and birth

3.3 Adjusting to Parenthood

- Parents often reorganize old routines
- Half of all new moms feel some irritation, resentment, and experience crying
- 10-15% feel more severe *postpartum depression*
- Postpartum depression affects warmth and enthusiasm of mothering

3.3 Birth Complications

- Lack of oxygen (*hypoxia*): often leads to surgical removal of the fetus (*C-section*)
- *Premature* and *small-for-date* infants
- Prematurity is less serious than being small-for-date
 - Small-for-date indicates other issues (e.g., malnutrition)
- *Infant mortality* is relatively high in the United States compared to other industrialized countries

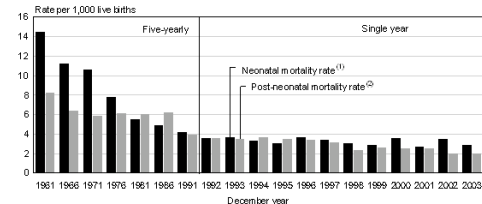
Infant Mortality Rates

- High rate for the US is related to low birth weight
- Inadequate or no prenatal care
- Many countries provide free prenatal health care

Singapore	2.3
Sweden	2.76
JAPAN	2.8
Hong Kong	2.94
Iceland	3.27
France	3.41
Finland	3.52
Norway	3.54
Malta	3.62
Czech Republic	3.86
Germany	4.08
Switzerland	4.08
Spain	4.31
Slovenia	4.35
Denmark	4.45
Austria	4.54
Belgium	4.56
Australia	4.57
Liechtenstein	4.58
Canada	4.63
Luxembourg	4.68
Netherlands	4.68
Portugal	4.92
UNITED KINGDOM	5.01
Ireland	5.22
Morocco	5.27
Greece	5.34
Taiwan	5.44
New Zealand	5.67
Italy	5.72
Chile	6.04
Korea, South	6.26
UNITED STATES	6.37
Croatia	6.51
Bolivia	6.53
Latvia	6.99

Infant Mortality Rates

- In many countries things are much better than they used to be
- New Zealand



3.4 The Newborn

- Assessing the Newborn
- The Newborn's Reflexes
- Newborn States
- Perception and Learning in the Newborn

3.4 Assessing the Newborn

- The Apgar assesses newborns' health including activity, pulse, grimace, appearance, and respiration
- The Neonatal Behavioral Assessment Scale (NBAS) is a comprehensive assessment of infants that includes measures of alertness and ability to interact with people



3.4 Assessing the Newborn

- Apgar involves assigning points to various features
- 7-10: good
- 4-6: special attention
- 0-3: life-threatening

APGAR Score		
	1 min.	5 min.
Heart Rate	0 0	
Absent	1 1	
Below 100	2 2	
Above 100		
Respiratory Effort	0 0	
Absent	1 1	
Weak cry	2 2	
Strong cry		
Reflex Response	0 0	
No response	1 1	
Grimace	2 2	
Cough/Sneeze		
Muscle Tone	0 0	
Limp	1 1	
Some flexion	2 2	
Well flexed		
Color	0 0	
Pale/blue	1 1	
Body pink, extrem. blue	2 2	
All pink		
TOTAL		

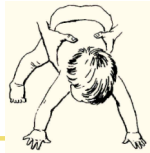
3.4 The Newborn's Reflexes

- Newborns' reflexes prepare them to interact with the world
- Some reflexes are important to survival (e.g., rooting and sucking)
- Some protect the newborn (e.g., blink and withdrawal)
- Some are foundations for later motor behavior



3.4 Reflexes

- Moro reflex: startled or falling
- Root reflex: to find nipple
- Parachute reflex: 9-12 months



3.4 Newborn States

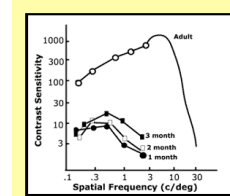
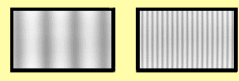
- 4 primary states: alert inactivity, waking activity, crying, sleeping
- 3 distinctive types of cries: hungry, mad, and basic
 - The average newborn cries for more than 2 hours each day
- Half of newborns' sleep is REM
- Sleeping on one's back may prevent SIDS

3.4 Perception and Learning in the Newborn

- All the basic perceptual processes are operating at birth
- Newborns can see, hear, taste, smell, and feel
- Newborns can also learn and remember

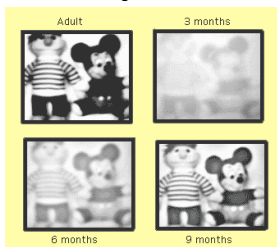
3.4 Perception and Learning in the Newborn

- Although infants see, their perceptual systems are not like adults



3.4 Perception and Learning in the Newborn

- Infants do *not* see things the same as adults



Next time

- Labor and delivery