Brain development during gestation
- Lateralization: specialization of the hemispheres of the brain
- Fetal nervous system development begins at about 3 weeks.
- 1 month: major regions appear (forebrain, midbrain and hindbrain)
- Front part of brain develop to form the cerebellum
- Cerebellum: the largest part of the brain and the seat of conscious brain activity. It grows most rapidly during the first year of life.
The Central Nervous System is made up of the brain, spinal cord and a peripheral network of nerves that extend all over the body.

Growth of the brain is a lifelong process and part of physical, cognitive and emotional development.

At birth, the brain is only 1/4 - 1/3 the size of an adult brain.
- By age 3 the brain is 90% of adult weight
- By age 6 brain is almost adult size
- But brain continues to develop and has growth spurts into adulthood.

Reflex behavior: Automatic, involuntary, innate response to stimulation.

Human infants have about 27 major reflexes.

Primitive reflexes: related to instinctive needs for survival and protection
- Sucking, rooting for the nipple

Postural reflexes: reactions to changes in position or balance.
- Stretching arms out when tilted down

Locomotor reflexes: voluntary movements that do not appear until later in
- Crawling, Walking

Touch and Pain
- First sense to develop
- By 32 weeks gestation all parts of the body are sensitive to touch
- When a newborn’s check is touch, he/she responds by trying to find the nipple

Smell and Taste
- Smell also develops in-utero
- Newborns prefer sweet taste to sour, bitter or salty (breast milk is sweet)

Hearing
- Fetus in-utero response to sounds and recognize them

Sight
- Least developed sense at birth
- Becomes more important as infant becomes more active
- At birth about 20/400 but reaches 20/20 around 8 months
Motor Development

- Marked by a series of milestones
- First learn simple skills then combine them into complex skills that permit a wider or more precise range of movement called **systems of action**.
- Children given the **Denver Developmental Screening Test** between ages 1-6 months to determine whether they are developing normally.
  - **Gross motor skills**—physical skills involving large muscles
  - **Fine motor skills**—physical skills involving small muscles and eye-hand coordination

Motor Development (averages)

- **Head control**
  - At birth—can turn side to side
  - 2-3 months begin to lift head higher and may roll over
  - 4 months almost all infants can keep heads erect while being held
- **Hand control**
  - At birth—grasping reflex
  - 3-4 months grasp an object like a rattle
  - 7-11 months can pick up tiny objects by pinching
  - 15 months start to stack and build
- **Locomotion**
  - 3 months—begin to roll over
  - 6-10 months creeping or crawling
  - 7 months—stand while hold and then about 11-12 months stand alone

ASD—Case Study

- **Autism Spectrum Disorders (ASD)** set of disorders that can cause severe and pervasive impairment in thinking, feeling, language, and ability to relate to others.
- ASD usually first diagnosed early in childhood range from severe forms of **autism** to mild forms and **Asperger syndrome**
  - Children with Asperger syndrome usually function at a higher level than children with Autism and have normal to high intelligence.
Early Signs of Autism

- No joyful gazing and delayed babbling
- Not recognizing parents voice
- Failure to make eye contact
- No or few gestures such as waiving or pointing
- Repetitive movements with objects
- No words by 16 months
- Loss of language skills

Why so many Autism recent cases?

- Cause still widely unknown
- In part due to increased awareness and more accurate diagnosis
- Strong genetic basis – runs in families
  - At least one gene has been identified
- Environmental factors
  - Exposure to certain viruses and chemicals may trigger an inherited tendency toward autism
  - Centers for Disease Control and Prevention (CDC), on the basis of many studies, found no link between preservatives in vaccines and autism.

Child Maltreatment

- Physical Abuse
- Neglect
- Sexual Abuse
- Emotional Abuse

- Shaken Baby Syndrome: form of maltreatment in which shaking an infant or toddler can cause brain damage, paralysis, or death