Infant Development

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- Concepts
  - Average vs Outer-limit of normal (this talk will focus on average age)
  - Primitive reflexes
  - Cephalocaudad progression of skills
  - Typical progression within developmental domain (crawl then walk)
Newborn

• Primitive Reflexes
  – Temporary
  – Must disappear in order to have conscious control
• Fisted hands
• Head lag
• Throaty sounds only

Asymmetric Tonic Neck Reflex (ATNR)
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- Early coordinate vision and reach
- Extensor tone on one side / flexor on opposite
- Starts around 2-4 weeks old (high flexor tone all over beforehand)
- Limits control of neck and arms
- Abnormal to persist past 4-6 months old
Grasp Reflex

- Good for bonding?
- Limits use of hand
- Should be gone by 4 months old
- Beware of asymmetry or persistent reflex

Plantar Grasp Reflex

- Abnormal to persist past 9 months old
Stepping Reflex

• Soles of feet on flat surface stimulates putting one foot in front of the other
• Disappears by 2 months old

Postural Reflexes

• Sometimes listed with primitive reflexes
• Develop later infancy and persist

• Protective equilibrium – puts hand out to side to protect self while sitting (develops ~4-6 months old)
• Parachute reflex – hands out in front to protect self while falling (develops ~8-9 months old)
Newborn

- Primitive Reflexes
  - Temporary
  - Must disappear in order to have conscious control
- Fisted hands
- Head lag
- Throaty sounds only

Head Lag

- Decreased neck tone
- Should be gone by 4-6 months old
2 month old

- Head steady when upright
- Head up in ventral suspension
- Regard object x 5 sec
- Track 90 degrees
- Social smile
- Cooing

2 month old

- Head steady when upright
- Head up in ventral suspension
- Regard object x 5 sec
- Track 90 degrees
- Social smile
- Cooing
2 month old

- Head steady when upright
- Head up in ventral suspension
- Regard object x 5 sec
- Track 90 degrees
- Social smile
- Cooing

4 month old

- No head lag
- Legs up in ventral suspension
- Track 180 degrees
- Turn to sound (before would quiet)
- Laugh
4 month old (continued)

- Hands open
- 2 hand reach (symmetric)
- Object: bring to mouth, retain
- Pose on “bear skin rug”

4 month old (continued)

- Hands open
- 2 hand reach (symmetric)
- Object: bring to mouth, retain
- Pose on “bear skin rug”
4 month old (continued)

- Hands open
- 2 hand reach (symmetric)
- Object: bring to mouth, retain
- Pose on “bear skin rug”
6 month old

- Looks after dropped yarn (object permanence)
- Coordinate look + listen
- 1 handed reach
- Rake
- Transfer
- Bang
- Early sitting
- Crawl (commando)
6 month old

- Transfer
  - 1st example of release
  - Can’t release block into cup until 12 months old
  - Later will show release skill by stacking blocks

6 month old

- Looks after dropped yarn (object permanence)
- Coordinate look + listen
- 1 handed reach
- Rake
- Transfer
- Bang
  - Early sitting (high guard)
- Crawl (commando)
6 month old

- Looks after dropped yarn (object permanence)
- Coordinate look + listen
- 1 handed reach
- Rake
- Transfer
- Bang
  - Early sitting (tripod)
  - Crawl (commando)
8 month old

- Respond to name
- Babble
- Roll back to front
- Sit well / pivot
- Creep
- Whole hand grasp / Finger feed
8 month old

• Respond to name
• Babble
• Roll back to front
• Sit well / pivot
• Creep
• Whole hand grasp / Finger feed
10 month old

- Respond to “no”
- Recognize 2 words (i.e. “up”, “bye”)
- Pull to stand
- Cruise
- Walk with 1 hand held

10 month old

- Respond to “no”
- Recognize 2 words (i.e. “up”, “bye”)
- Pull to stand
- Cruise
- Walk with 1 hand held
10 month old

- Respond to “no”
- Recognize 2 words (i.e. “up”, “bye”)
- Pull to stand
- Cruise
- Walk with 1 hand held
12 month old

- Social games
- Mama / Dada + 1 word
- Neat pincer grasp
- Isolate index finger
- Intentional release
- Stand alone
- Sit with control
- 1st steps

Isolate index finger

- Necessary for joint attention (JA):
  - Interaction between parent, child and item of interest
  - Response to JA (~9-10 months old)
  - Initiate JA to request (~15 months)
  - Initiate JA to show (~16 months)
Abnormal Findings

Asymmetric Moro

High Tone in Ventral Suspension before 3 m/o

Abnormal Findings

Scissoring

Hemiplegia
Toddler and Child Milestones

• Will change gears to look at 1½ - 6 year old milestones by domain:
  – Gross Motor
  – Fine Motor
  – Receptive Language
  – Expressive Language
  – Play
  – Personal – Social

Gross Motor

• 15 months old – walk well alone, stoop/recover
• 18 month old – runs clumsy, throws ball
• 24 month old – run well, kick ball, walk up/down stairs²
• 24 month old – 24 month old – run well, kick ball, walk up/down stairs²
• 24 month old – run well, kick ball, walk up/down stairs²
• 24 month old – run well, kick ball, walk up/down stairs²
• 30 month old – jumps both feet off ground
• 3 year old – 3 year old – jump fwd, tricycle, up stairs¹
• 4 year old – hop, down stairs¹
• 5 year old – 5 year old – skip
• 6 year old – bicycle without training wheels
Fine Motor

- Tower building
  - 15 months – 2 block tower
  - 18 months – 4 block tower
  - 24 months – 6 block tower
  - 30 months – 8 block tower
  - 3 years – bridge
  - 4 years - gate
  - 6 years - steps
Fine Motor

• Shapes
  – imitate = you do it first, ~6-12 months earlier than copying same shape
  – copy = from picture already drawn
  – 3 years – copy circle
  – 4 years – copy cross
  – 4 ½ years – copy square
  – 5 years – copy triangle (write name, color in lines)
  – 6 years – copy diamond

Fine Motor

• Drawing a Person
  – Start with a face (i.e. circle) at 36 months, ~4 more parts per year
  – 4 year old – 4 part person
  – 5 year old – 8 part person
  – 6 year old – 12 part person
  – 7 year old – horizon line
  – 8-9 year old – depth / perspective
Receptive Language

- 15 month old – identify 1 body part
- 18 month old – 4 body parts
- 24 month old – 7 body parts, nouns
- 30 month old – identify action in picture (baby sleeping, eating)
- 3 years old – identify function of objects (scissor=cut, chair=sit)
- 4 years old – concepts of first/last, most/least, same/different, 4 colors and prepositions (ie - in, under, behind)
- 5 years old – identify letters

Expressive Language

- 15 months – 4-6 words
- 18 months – 7-20 words, lots of jargon
- 24 months – 50 words, 2 word phrases, pronouns (24-30m), 50% understandable
- 3 years old – 3-4 word sentences, 250 words, plurals, present tense, 75% unders., name/gender/age, what to do if cold/tired/hungry
- 4 years old – 4-8 word sentences, past/future tense, ~100% understandable, count to 10
- 8 years old – abnormal to have a consistent speech error
Play

- 12 month old – in/out play, cause/effect
- 18 month old – domestic play, functional pretend play (put phone to ear)
- 24 month old – early symbolic pretend play (pretend to feed doll with food)
- 3 year old – substitutions (bowl as hat, imaginary salt shaker), doll as agent (doll looks in mirror)
- 4 year old – board games, tell simple stories, assigns roles in games (“Superman”)
- 5 years old – complex stories, take other’s perspective

Personal - Social

- 18 month old – spoon with control
- 24 month old - 2-step related commands
- 30 month old – potty trained
- 3 year old – neat with fork & spoon, cut with scissors, dress with supervision, follows 2 unrelated commands
- 4 year old – prepare cereal, button clothes
- 5 year old – tie shoes, spread with a knife, follows 3 unrelated commands