



# CHILDHOOD DEVELOPMENT STAGES

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# OBJECTIVES

- Review age-appropriate activities and exam findings
- Identify patient age based on reported activities
- Identify abnormalities of history or exam that suggest pathology

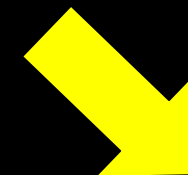
# WHEN THERE ARE QUESTIONS...

- There are some tables, but they are really only for reference.

- I want you to cheat off the internet.

Because that's what you'll do (review references) when someone's life depends on it.

- The sooner people shout out or type in answers, the sooner we move on...  
→ the sooner we move on, the sooner we finish



<https://rb.gy/tknqwl>

# A FEW THINGS OFF THE BAT...

- Parents are the worst at taking useful videos, but they can still be useful
- Be careful with macros/dot phrases – don't attribute impossible milestones (e.g. infant denies dizziness, vision change, and chest pain or 3 year old with "soft fontanelle")
- Don't discharge new developmental delays or regressions without a VERY good reason
- The best training is to have your own, or be around someone else's, multiple developmentally normal children and develop your own internal bell curve of what is expected to be normal. Or review milestones (it's cheaper).

# DEFINITIONS

## Terms:

- Precocious = milestone earlier than expected (usually suspiciously so)
- Delayed = has not reached milestone expected for age
- Regression = no longer able to perform previously possible milestone
- “Corrected Age” (for premies) = approx age since due date **[up to age 2 years]**  
e.g. Due date in January... now it's November  
→ so that 12m ex-32 wker = 10 mo corrected  
  
...or subtract # months/weeks premature from current age  
e.g. 16m ex-28 weeker (3 months early)  
→ corrected age 13 months developmentally

# TEASER QUESTIONS

# CLASSIC BOARDS QUESTION:

An ex-full term **6 week old** infant is brought in by the parent. The child has a parietal hematoma and decreased responsiveness. The parent reports the infant **“rolled off the changing table”** and landed on hardwood floors. In addition to acute medical care for the child, you also need to:

- a) Enroll the parents in new-baby classes
- b) Provide reassurance
- c) Contact CPS/DCFS and social work
- d) Refer the infant to a developmental clinic

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# TOUGHER QUESTION:

At what age would this story (“they rolled off the bed”) be more reasonable?

# A (REAL) CASE OF SEPSIS

15yM BIBA for fever and dehydration x2 days. Has never been taking to a western doctor, parents consult a traditional Chinese medicine specialist for all care, and he takes tonics made by this specialist. No vaccines, no reported PMHx.

He is dry on exam, confused, obese, tachycardic, hypotensive, febrile. Resp status okay.

When the techs are changing him into a hospital gown, you notice there is no hair in his armpits or groin, and his penis/testes seem small. iStat sodium 175.

After you start THREE pressors, steroids, and all the fluids, he goes to the ICU.

Who will be consulting on this patient?

# WHAT'S WRONG HERE?



Does it change knowing she is 7 months old?

If she is a 7mF ex-29 wker, what is her corrected age?

*7 months – 2.5 months early =*  
**4.5 mo**

# THE ACTUAL CONTENT PART

# THINGS TO THINK ABOUT

- Reflexes
- Age-related milestones  
(motor and social/language)
- Gross development (bones, puberty)

# PRIMITIVE REFLEXES

Reflex	Description	Disappears by (age)	How to Elicit
<b>Moro</b> (aka "startle" reflex)	BUE/BLE extension and abduction, can be triggered by movement or sound	<b>1-6 mo</b> (variable sources)	Elevate head 30 degrees above the body then let the head drop
Rooting	Turns head towards cheek stimulation	4-6 mo	Gently stroke cheek
Palmar Grasp	Closure of fingers to grasp when item touches palm	1-7 mo (voluntary grasp starts ~2 mo)	Stroke palm or place object in hand
Babinski	Great toe dorsal flexion, remaining toes spread	12 mo usually (can persist to 2.5 yrs)	Lateral stroke to foot



# OBLIGATORY TABLE OF MILESTONES (INFANT)

Age (mo)	Gross Motor	Visual-Motor, Problem Solving	Language	Social and Adaptive
1	Raises head <i>slightly</i> , makes crawling movements	Visually fixes, tight grasp, <b>follows TO midline</b>	Alerts to sound	Regards face
2	Holds head midline, lifts chest off table	No longer clenches fist tightly, <b>follows PAST midline</b>	Social smile (to voice/touch)	Recognizes parent
3	Supports on forearms in prone position, <b>holds head up steadily</b>	Holds hands open at rest, responds to visual threat	Coos	Reaches for familiar objects/people, anticipates feeding
4	<b>Sits</b> with assistance, <b>rolls</b> front to back	Reaches with arms in unison, brings hands to midline	Laughs, orients to voice	Enjoys looking around
5	May begin to sit unaided	<b>Transfers objects</b>	Says "ah-goo"	
6	Begins to pull to stand	Unilateral reach, raking grasp	<b>Babbles</b> , orients to bell	Recognize that someone is a <b>stranger</b>

# OBLIGATORY TABLE OF MILESTONES (INFANT)

Age (mo)	Gross Motor	Visual-Motor, Problem Solving	Language	Social and Adaptive
7	Creeps	Inspects objects		Finger feeds (7-9 mo)
8	Comes to sit, <b>crawls</b>		"Mama"/"Dada" indiscriminately	Explores environment, gesture games
9	<b>Pulls to stand, cruises</b> , pivots when sitting	Pincer grasp, <b>holds bottle</b>	Gestures, waves "bye-bye", responds to "no"	
12	<b>Stands/walks unassisted</b> (can take until 15-17 mo)	Mature pincer grasp, voluntary release, marks paper with pencil	2 words other than "Mama"/"Dada"	



# OBLIGATORY TABLE OF MILESTONES (CHILD)

Age	Gross Motor	Visual-Motor, Problem Solving	Language	Social and Adaptive
15 mo	Creeps up stairs, walks backwards	Scribbles in imitation, builds 2 block tower	Uses 4-6 words, follows 1 step command without gesture	(15-18 mo) uses spoon and cup
18 mo	<b>Runs</b> , throws objects from standing without falling	Scribbles spont., builds 3 block tower, turns 2-3 pages at a time	Mature jargoning, 7-10 word vocab, knows 5 body parts	Copies parents in tasks, plays in company of other children
21-24 mo	<b>Walks up and down steps</b> without help, squats in play	Imitates pencil stroke, builds 7 block tower, turns 1 page at a time, removes some clothes	Uses pronouns inappropriately, follows 2-step commands, <b>50 word vocab, 2 word sentences</b>	Parallel play, asks to use toilet and for food

# OBLIGATORY TABLE OF MILESTONES (CHILD)

Age	Gross Motor	Visual-Motor, Problem Solving	Language	Social and Adaptive
3 yr	Can alternate feet with going UP steps, pedals tricycle, <b>jump with 2 feet</b>	Copies circle, undresses completely, dresses partially, dries hands if reminded, unbuttons	Uses a minimum of 250 words, 3-word sentences, uses plurals, knows all pronouns, repeats 2 digits	Group play, shares toys, takes turn, <b>knows full name/age/gender</b>
4 yr	Hops on 1 foot, skips, alternates feet going DOWN steps	Copies square, buttons clothing, dresses self completely, catches ball	Knows colors, says song or poem from memory, asks questions	Tells "tall tales", plays cooperatively with a group of children
5 yr	Skips alternating feet, jumps over low obstacles	Copies triangle, ties shoes, spreads with knife	Prints first name, ask what a word means	Plays competitive games, abides by rules, likes to help w/ household tasks

# OTHER MILESTONES

- Non-BM/formula foods introduced ~4-6 mo
- Fontanelle closes ~9-18 months
- Puberty Tanner stages
  - 1 (pre-puberty) → 2-4 (pubertal) → 5 (adult)
  - Puberty before ages 8F/9M is precocious
  - Lack of puberty signs (Tanner 2) by age 13F/14M is delayed
    - Menarche usually ought to occur by age 15
- Growth plates may not close until age 21 yrs

# VIDEOS

<https://rb.gy/tknqwl>

THIS CHILD IS AT LEAST WHAT AGE?



THIS CHILD IS AT LEAST WHAT AGE?



# THESE CHILDREN ARE AT LEAST WHAT AGES?

Kid on the left (A)  
with light blue  
rainbow shirt



Kid on the right (B)  
with blue polka dot shirt

# SUMMARY

Then quick cases



# MILESTONES SUMMARY

- **By age 4 Months**

- Moro/startle might be gone
- May start to roll, sit with help
- Should have strong head control, no head lag

- **By age 9 Months**

- Able to reach out and grasp/use objects (e.g. bottle)
- Pull to stand +/- cruising or steps with assistance

- **By age 18 Months**

- Should be walking/talking
- May be starting to run (not just trot fast)...

- **By age 2 years**

- Using 2-word sentences
- 50+ words in vocab
- Walk up and down steps

- **By age 3 years**

- Hold a brief conversation
- Jump with two feet

# RAPID VIGNETTES

# QUESTIONS – NORMAL OR NOT

- 8mF ex-FT CC “burn” pulls to stand, tugged at table-cloth, and hot coffee fell on child

**PLAUSIBLE** (doesn't mean NAT/neglect isn't possible)

- 19mF ex-FT CC “leg pain”, parents report she was running, foot caught on rug, XR shows distal tibial spiral fx

**PLAUSIBLE** (“toddler's fracture”)

# QUESTIONS – NORMAL OR NOT

- 6mM ex-FT CC “fussy”, when you pull him up by his arms his head sags back to the bed, chest clear, belly soft, vitals stable

**ABNORMAL / DELAYED** (or weak/dehydrated/septic, or consider tox/botulinism)

- 10mF ex-36 wker CC “runny nose”, tracks examiner, does not follow 1 step commands by examiner, no speech heard by examiner

**NORMAL** (stranger fear at this age, correction for age +/- for near term)

# QUESTIONS – NORMAL OR NOT

- 14mF ex-31 wker CC “abnormal gait”, parents concerned she is unable to walk, can pull to stand, says “Mama/Dada”, places items in mouth when offered, +Babinski

**NORMAL** (corrects to 11m age, confirm no regression from prior walking)

- 8mM ex-FT CC “jumpy”, parents note has begun to be startled a couple times a day, parents feel that compared to earlier “he just wants to lie there, he doesn’t want to sit or crawl anymore”, PO/UOP ok, AVSS

**ABNORMAL** (startle/Moro reflex should no longer be present, probe for regression, concerning for infantile spasms)

# QUESTIONS – NORMAL OR NOT

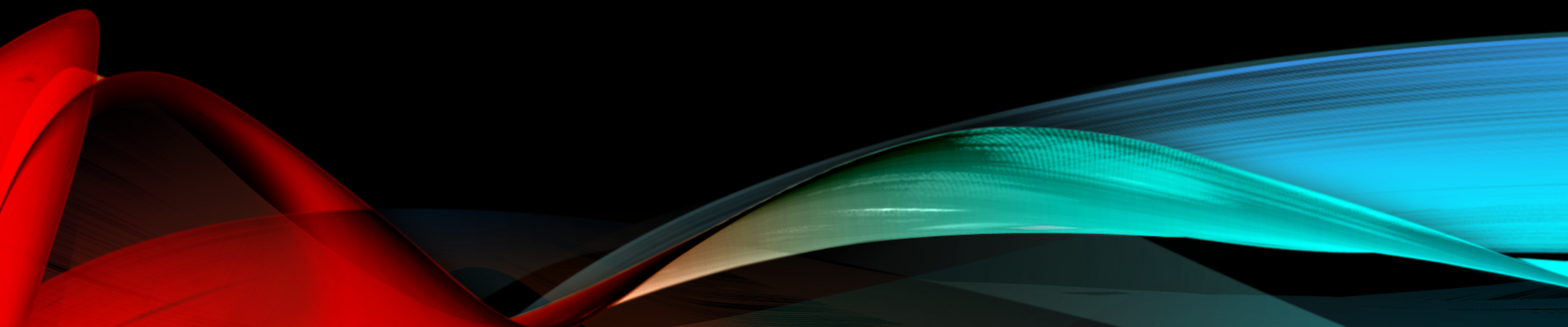
- 16mF ex-28 wker, “hasn’t started walking”, pulls to stand, walks when holding parents’ hands, cruises, “walks upright on her knees” while holding objects in her hands

**NORMAL[ish]** (possibly fear of walking unassisted, age corrects to 13m – WNL to not yet walk, demonstrates adequate coordination and gross motor strength needed to walk, anticipate will walk soon but will need close outpt f/up with PCP)

- 6mF ex-32 wker with emesis, was sitting with assist and cooing, now not able to roll, nonverbal other than cry, not able to track past midline, no fontanelle palpable on exam

**ABNORMAL** (concerning for elevated ICP, intracranial mass; has regression, premature closure of anterior fontanelle, exam now c/w 1-2 mo old despite corrected age 4mo)

FIN



# REFERENCES

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- Osagie IE, Givler DN. *Infant Head Lag [StatPearls]*. 2021.
- *Rosen's Emergency Medicine: Concepts and Clinical Practice*. 6<sup>th</sup> ed. 2006.
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