



# 41<sup>st</sup> National Conference on Pediatric Health Care

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## Growth and Development Basics

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# Growth and Development Basics

At the end of this session, the acute care nurse practitioner student or graduate will be able to:

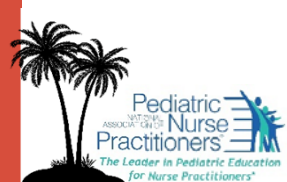
1. Identify pediatric developmental primary milestones
2. Review growth and development, especially in relation to chronic, acute and specialty care
3. Apply concepts of development to the acute and critically ill child.
4. Describe methods to support development in acute and chronic illness.



# Assessment Category

History and Review of Systems for disease process.

Details include age of patient and appropriate findings



# Prenatal Screening

- First Trimester Screen: between 11 & 15 weeks combination of blood sample and Ultrasound for genetic abnormalities
  - Nuchal translucency for cardiac abnormalities
- Ultrasound
  - Size of infant, single or multiple gestation, amniotic fluid
  - Gross defects (polycystic kidney disease, cardiac defects, meningomyelocele)
- Alfa-Fetoprotein
  - risk for neural tube defects, gastroschisis, omphalocele, chromosome abnormality
- Amniocentesis
  - Identification of karyotype, DNA sampling
  - 16 weeks or later; risk for spontaneous abortion
- Chorionic Villus Sampling: 10 weeks of gestation or later
  - Infant karyotype, DNA sampling
  - Risk for loss of fingers/toes; risk (low) of spontaneous abortion
- Second Trimester Screen : between 15 and 20 weeks (Triple Screen or Quadruple Screen)



# Pregnancy History and relation to sick infant

- Infant gestational age at first prenatal visit
- Perinatal Infections: GBS, STI, Rubella, Varicella
- Maternal use of illicit or prescribed drugs, smoking, alcohol during pregnancy
- Previous pregnancies, losses, preterm birth
- Chronic Illness such as Diabetes, Epilepsy, Asthma
- History of genetic abnormalities within family



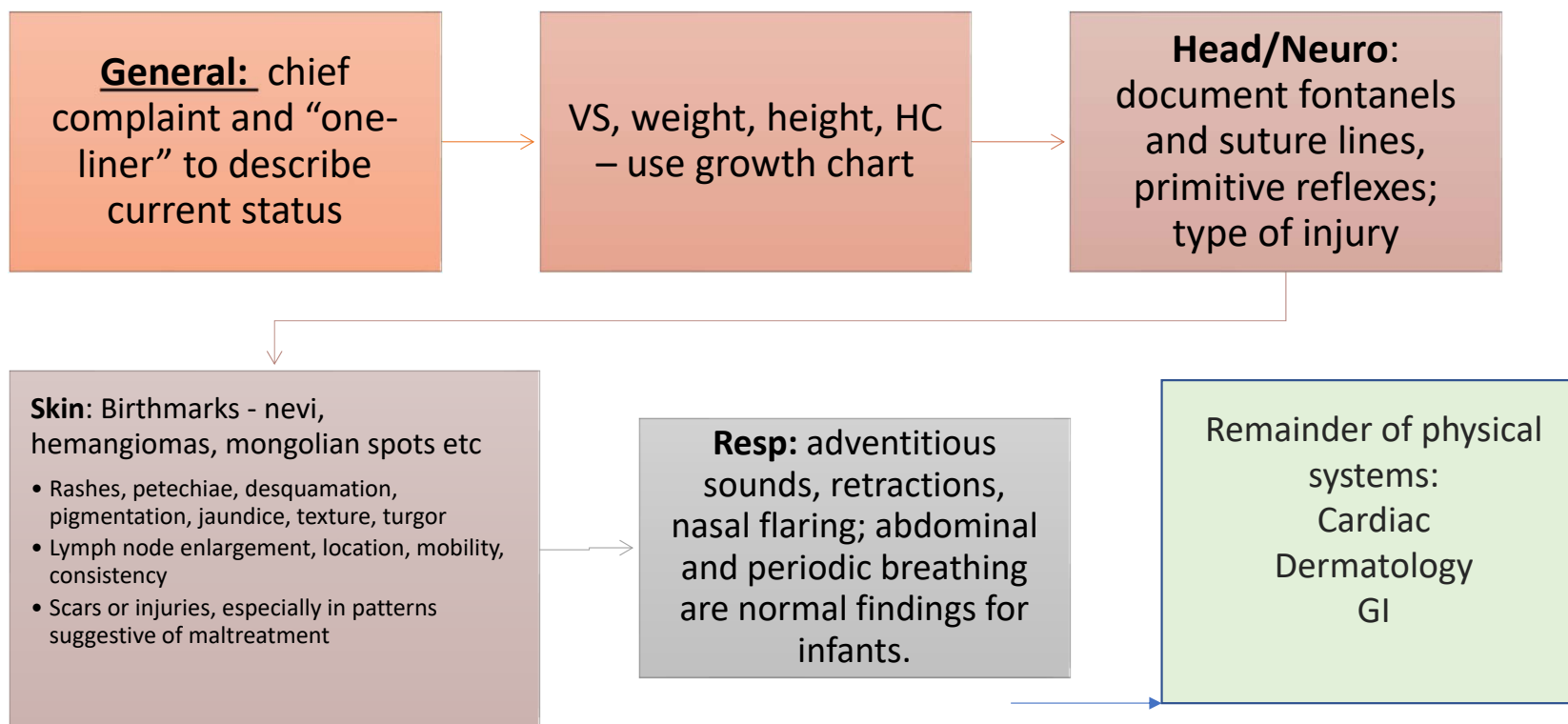
# Pregnancy History

- Oligohydramnios
  - Intrauterine growth retardation (IUGR)
  - Umbilical cord compression
  - Pulmonary hypoplasia
  - Musculoskeletal defects (e.g. club foot, others)
- Polyhydramnios
  - Duodenal atresia
  - Umbilical cord prolapse
  - Esophageal/intestinal atresia
  - Neuromuscular disorder (e.g anencephaly)
  - Dysplastic kidneys
- Gestational Diabetes
- Pre-eclampsia
- Pregnancy Induced Hypertension



\*Curious Child, downloaded Wikimedia, free access, 2018

# Highlights of Pediatric Physical Exam and ROS



# Development: Infant

2 months

4 months

6 months

9 months

12 months



- Back-to-sleep
  - No blankets, bumper pads, wedges
- Car seat – rear facing until age 2



# Development: Infant

2 months: social smile, tracking, hearing

4 months: rolls both ways, holds head up, laughs out loud, grasp and reach, fingers to mouth

6 months: sits unsupported, giggles, squeals, transfers objects, holds bottle, looks for items, people briefly

9 months: crawls, pulls self to stand, cruises, responds to name, stranger anxiety, waves bye-bye

12 months: walks with help/alone, primitive reflexes disappear, 2 – 3 word vocabulary, knows name,

- Back-to-sleep
  - No blankets, bumper pads, wedges
- Car seat – rear facing until age 2



# Highlights

- Neonates much more susceptible to bacterial illness; illness progresses quickly
- Doubles birth weight by 4 - 6 months of age
- Posterior fontanel closes 1-3 months of age
- Obligate **nose** breathers
- Mongolian spots -> normal variant
- Café au Lait spots; may be faint at birth and more noticeable in first 2 years of life -> often associated with Neurofibromatosis, tuberous sclerosis, Fanconi Anemia
- Hemangioma; may increase in size until around age 6 months



# Toddler

- 15 – 18 months of age:
- 18 months to 2 years of age:
- 2 years



# Toddler

- 15 – 18 months of age:
  - Anterior fontanel closes
  - Shows affection, begins to follow simple directions, temper tantrums
  - Scribbles; builds 4 blocks, drinks from a cup, begins to use a spoon
  - Runs, jumps, begins to climb stairs
  - Vocabulary of ~ 10 words, knows 2 – 3 body parts
- 18 months to 2 years of age:
  - Walking, running, navigating stairs
  - Points to and/or names items in a book, people, animals
  - Begins to put words together, songs, says no
  - Sort shapes, identify some colors
  - Pretends, feeds doll; temper tantrum,
  - Knows ordinary things: brush, spoon, cup





# Toddler

- 2 years:
  - More independent
  - Parallel play
  - Follows simple instructions
  - Short sentences, 2 – 4 words, Repeats words
  - Names items in a picture book, identifies when pointed to
  - Sorts shapes and colors
  - Kicks a ball, runs, throws overhand
  - Walks up and down stairs holding on

# Preschoolers

- 3 years:

- 4 years:



# Preschoolers

## 3yrs

- Jumps in place, rides tricycle, kicks ball, alternates steps, builds tower of 8 – 10 blocks
- Vocabulary 200+ words
- Knows own gender and learning others', names friends
- Increasing ability to share
- Follows 2 – 3 step directions

## 4 yrs

- Hops/jumps on one foot
- Copies circle, builds tower with 10 blocks
- Concrete and egocentric
- Make believe, Tells a story
- Cooperates with other children
- Catches a ball, puts a puzzle together

# School Age

- 5 Years:



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- 6 – 10 years:



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# School Age

## 5 Years:

- Speaks very clearly, counts to 10 or higher, can say alphabet
- Has friends, knows their names, knows gender
- Can draw a person with 6 or more parts, can write name and/or recognize letters, copies geometric shapes
- Plays simple board games , beginning to understand rules
- Swings, climbs and hops

## 6 – 9 years

- Increased motor strength, rides a bike, sports team
- Increased ability to share, has many friends; learning right from wrong, learns to follow rules, household chores
- Understands concepts of space, cause/effect
- Reading and writing, like school

# Adolescent/Teen

- 10 – 13 years



- 14 – 18 years



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# Adolescent/Teen

## Ages 10 – 13:

- Writing and fine motor skills improve
- Tells and writes stories in order that makes sense
- More selective in friendships; may have 'best friend'
- Know how people feel based on what they see and hear
- Beginning adolescence, physical changes

## Ages 14 – 18:

- Show more concern about themselves; clothing, grooming
- Developing identity, social skills
- Emotions, sadness, lack of self confidence, peer pressure
- Less affection for parents, anger
- Complex thought, can have meaningful conversations
- Competitive sports, high academic goals
- Interest in relationships, males – females, Gay and Lesbian

# Growth and Development in Acute Care/Disease Process

- Tell children about their illness and plans for care based on their developmental level.
- Children can assent as young as 6 – 7 years of age
- Toddler or preschooler with new diagnosis may experience developmental regression
- Chronic illness can be associated with anger and defiance, with risk-taking in teens or with anxiety and depression.
- Trauma contributes to loss of milestones and developmental delay

## Check Your Knowledge: At what age??

- Believe that Death is temporary: \_\_\_\_
- Like to touch and play with equipment prior to procedure: \_\_\_\_
- Developing logic and reasoning skills; awareness of illness and death: \_\_\_\_
- Preparation for procedures/hospitalization 1 week in advance: \_\_\_\_
- Understanding death as permanent and interest in physical process of death: \_\_\_\_
- Time is compacted: \_\_\_\_
- Need to know what will happen and why; walk through the process: \_\_\_\_
- Assist in making informed decisions: \_\_\_\_



## Check Your Knowledge: At what age??

- Believe that Death is temporary: 3 – 5 yrs
- Like to touch and play with equipment prior to procedure: 6 – 12 yrs
- Developing logic and reasoning skills; awareness of illness and death:
- Preparation for procedures/hospitalization 1 week in advance: 6 – 12 yrs
- Understanding death as permanent and interest in physical process of death: 6 – 12 yrs
- Time is compacted: 3 – 5 yrs
- Need to know what will happen and why; walk through the process: 6 – 12 yrs
- Assist in making informed decisions: 6 – 12 yrs

## Test Question

What is the most important question to ask in order to determine the potential severity of illness in a child who presents with wheezing?

- a. How many times was the child treated with steroids in the past year?
- b. What medications is the child currently taking?
- c. How many times has the child been admitted to the intensive care unit and did they require ventilation?
- d. At what age was the child diagnosed with asthma and how many emergency department visits did they have?

What is the most important question to ask in order to determine the potential severity of illness in a child who presents with wheezing?

- Answer: How many times has the child been admitted to the intensive care unit and did they require ventilation?



## Test Question

A four-year-old who has been treated for ALL over the past year, arrives to the oncology clinic for chemotherapy. She has been cooperative and pleasant in the past and today refuses to walk past the front desk and has a temper tantrum when her parent picks her up to carry her. What is the best response?

- a. Recognize that she may be regressing from ongoing illness and allow her time to be angry and recover.
- b. Encourage her parent to carry her back to the treatment room and ignore her behavior.
- c. Reschedule the appointment for a time when the child may be in better mood.

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## Test Question

A 15-year-old with previously well-controlled diabetes since age 6, is admitted with diabetic ketoacidosis for the first time. She has been "forgetting" to take her insulin and claims she is not motivated to check her blood glucose. The most appropriate referral at this time is:

- a. Endocrinology to assess for needed changes in insulin dosing
- b. Counselor to assist with managing a chronic illness
- c. Social work to be sure that she has all diabetic supplies
- d. School nurse to remind her to check her glucose ac

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- Answer: Counselor to assist with managing a chronic illness



## Test Question

A 5-year-old child with asthma will be starting kindergarten. In reminding him how to use his inhaler, developmentally appropriate information includes:

- a. his triggers that can cause an asthma exacerbation
- b. recognizing that the spacer is round in shape and he can count 2 puffs
- c. knowing how to set up his own albuterol neb and insert the medication
- d. ability to draw an accurate picture of the MDI and spacer

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