ATI Chapter 2: Physical Assessment Findings

- Alter examinations to accommodate chronological age and developmental needs. Involve children and family members in examinations. Praise children for cooperation during examinations.
- Observe for behaviors (interacting with nurse, making eye contact, permitting physical touch, and willingly sitting on the examination table) to determine the child's readiness to cooperate.
- Language, cognition, and fine and gross motor development can be screened using a standardized tool (the Denver Developmental Screening Test-Revised [Denver II]). A combination of data collected from psychosocial and medical histories and a physical examination is used to determine need and make a referral for further examination.

Nursing Actions

- Keep the room warm and well lit.
- Perform examinations in non threatening environments. Keep medical equipment out of sight.
- Provide privacy. Determine whether older school-age children and adolescents perform a caregiver to remain during examination.
- Take time to play and develop rapport prior to beginning an examination.
- Observe for behaviors that demonstrate child's readiness to cooperate (interacting with nurse, making eye contact, permitting physical touch, and willingly sitting on the examination table)
- Encourage the child and family to ask questions during physical examinations. Discuss findings with family after the examination.
- Explain each step of the examination to the child
  - Use age-appropriate language
  - Demonstrate what will happen using dolls, puppets, or paper drawings
  - Allow the child to manipulate and handle equipment
  - Encourage the child to use equipment on others
- Examine the child in a secure, comfortable position. For example, a toddler may sit on a parent's lap, if desired.
- Proceed to examine the child in an organized sequence when possible
- If the child is uncooperative, assess reasons, be firm and direct about expected behaviors, complete the assessment quickly, and use a calm voice.

Pediatric Vital Signs

	Temperature	Pulse Rate	Respirations	Blood Pressure	Hypertension	Growth
Newborn	N/A	110–160 beats/min	30–60 breaths/min	Systolic: 64 mmHg Diastolic: 41 mmHg	N/A	Growth can be evaluated using weight, length/height, body mass index (BMI), and head circumference. Growth charts are tools that can be used to assess the overall health of a child. • It is recommended to use the World Health Organizations (WHO) growth standards for infants and children ages 0 to 2 in the United States and CDC growth charts for children 2 years and older • To see growth charts by age and sex, visit the CDC website
Infant	99.5 degrees Fahrenheit	90–160 beats/min	25–30 breaths/min	Systolic: 85 mmHg Diastolic: 50 mmHg	N/A	
Toddler	99.9 degrees Fahrenheit	80–140 beats/min	25–30 breaths/min	M Systolic: 85–91 mmHg Diastolic: 37–46 mmHg F Systolic: 86–89 mmHg Diastolic: 40–49 mmHg	M Systolic: 103–109 mmHg Diastolic: 56–65 mmHg F Systolic: 104–107 mmHg Diastolic: 58–67 mmHg	
Preschooler	3 years: 99.0 degrees Fahrenheit 5 years: 98.6 degrees Fahrenheit	70–120 beats/min	20–25 breaths/min	M Systolic: 91–98 mmHg Diastolic: 46–53 mmHg F Systolic: 89–93 mmHg Diastolic: 49–52 mmHg	M Systolic: 109–112 mmHg Diastolic: 65–72 mmHg F Systolic: 107–110 mmHg Diastolic: 67–72 mmHg	
School-aged	7 years: 98.2 degrees Fahrenheit 9–11 years: 98.1 degrees Fahrenheit	60–110 beats/min	20–25 breaths/min	M Systolic: 96–106 mmHg Diastolic: 55–62 mmHg F Systolic: 94–105 mmHg Diastolic: 56–62 mmHg	M Systolic: 114–123 mmHg Diastolic: 74–81 mmHg F Systolic: 111–123 mmHg Diastolic: 74–80 mmHg	
Adolescent	97.9 degrees Fahrenheit	50–100 beats/min	16–20 breaths/min	Systolic: <120 mmHg Diastolic: <80 mmHg	N/A	

General Appearance

- Appears un-distressed, clean, well-kept, and without body odors
- Muscle tone: erect head posture is expected in infants after 4 months of age
- Makes eye contact when addressed (except infants)
- Follows simple commands as age-appropriate
- Uses speech, language, and motor skill spontaneously

Nails

- Pink over the nail bed and white at the tips
- Smooth and firm (but slightly flexible in infants)

Lymph Nodes

- Lymph nodes should be non-palpable
- Lymph nodes that are small, palpable, non tender, and mobile can be an expected finding in children

Hair

- Hair should be evenly distributed, smooth, and strong
  - Manifestations of nutritional deficiencies include hair that is stringy, dull, brittle, and dry
  - Hair loss or balding spots on infants can indicate the child is spending too much time in the same position
- Scalp should be clean and absent from any scaliness, infestations, and trauma
- Assess children approaching adolescence for the presence of secondary hair growth

Neck

- Short in infants
- No palpable masses
- Midline trachea
- Full range of motion present whether assessed actively or passively

Skin

- Variations in skin color are expected
- Temperature should be warm and slightly cool to touch
- Skin texture should be smooth and slightly dry, not oily
- Skin turgor exhibits brisk elasticity with adequate hydration
- Lesions are not expected findings
- Skin folds should by symmetric

Head

- The shape of the head should be symmetric
- Fontanels should be flat. The posterior Fontainebleau usually closes by 8 weeks of age, and the anterior fontanel usually closes between 12 and 18 months of age.

Face

- Symmetric appearance and movement
- Proportional features

EYES

Eyebrows:
- should be symmetric and evenly distributed

Eyelids:
- should close completely and open to allow the lower border and most of the upper portion of the iris to be seen

Eyelashes:
- should curve outward and be evenly distributed with no inflammation around any of the hair follicles

Conjunctiva:
- palpebral fissures and conjunctiva are pink
- bulbar conjunctiva are transparent

Lacrimal apparatus:
- is without excessive tearing, redness, or discharge

Sclera:
- should be white

Corneas:
- should be clear

Pupils:
- should be round, equal in size, reactive to light, and accommodating

Irises:
- should be round with the permanent color manifesting around 6 to 12 months of age

Visual acuity:
- can be difficult to assess in children younger than 3 years of age
- visual acuity in infants can be assessed by holding an object in front of the eyes and checking to see whether the infant is able to fix on the object and follow it
- use the tumbling E or HOTV test to check visual acuity of children who are unable to read letters and numbers
- older children should be tested using a Snellen chart or symbol chart

Peripheral visual fields:
- should be
  - Upward 50 degrees
  - Downward 70 degrees
  - Nasally 60 degrees
  - Temporally 90 degrees

Extraocular movements:
- might not be symmetric in newborns
- corneal light reflex should be symmetric
- cover/uncover test should demonstrate equal movement of the eyes
- six cardinal fields of gaze should demonstrate no nystagmus

Color vision:
- should be assessed using the Ishihara color test or the Hardy-Rand-Rittler test
- the child should be able to correctly identify shapes, symbols, and numbers

Internal exam:
- red reflex should be present in infants
- arteries, veins, optic discs, and maculae can be visualized in older children and adolescents

NOSE

- The position should be midline
- Patency should be present for each nostril without excessive flaring
- Smell can be assessed in older children

Internal structures:
- The septum is midline and intact
- The mucosa is deep pink in light-skinned clients and various shades of brown or gray in dark-skinned clients
- The mucosa should be noise without evidence of discharge

EARS

Alignment:
- the top of the auricles should meet in an imaginary horizontal line that extends from the outer canthus of the eye

External ear:
- the external ear should be free of lesions and non tender
- the ear canal should be free of foreign bodies or discharge
- cerulean is an expected finding

Internal ear:
- in infants and toddlers, pull the pinna down and back to visualize the tympanic membrane
- in children older than 3 years of age, pull the pinna up and back to visualize
- the ear canal should be pink with fine hairs
- the tympanic membrane should be nearly pink, or gray
- the light reflex should be visible

Hearing:
- newborns should have intact acoustic blink reflexes to sudden sounds
- infants should turn toward sounds
- older children can be screened by whispering a word from behind to see whether they can identify the word

MOUTH + THROAT

Lips:
- darker pigmented than facial skin
- smooth, soft, moist, and symmetric

Gums:
- coral pink in light-skinned clients, and various shades of brown or gray in dark-skinned clients
- tight against the teeth

Mucous membranes:
- without lesions
- moist, smooth, and glistening
- pink in light-skinned clients and various shades of brown or gray in dark-skinned clients

Tongue:
- infants can have white coatings on their tongues from milk than can be easily removed. Oral candidiasis is not easily removed
- children and adolescents should have pink, symmetric tongues that they are able to move beyond their lips

Teeth:
- infants should have six to eight teeth by 1 year if age
- children and adolescents should have teeth that are white and smooth, and begin replacing the 20 deciduous teeth with 32 permanent teeth

Hard and soft palates:
- intact, firm, and concave

Uvula:
- intact and moves with focalization

Tonsils:
- infants: might not be able to visualize
- Children: barely visible to prominent, same color as surrounding mucosa

Voice:
- infants: strong cry
- children and adolescents: clear and articulate

THORAX + LUNGS

Chest shape:
- Infants: shape is almost circular with anteroposterior diameter equaling the transverse or lateral diameter
- Children and adolescents: the transverse diameter to anteroposterior diameter changes to 2:1

Ribs and sternum:
- more soft and flexible in infants
- symmetric and smooth, with no protrusions or bulges

Breath sounds:
- inspiration is longer and louder than expiration
- vesicular, or soft, swishing sounds, are heard over most of the lungs

Movement:
- symmetric, no retractions
- Infants: irregular rhythms are common
- Children younger than 7 years: more abdominal movement is seen during respirations

Breasts:
- Newborns: breast can be enlarged during the first few days
- Children and adolescents: nipples and areolas are darker pigmented and symmetric
  - Females: breasts should appear asymmetric, have no masses, and be palpable
  - Males: can develop gynecomastia, which is unilateral or bilateral breast enlargement that occurs during puberty

CIRCULATORY SYSTEM

A comprehensive assessment of the circulatory system includes assessment of pulses, capillary refill time, next veins, clubbing of fingers, peripheral cyanosis, edema, blood pressure, and respiratory status.

Heart sounds:
- auscultation should be done in both a sitting and reclining position
- S1 and S2 heart sounds should be clear and crisp
  - S1 is louder at the apex of the heart
  - S2 is louder near the base of the heart
  - Physiologic splitting of S2 and S3 heart sounds are expected findings in some children
  - Sinus arrhythmias that are associated with respirations are common

Pulses:
- Infants: brachial, temporal, and femoral pulses should be palpable, full, and localized
- Children and adolescents: pulse locations and expected findings are the same as those in adults

Abdomen:
- Without tenderness, no guarding
- Shape: symmetric and without protrusions around the umbilicus
  - Infants and toddlers have rounded abdomens
  - Children and adolescents should have flat abdomen
- Bowel sounds should be heard every 5 to 30 seconds

GENITALIA

Anus:
- surrounding skin should be intact with sphincter tightening noted if the anus is touched
- routine rectal exams are not done with the pediatric population

FEMALE: hair distribution over the mons pubis should be documented in terms of amount and location during puberty. Hair should appear in an inverted triangle. No pubic hair should be noted in infants or small children.
- **Labia:**
  - symmetric, without lesions, moist on the inner aspects
- **Clitoris:**
  - small, without bruising or edema
- **Urethral meatus:**
  - slit-like in appearance with no discharge
- **Vaginal orifice:**
  - the hymen can be absent, or it can completely or partially cover the vaginal opening prior to sexual intercourse

MALE: hair distribution is diamond shaped after puberty in adolescent males. No pubic hair is noted in infants and small children.
- **Penis**
  - Penis should appear straight
  - Urethral meatus should be at the tip of the penis
  - Foreskin might not be retractable in infants and small children
  - Enlargement of the penis occurs during adolescence.
  - The penis can look disproportionately small in males who are obese because of skin folds partially covering the base
- **Scrotum**
  - The scrotum hangs separately from the penis
  - The skin on the scrotum has a rugose appearance and is loose
  - The left testicle hangs slightly lower than the right
  - The inguinal canal should be absent of swelling
  - During puberty, the testes and scrotum enlarge with darker scrotal skin

MUSCULOSKELETAL SYSTEM

Length, position, and size of extremities are symmetric.

Joints
- stable and symmetric with full range of motion and no crepitus or redness

Gait
- Toddlers and young children: a bowlegged or knock-knee appearance is a common finding. Feet should face forward while walking
- Older children and adolescents: a steady gait should be noted with even wear on the soles of shoes

Spine
- Infants: spines should be without dimples or turfs of hair. They should be midline with an overall C-shaped lateral curve.
- Toddlers: appear squat with short legs and proturberant abdomens
- Preschoolers: appear more erect than toddlers
- Children: should develop the cervical, thoracic, and lumbar curvatures like that of adults.
- Adolescents: should remain midline (no scoliosis noted)

NEUROLOGICAL SYSTEM

Deep Tendon Reflexes
- deep tendon reflexes should demonstrate the following:
  - Partial flexion of the lower arm at the biceps tendon
  - Partial extension of the lower arm at the triceps tendon
  - Partial extension of the lower leg at the patellar tendon
  - Plantar flexion of the foot at the Achilles tendon

Cerebellar Function (children and adolescents)
- Finger to nose test:
  - Rapid coordinated movements
- Heel to shin test:
  - Able to run the heel of one foot down the shin of the other leg while standing
- Romberg test:
  - Able to stand with slight swaying while eyes are closed

Infant Reflexes

	Expected Finding	Expected Age
Sucking + Rooting	• Elicited by stroking an infant's cheek or the edge of an infant's mouth • The infant turns their head toward the side that is touched and starts to suck	Birth to 4 months
Palmar	• Elicited by placing an object in an infant's palm • The infant grasps the object	Birth to 4 months
Plantar	• Elicited by touching the sole of an infant's foot • The infant's toes curl downward	Birth to 8 months
Moro	• Elicited by allowing the head and trunk of an infant in a semi-sitting position to fall backward to an angle of at least 30 degrees. • The infant's arms and legs symmetrically extend, then abduct while fingers spread to form C shape.	Birth to 4 months
Tonic Neck	• Elicited by turning an infant's head to one side • The infant extends the arm and leg on the opposite side	Birth to 3-4 months
Babinski	• Elicited by stroking the outer edge of the sole of an infant's foot up toward the toes • The infant's toes fan upward and out	Birth to 1 year
Stepping	• Elicited by holding an infant upright with his feet touching a flat surface • The infant makes stepping movement	Birth to 4 weeks

Cranial Nerves

	Infants	Children + Adolescents
I Olfactory	Difficult to test	Identifies smells through each nostril individually
II Optic	Looks at face and tracks with eyes	Has intact visual acuity, peripheral vision, and color vision
III Oculomotor	Blinks in response to light Has pupils that are reactive to light	Has no nystagmus and PERRLA is intact
IV Trochlear	Looks at face and tracks with eyes	Has the ability to look down and in with eyes
V Trigeminal	Has rooting and sucking reflexes	Is able to clench teeth together Detects touch on face with eyes closed
VI Abducens	Looks at face and tracks with eyes	Is able to move eyes laterally toward temples
VII Facial	Has symmetric facial movements	Has the ability to differentiate between salty and sweet on tongue Has symmetric facial movements
VIII Acoustic	Tracks a sound Blinks in response. to a loud noise	Does not experience vertigo Has intact hearing
IX Glosso Pharyngeal	Has in intact gag reflex	Has an intact gag reflex Is able to taste sour sensations on back of tongue
X Vagus	Has no difficulties swallowing	Speech is clear, no difficulties swallowing Uvula is midline
XI Spinal Accessory	Moves shoulders symmetrically	Has an equal strength of shoulder shrug against examiner's hands
XII Hypoglossal	Has no difficulties swallowing Opens mouth when nares are occluded	Has a tongue that is midline Is able to move tongue in all direction with equal strength agains tongue blade resistance

PRACTICE QUESTIONS

1. **A nurse is preparing to assess a preschooler. Which of the following actions should the nurse take to prepare the child?**
   A. Allow the child to role-play using miniature equipment.
   B. Use medical terminology to describe what will happen.
   C. Separate the child from the caregiver during the examination.
   D. Keep medical equipment visible to the child.

2. **A nurse is checking the vital signs of a 3-year-old child during a well-child visit. Which of the following findings should the nurse report to the provider?**
   A. Temperature 37.2 degrees Celsius (99.0 degrees Fahrenheit)
   B. Heart rate 106/min
   C. Respirations 30/min
   D. Blood pressure 88/54 mmHg

3. **A nurse is assessing a child's ears. Which of the following findings should the nurse expect?**
   A. Light reflex is located at the 2 o'clock position.
   B. Tympanic membrane is red in color.
   C. Bony landmarks are not visible.
   D. Cerulean is present bilaterally.

4. **A nurse is assessing a 6-month-old infant. Which of the following reflexes should the infant exhibit?**
   A. Moro
   B. Plantar grasp
   C. Stepping
   D. Tonic neck

5. **A nurse is performing a neurologic assessment on an adolescent. Which of the following responses should the nurse expect the adolescent to exhibit when assessing the trigeminal nerve? (Select all that apply.)**
   A. Clenching teeth together tightly
   B. Recognizing sour tastes on the back of the tongue.
   C. Identifying smells through each nostril
   D. Detecting facial touches with eyes closed
   E. Looking down an in with the eyes

ANSWERS:

1. A
2. C
3. D
4. B
5. A, D