

This document was produced by the American International Health Alliance (AIHA) with support from the US Agency for International Development (USAID). This document is part of the EurasiaHealth Knowledge Network at www.eurasiahealth.org.

EurasiaHealth resources are provided free of charge and are freely distributable. An electronic version of this document may be posted on another Web site for non-commercial purposes only, provided that the following conditions are met: the content may not be altered, credit is given to the EurasiaHealth Knowledge Network as the source of the document, notification is sent by e-mail to webmaster@aiha.com, and a reference to the EurasiaHealth Web site (www.eurasiahealth.org) is included in the credit notice. No fees may be assessed for access to EurasiaHealth materials.

AIHA and EurasiaHealth are not responsible for the opinions expressed in this document. The responsibility for the interpretation and use of the material lies with the reader. AIHA and EurasiaHealth disclaim responsibility for any errors, omissions, or other possible problems associated with this document.



This information is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents do not necessarily reflect the views of USAID or the United States Government.



V. PHYSICAL ASSESSMENT

A. OBJECTIVES

At the end of this presentation, the participants will be able to:

Define health and physical assessment.

Demonstrate the ability to obtain a complete and relevant health history from an adult patient and a pediatric patient.

Identify the tools and the use of each tool, as it is relevant to the physical exam.

Demonstrate competence to perform a basic physical exam of an adult patient and a pediatric patient.

Demonstrate appropriate use of universal precautions when performing physical examination or patient care.

B. CURRICULUM OUTLINE

Learning Objectives

World Health Organization definition of Health

Health Assessment: A systematic process

History taking and documentation:

The Physical Exam

Tools

Preparation for the physical exam

Exam write-up:

General Appearance:

Patient's height/weight – growth chart

Patients Vital Signs

Pulse

Respiratory rate

Temperature

Blood pressure

Review of Systems

Skin, Hair and Nails Assessment

Head and Neck Assessment

Respiratory Assessment

Cardiac Assessment

Gastro-intestinal Assessment

Genital-urinary Assessment

Musculoskeletal Assessment

Neurological Assessment

Breast Assessment

C. CURRICULUM

PHYSICAL ASSESSMENT OF THE ADULT AND CHILD

A. LEARNING OBJECTIVES

B. WORLD HEALTH ORGANIZATION DEFINITION OF HEALTH

“A state of complete physical, mental and social well being, not merely the absence of disease.”

C. HEALTH ASSESSMENT: A SYSTEMATIC PROCESS

“A systematic process by which the nurse, through interaction with the patient, and significant others, collects and analyzes information about the client.”

D. HISTORY TAKING:

A. What a History includes:

1. Patient’s identifying information
2. Reason for visit
3. History of current problem: What to ask
Type of symptom
Timing – initial occurrence, constant/intermittent
Location
Associated problems
Activities that make it better/worse
4. Past medical history
Preventive care (immunizations)
Allergies
Substances – smoking, illicit drugs, medications
Trauma – accidents, injuries
Illnesses – childhood, hospitalizations, surgeries
Mental health – meds, therapy
5. Documentation review of patient’s systems

B. Why do a History?

1. Client perspective of health status
2. Assists in determining knowledge base of client and family
3. Provides information for baseline data—

- comparative
- 4. Assists in prioritization

THE PHYSICAL EXAM

A. Tools needed for the physical exam:

1. Stethoscope
2. Sphygmomanometer
3. Tuning Fork
4. Spelling Chart
5. Otoscope
6. Reflex hammer
7. Pen light
8. Gloves
9. Tongue blade or spoon
10. You: observational skills and use of your senses

B. Technique – The “SENSES”

1. Inspection
2. Auscultation
3. Percussion
Determine size, shape and density of tissues through sound created by use of vibration
4. Palpation

C. Why do a physical assessment?

1. Supplement, confirm or refute data from history
2. Assist in making clinical judgments about changes in health status
3. Evaluate the outcomes of care
4. Share information to educate the client and family
5. GOAL is to identify needs of the client, considering relevant physical, psychological and social findings.

D. Exam write-up: succinct, objective findings

E. Exam Process:

1. Sequence
 - a. General to Specific
 - b. Head to Toe
 - c. Side to Side
 - d. Targeted/focused exam re: complaints
2. Hand washing and universal precautions

Universal Precautions: Prevent nurse from being exposed to diseases that lie in blood and other body fluids. Consider all patients potentially infected!!!

| <u>Exposure</u> | <u>Recommendations</u> |
|--|---|
| Potential contact with any body fluids | Gloves with any body fluid |
| Potential splashes of body fluids | Gloves, goggles, gown & mask |
| Sharp instruments/needles | If disposable place in puncture resistant container |

NEVER put a cap on a needle using both hands!

3. Environmental concerns
4. Cultural concerns

F. Decision Making:

1. Is problem primary to system or symptom/side effect of something else?
2. Review history
3. Note baseline data and compare findings
4. Report significant findings to physician

G. Obtain the Patient's height/weight –growth chart

H. Patient's Vital Signs:

1. Pulse
Need timer or watch/clock with second hand
Stethoscope to listen OR use fingers – not thumbs
What is a pulse?
Take on wrist or neck or listen with stethoscope on

chest

Normal pulses adults – children

Significance of abnormal temperature

2. Respiratory rate

No equipment needed or can listen with stethoscope. When taking pulse, count for one-minute number of breaths

Normal rate for adults – children

Significance of abnormal respiratory rate

3. Temperature

Need thermometer

Recommended to take under arm, not rectal or oral

How to read a thermometer

Normal temperature

Significance of abnormal temperature

4. Blood Pressure

Need sphygmomanometer and stethoscope

What is blood pressure?

How to take blood pressure

Normal adult – child blood pressures

Possible significances of abnormal blood pressures

ASSESSMENT OF SKIN, HAIR & NAILS

I. INTRODUCTION

A. External protection

B. Sensory organ for touch, temperature and pain

C. Assessment includes hair, scalp, mucus membranes, skin and nails

II. EXAM

A. Skin (includes Mucus Membranes)

1. Color—usually uniform in color. Abnormal tones—pallor, cyanosis, jaundice, flushing.
 2. Moisture—Hydration status
 3. Temperature—Compare side to side. Dependent on circulation. Can reflect local obstruction.
 4. Texture—Character of surface. Change due to trauma, medication, age, and metabolism.
 5. Turgor/elasticity—Reflects hydration. Altered by edema, dehydration, and age. Lift fold of skin on forearm or abdomen.
 6. Edema—Fluid build up. Note location, symmetry, color, shape, and quality.
 7. Lesions and Vascularity—Note location, distribution, configuration, characteristics.
- Causes—injury, allergy, and infectious disease.

B. Hair/Scalp

1. Quality—Color, lubrication, texture, condition.
2. Inspection—Symmetry, lesions, infestation.

C. Nails

1. Assists in assessing general state of health, nutritional status, oxygenation, circulation, disease, and habits.
2. Normal—transparent, smooth, convex, 160 angle, nail bed firm on palpation.
3. Color/Texture—Capillary refill.
4. Clubbing-Enlargement of tips of fingers, Nail thick, hard, shiny and curved; Angle increases from 160 to 180; Think respiratory, cardiovascular, cirrhosis; accompanies severe long-standing oxygenation dysfunction.

HEAD AND NECK

I. HISTORY

- A. Headache, dizziness, visual disturbance, hearing problems, head injury, sore throat, and swelling?

B. Smoking and chewing tobacco increases risk of oral cancer.

II. EXAM

A. Head and Face

1. Inspect for symmetry, shape and size
2. Observe and palpate scalp
3. Observe face for symmetry of structures
4. Observe motor function of face.
 - a. Cranial Nerve VIII-Facial Nerve
5. Sensation test if applicable
 - a. Cranial Nerve V—Trigeminal

B. Eyes

1. Vision
2. Assess pupil size, visual acuity and movement
3. Inspect external structures
4. Tools: ophthalmoscope, spelling chart, and cardboard for cover/uncover test.

C. Ears

1. Inspect and palpate external ear and mastoid
2. Inspect external auditory canal
3. Note hearing acuity
4. Inspect tympanic membrane—use of otoscope is available
 - a. Children—pull auricle downward
 - b. Adults—pull auricle upward and back
5. Tools: Tuning Fork, Otoscope

D. Nose

1. History of epistaxis, obstruction, injury
2. Test for patency of nares—flaring, note drainage/color
3. Palpate frontal and maxillary sinuses for tenderness
4. Tools: Pen light to examine nares

E. Mouth and Pharynx

1. Inspect using penlight and spoon to depress tongue
 - a. Mucous membranes

- b. Teeth
- c. Tongue
- d. Gingiva
- e. Swallowing
- f. Uvula – Gag reflex

F. Neck

- 1. Inspect for symmetry, distended veins, and arterial pulsation
- 2. Palpate trachea for midline location
- 3. Palpate carotid arteries
- 4. Assess range of motion and muscle strength

G. Lymph Nodes

- 1. Location in head and neck
- 2. Palpation technique
- 3. Note size, consistency and location of palpated

RESPIRATORY ASSESSMENT

I. STRUCTURES involved in ventilation and perfusion

II. HISTORY

- A. Smoking, functional status, complaints

III. EXAM

A. Inspection

- 1. Count rate
- 2. Observe shape, symmetry, deformities, and posture
- 3. Observe quality/rhythm, depth, prolonged expiration
- 4. Observe use of accessory muscles
- 5. Observe retractions
- 6. Observe lips, nail beds for cyanosis
- 7. Observe nasal flaring/pursed lip breathing

B. Palpation

1. Evaluate expansion
 2. Assess fremitus—vibrations
- C. Auscultation
1. Techniques for effective listening
 2. Normal breath sounds
 3. Abnormal/additional sounds
 - a. Crackles/Rales—air through fluid
 - b. Wheezes—air through narrow airways
 - c. Gurgles/Bronchi—thick secretions causing partial obstruction of airflow
 - d. Pleural Friction Rub—pleural irritation
 4. Evaluate sounds
 - a. Where in respiratory cycle
 - b. Location in Lung fields
 - c. Intensity of sounds

CARDIAC ASSESSMENT

I. INTRODUCTION

- A. Main function to pump
- B. Assess effectiveness of pump

II. ANATOMY REVIEW

- A. Base—upper part of heart
- B. Apex—lower part of heart
- C. Atria—receiving chambers
- D. Ventricles—pumping chambers
- E. Great vessels—vena cava, pulmonary arteries, pulmonary veins, aorta
- F. Apical Impulse
 1. Medial to left mid clavicular line at 5th intercostals space
 2. At 4th intercostals space until age 7
- G. Cardiac Cycle
 1. Ventricular diastole—filling
 2. Mitral and tricuspid valves open

3. Blood flows from atria to ventricles
4. Ventricular pressure leads to valve closure—first heart sound occurs
5. Ventricular systole—pumping
6. Ventricular pressure leads to opening of aortic and pulmonic valves
7. Blood ejected from ventricles
8. Increase pressure in aorta and pulmonary arteries
9. Aortic and pulmonic valve closure—second heart sound occurs
10. Diastole begins again

H. Hear Sounds

1. S1—closure of mitral and tricuspid valves
 - a. Loudest at apex
2. S2—Closure of aortic and pulmonic valves
 - a. Loudest at base
3. S3—vibrations due to rapid filling
 - a. Associated with volume overload

III. EXAM

A. Inspection and palpation simultaneously

1. Detect pulsations over precordium
2. Client supine
3. Point of maximal intensity
 - a. 4th to 6th intercostals space
 - b. Mid clavicular line
 - c. Note location—able to locate in 50% of population

B. Auscultation

1. Note rate and rhythm
2. Identify S1 and S2
3. Identify extra sounds

C. Murmurs

1. Originate in area of heart valve
2. Increased flow—may be normal valve
3. Forward flow
 - a. Through irregular valve
 - b. Through constricted valve

- c. Into dilated vessel or chamber
- 4. Backward flow
 - a. Through septal defect
 - b. Through incompetent valve

GASTRO INTESTINAL

I. INTRODUCTION

- A. General versus focused exam based on history
 - 1. Empty bladder prior to exam
 - 2. Nausea, vomiting, diarrhea
 - 3. Nutritional status/appetite—weight gain/loss
 - 4. Bowel movements
 - 5. Injury/trauma
 - 6. Pain
- B. Four quadrants
 - 1. Right lower, right upper, left upper, left lower

II. EXAM

- A. Inspection
 - 1. Note appearance, distention, guarding, and presence of sores, hernia
 - 2. Normally flat, rounded, or concave
 - 3. Symmetric in contour
 - 4. Distention—fat, fluid, flatulence, feces, fibroid, or fatus
 - 5. Movement—respiratory, pulsation
- B. Auscultation
 - 1. 15 seconds in each quadrant-using diaphragm
 - 2. Bowel sounds result of air and fluid movement
 - 3. Normal sounds
 - a. High pitched gurgling
 - b. Every 5 to 15 seconds
 - c. Listen 5 minutes before concluding absent
 - 4. Decreased sounds
 - a. Inhibition of motility

- b. Causes, inflammation, gangrene, pneumonia, peritonitis, electrolytes imbalance, post operative, late bowel obstruction
 - 5. Increased
 - a. Loud gurgling
 - b. Causes increased motility, stenotic bowel, early bowel obstruction, gastroenteritis
- C. Palpation
 - 1. Least tender area first
 - 2. Observe body posturing and facial expression
 - 3. Begin with light palpation—1 cm for slight tenderness, large masses and guarding
 - 4. Deep palpation—1-3 inches bimanual for deeper structures, kidneys, and masses
 - 5. Liver palpation—normally cannot feel liver. Under right rib margin on inspiration
 - 6. Spleen—Normally not palpable. Under left rib margin
 - 7. Kidneys—Usually not palpable. Elevate flank. Check costal vertebral junction tenderness
 - 8. Appendix—Inflammation fairly frequent. Right lower quadrant rebound tenderness, increased WBC, fever, diarrhea
 - 9. Bladder—Between supra pubic and umbilicus, round and smooth. Increased distention with prostate enlargement.

GENITAL URINARY ASSESSMENT

I. INTRODUCTION

- A. Assessment of sexual organs, obtain history including sexual partners, bleeding, problems with urination
- B. Maintain privacy
- C. Tools: Gloves, drapes, and penlight

II. EXAM

- A. Inspection and palpation of general anatomy

- B. Female:
 - a. Pubic hair infestations, lesions
 - b. Vulvar area – labia majora for nodules
 - c. Clitoris – retract and check for warts, canchors
 - d. Urethral opening – note discharge, swelling, lesions
 - e. Vaginal orifice – note discharge, lesions
 - f. Vaginal discharge – note color and consistency
 - g. Perineum – note redness, inflammation, intact
 - h. Anus, Rectum – note fissures, lesions, hemorrhoids

- C. Male:
 - a. Inspect pubic hair—note infestations, lesions penis
 - b. Palpate nodules - examine tip of penis, note discharge
 - c. Urethral meatus – note location
 - d. Scrotal sac - note outer appearance, note lesions, swelling
 - e. Testes – palpate
 - f. Hernias – note inguinal ring or femoral hernia
 - g. Anus/rectum – note lesions, hemorrhoids, fissures

MUSCULOSKELETAL ASSESSMENT

I. INTRODUCTION

- A. Provides movement and support
- B. Screening for functional abilities and safety
- C. Joint motion includes: flexion, extension, rotation, supination, pronation, adduction, abduction, inversion and iversion

II. HISTORY

- A. Family history of musculoskeletal disease
- B. Previous trauma
- C. Changes in functional abilities
- D. Symptoms such as pain, weakness, stiffness, swelling, heat

III. EXAM

- A. Inspection of posture and gait for alignment, ease of movement,

- symmetry of body parts, and balance
- B. Palpate for muscle swelling or atrophy, deformities of bones, joints, increased warmth, tenderness and tenderness
- C. Range of motion testing – active and passive
- D. Muscle strength testing
- E. Circulation, movement and sensation
 1. Temperature, cyanosis, color changes
 2. Swelling, edema—absent, present, pitting

| | |
|-------------|------------------|
| 0 – 5 sec | 1+ pitting edema |
| 5 - 10 sec | 2+ pitting edema |
| 10 – 15 sec | 3+ pitting edema |
| 15 - 20 sec | 4+ pitting edema |
 3. Peripheral pulses – rate, rhythm, symmetry

NEUROLOGICAL ASSESSMENT

I. INTRODUCTION

- A. Much of exam is completed in conjunction with prior parts of the exam
- B. Extent of exam related to specific complaints

II. HISTORY

- A. Relate to head and neck assessment
- B. Trauma of head or spine
- C. Headache, dizziness, in-coordination, tremors, weakness, seizures
- D. Changes in sensation
- E. Speech changes

III. EXAM

- A. Mental status
 1. Level of consciousness – arouseability, ability to speak and follow directions.
 2. Awareness – orientation to person, place, and time
 3. Thought processes – abstract thinking, problem solving/concentration, memory, judgment

- 4. Communication – comprehension and expression, written and spoken
- B. Cranial nerve assessment with head and neck
- C. Motor and sensory function – done with musculoskeletal exam
- D. Frequent assessment of neuro function required if changes in or threats to neuro status—level of consciousness, strength of grip, symmetry of pupil size, shape, and response to light, vital signs (Late indicators)

BREAST ASSESSMENT

I. INTRODUCTION

- A. Screening for cancer in males and females and assessing development
- B. Breast Exam by a Professional: should be done every 3 years if less than 20 years old; every year if greater than 40 years
- C. Self Breast Exam: should be done monthly starting at 13 years of age

II. EXAM

- A. Inspection: Note lesions, dimpling, retractions, symmetry, inverted nipples, discharge from nipple
- B. Palpation: Note lymph in Axilla
 - 1. Patient should lie down on back with arm under head
 - 2. Using pads of fingers in a circular motion palpate from outer area to inner area, including areola and nipple
 - 3. Note location, size, hardness/softness, distinct borders, mobile or fixed, tender or non-tender

Definition of Child Health Supervision and Promotion:

Child health supervision should promote the physical, emotional, intellectual, and social health, safety and well being of children and adolescents in the context of their family and community.

Taking a History

Gathering historical information will provide the majority of the data necessary to assess overall health status.

Historical information is gathered from two sources – the existing medical record and the interview of the parent and child.

Interviewing

The interview is a time to establish a trusting relationship with both the child and parent. It should be conducted in a private, quiet, comfortable room. For younger children, all evidence of invasive potentially painful equipment should be concealed until necessary for examination.

Well-child interview is most frequently conducted by Health Care Practitioners working in ambulatory care settings. Initially, it includes a complete history, which is updated on subsequent visits. After completing the health history and the physical examination, the care provider offers the child and family guidance on nutrition, safety, and growth and development.

The problem interview also known as the interim health history, focuses on an immediate physical, social, or emotional problem that has been identified by the family, child, or health care provider. Information obtained pertains primarily to a specific problem but should not be restricted to the problem.

Once a problem has been identified and management begun a therapeutic interview may be needed. This is generally used to obtain information about how a problem – especially one that is persistent, complex, or long term – will respond to treatment.

The interview approach should be based on the developmental levels of the child and the adult. Questions should be asked in a clear and concise manner, avoiding use of jargon and medical terminology. They should also be asked in a way that is non-threatening and non-judgmental.

Demographic Data

This is the data that identifies the patient's:

Date of interview

Name and address

Date and place of birth

Sex

Age

Race/Nationality

Primary language spoken

First names of parents

Source of reliability of informant(s)

Reason for contact (chief complaint)

This is the specific reason for the visit to the office clinic, or hospital.

Present Illness

This portion of the history is obtained if the child presents with a specific problem. It covers: a description of the onset and progression of the problem, identification of the characteristics of the problem, the present status of the problem, and the reason for seeking health care at this time.

Family Profile

The primary purpose for obtaining a family health history is to discover potential hereditary or familial diseases that could affect the health of the child.

Familial or Hereditary Diseases

Information on existing or past conditions that are of a familial or hereditary nature in parents, grandparents, first aunts and uncles, and siblings should be obtained.

Past Health History

Birth History

The birth history should include data concerning the mother's health during pregnancy, labor, and delivery, and the infant's condition immediately following birth.

Past Illness

The past health history includes a summary of any diseases, accidents, operation, or hospitalizations that the child has experienced.

Immunizations

The types and date of the child's immunizations should be noted. Any reactions to the immunizations and the treatment that followed should also be noted. A record of tuberculin skin testing included with the immunizations.

Developmental History

Documentation of the age at which the child mastered developmental milestones is included in the health history.

Milestones usually recorded include motor, language, and social development.

Review of Systems

The review of systems is done for a complete database in a well child as well as for a child who presents with an illness or specific complaint. It focuses attention on any deviations from health, thus allowing a more comprehensive picture of the child's health status and potential problems.

Physical Assessment

Approaching the Child

There are seven key issues in approaching a child for a physical assessment:

1. The atmosphere must be comfortable
2. The examination must be done quickly
3. The child's modesty must be respected
4. The examiner must take advantage of opportunities for assessment as they arise
5. The procedures need to be explained before they are done
6. The examination must be done systematically; and lastly
7. The examiner must be skilled in the assessment techniques and have a good knowledge base in anatomy as well as child development.

Measurements

Height and Weight: Should Be Plotted On a Growth Chart

For the child, the measurements of height and weight should be obtained and plotted on a standardized anthropometric chart at each physical examination.

Some general rules exist regarding height and weight:

Height and weight measurements provide important information but single measurement is of less importance than a series of measurements.

The relationship between height and weight is significant.

Children should constantly progress in height and weight.

Head Circumference

The brain achieves 75% of its adult size by 3 years of age. One-half of total head growth occurs during the first year of life. Therefore, the head circumference should be taken at each well-child visit during the first two to three years.

A reliable reading of head circumference is obtained by using a metal or paper tape measure around the broadest part of the head.

The head circumference is also plotted on a growth chart. As with height and weight, serial measurements provide more information than a single measurement, and marked differences should be investigated.

Assessment of Vital Signs

The normal values for pulse, respiratory rate, and blood pressure will vary with the age and size of each child. Normal temperature values will depend on the route by which the temperature is measured. Generally the accepted values are between 35.5°C to 38°C (96°F to 100.4°F) for oral temperature.

Normal Pulse and Respiratory Rates for Specific Ages

| Age | Pulse (Beats per Minute) | Average Pulse | Respirations (Breath per Minute) |
|----------|--------------------------|---------------|----------------------------------|
| Neonate | 70 – 170 | 120 | 30 – 40 |
| 2 years | 80 – 130 | 110 | 25 – 32 |
| 4 years | 80 – 120 | 100 | 23 - 30 |
| 6 years | 75 – 115 | 100 | 21 – 26 |
| 8 years | 70 – 110 | 90 | 20 - 26 |
| 10 years | 70 – 110 | 90 | 20 – 26 |
| 12 years | 70 – 110 | 85 | 18 – 22 |
| 14 years | 65 – 105 | 85 | 18 – 22 |
| 16 years | 60 – 100 | 85 | 16 – 20 |
| 18 years | 50 - 90 | 80 | 12 - 24 |

The Physical Examination

Physical examination utilized four basic assessment techniques:

1. inspection
2. auscultation
3. percussion
4. palpation

General Appearance

Following are examples of some areas used to develop a general appearance statement:

- Physical appearance
- Nutrition status
- Behavior and degree of activity
- Facial expression
- Interactions with parents or nurse
- Developmental status
- Consciousness level
- Speech or nature of cry
- Gait
- Coordination and posture

The Skin

Techniques: Inspection

Palpation

Examine for Color – pink, pallor, jaundice, cyanosis

Moisture

Turgor – check abdomen for tenting

Edema

Temperature

Rashes

Signs of Abuse – bruising, burns

Hygiene

Equipment

Natural Lighting

Color

The skin should be inspected for areas of hyperpigmentation or hypopigmentation. When examining the skin, the nurse should note any signs of cyanosis or erythema.

Skin that is very pale demonstrates a decrease in hemoglobin content, often seen secondary to anemia or shock.

Jaundice is seen as a yellow-green hue.

Moisture

The skin is inspected and palpated for the degree of moisture present.

Texture

Inspection and palpation of the quality and character of the skin surface is necessary for the evaluation of skin texture. Normal skin is smooth, soft and pliable.

Turgor

One of the best indicators of nutrition and hydration is skin turgor. Normal skin turgor is elastic and taut. Turgor is evaluated by pinching the skin between thumb and forefinger and noting the reaction of the pinched skin.

Edema

An excess of water that is stored in the skin in the form of edema is evaluated according whether it is pitting or non-pitting. The thumb is firmly pressed over the medial aspect of the child's malleoli for at least five seconds. After releasing the skin, any sign of indentation that lasts several seconds indicates pitting edema.

Temperature

Palpation of the skin to determine its temperature is best completed by comparing body parts.

Lesions and Rashes

Examination of the skin is not complete unless it has been inspected and palpated for skin lesions. Any lesions or rashes on the skin should be noted and described in detail as follows: size, color, shape, location, surface characteristics, anatomic distribution, configuration, and morphology.

Hair

Hair is examined for color, length, distribution, cleanliness, amount, and texture. Body hair is also evaluated. Pubic hair should become evident at 8 to 12 years.

Nails

Nails are examined as part of the integumentary system. Nails are inspected and palpated for their size, shape (convex or concave), and color (pink, cyanotic, pale). Characteristics such as smoothness, pitting, ridging and clubbing are carefully noted.

The Lymphatic System

The lymphatic system provides important information about the child's health status. Lymph nodes are inspected and palpated during the examination of the part of the body in which they are located.

The physical examination should include evaluation of five major lymph node areas: head, neck, axillae, inguinal, arms and legs.

Lymph nodes are palpated using the finger pads and gently but firmly pressing in a circular motion along the regions in which the nodes are normally present. Note tenderness, redness, and size.

The Head, Face and Neck

Head

Inspection from all angles is necessary to determine the size, shape, and symmetry of the head. The shape of the skull is generally round but may be long or broad. Suture lines and fontanelles are inspected and palpated during examination of the infant's and young child's head. They should be separated at birth. Fuse at about 18 months. The child's scalp is inspected and palpated for scaliness, infections, and hair. The head should be inspected and palpated for any bulges or swellings. Control, movement, and position of the head are also observed. The head should move smoothly from an extended or flexed position and from side to side.

Face

The face should be inspected for shape, symmetry, paralysis, and placement of features, distribution of hair and skin color and texture. Symmetry and

placement of features should be evaluated from the front and from each side. The eyes should be set at the same level and not set wide apart or close together. The nose should be midline with symmetrical nares; the mouth should be symmetrical, and the ears set at the same level on both sides of the head. Edema, twitching, and tics should also be observed for and palpated.

Neck

The neck is inspected for contour, mobility, pulsations, symmetry, size, and shape. Palpation of the neck is used to determine strength, pulsations, and position of structures such as the thyroid and the trachea.

Eye

Examination of the eye begins with the eyelids, which are inspected for ptosis, retraction slanting, edema, redness, or epicanthal folds. They should also be inspected for styes, chalazions, and boils.

Presence or absence of eyelashes is determined, as are their color and texture. The nasolacrimal duct should be inspected for patency, position, redness, and swelling. The palpebral and bulbar conjunctivae are examined next for color, moisture and integrity. The orbit of the eye is also assessed.

The full range of motion of the extraocular muscles is evaluated by having the child follow an object to each of the visual fields. Two screening tests are used to detect strabismus. The corneal light reflex and cover/uncover test is determined by shining a penlight at the bridge of the nose while the child looks straight ahead. Inspection of the child's eyes should then be done to determine if the reflection of light falls at the same point on each pupil. Any deviation indicates strabismus. The cornea, sclera, iris, and pupil are considered to comprise the eye proper and are examined next. The cornea is inspected for clouding, enlargement, abrasions, lesions, or change in color. The sclera is observed for color, hemorrhage, or discoloration.

The iris and pupil are examined together. The size, shape, and color of the irises are noted.

Pupils are examined for size, shape, equality, reaction to light, and accommodation.

The lens is examined by shining a light on the eyes and inspecting the lens for opacities. Finally, with the aid of the ophthalmoscope, the retina can be examined. The examiner holds the ophthalmoscope in the right hand and looks into the right eye of the child.

The child should be instructed to focus on a fixed object such as a fluorescent sticker on the wall.

The ophthalmoscope is dialed to 0. The examination begins by focusing the light into the child's eyes at a distance of about 12 inches from a position that is

about 15 degrees to the side of the line of vision. A red reflex is obtained at this time.

Finally, visual acuity is tested. Vision screening should begin early in life (at 3 to 4 years) and continue at regular intervals. The infant's vision can be evaluated by watching the child's ability to focus and follow brightly colored objects or a light. Ask the mother if she notices.

Visual acuity is defined as the ability to see near and far objects clearly. There are a variety of tools that can be used to test visual acuity.

The Ear

Examination of the ears begins with inspection for shape, position, and placement of the external ears. The pinna is also inspected for color and structural anomalies. The pinna is palpated for cartilage formation, masses, tenderness, and cysts. The bony prominence located immediately posterior to the ear lobe is the mastoid process. This area is inspected and palpated for erythema, swelling, and tenderness. The outer canal of the ear is then inspected for discharge. Inter structures are examined with the aid of an audioscope. The ear canal is normally curved and must be straightened before the examiner can visualize the canal and tympanic membrane. The canal is then examined internally for erythema, lesions, furuncles, and discharge.

Once the canal has been inspected, the examiner proceeds to the tympanic membrane. The tympanic membrane is assessed for color, the landmarks and mobility, if mobility is decreased may indicate Otitis Media – use the insulator. A normal tympanic membrane is a light, pearly gray color.

Ask the mother/father to assess hearing.

The Nose

The shape of the nose is inspected.

Internal examination of the nose requires a penlight or an otoscope with a nasal speculum. Normal mucosa is pink and moist. The examiner also determines the type and amount of nasal secretions. Finally, palpation and percussion of the sinuses is performed.

The Mouth and Throat

Examination begins with inspection of the lips for color, moisture, size, shape, asymmetry, drooping, fissures, clefts, edema, or lesions. In addition, the lips and the surrounding area are inspected for pallor or cyanosis.

Teeth are inspected for number, type, position, caries, malocclusions, (inspect at every visit), color, and hygiene.

Salivation is noted.

Gums should be inspected and palpated for color, moisture, inflammation, swelling, bleeding, tenderness, and ulcerations.

The buccal mucosa is inspected and palpated for color, moisture, lesion, and parotid ducts, and masses.

Inspection for the tongue is done to determine color, moisture, size, tremors, coating, size of papillae, and the presence of lesions. The normal tongue is pink and should fit in the mouth. The examiner should observe the tongue closely to determine mobility. The frenulum is checked for tongue-tie and is considered abnormal if the tongue cannot extend to upper-lip, refer.

The hard and soft palates are inspected and palpated for color, shape, clefts, and the presence of lesions.

The uvula is inspected as the child is gagged or is told to say, "aah." If present, tonsils are inspected for color, size, symmetry, inflammation or exudates, and possible lesions.

The posterior pharynx is checked for color, drainage, edema, and abnormal lesions or growth.

The Chest and Lungs

The chest is inspected for size, shape, symmetry, and movement. The chest should be inspected during inspiration and expiration. Normal inspirations occur as the chest expands. The location and depth of retractions, if present, should be described.

The chest is palpated to determine if any cysts, tenderness, tumors, or abnormal growths. Palpation of the ribs will indicate the number of ribs and the presence of tenderness. Lung expansion is evaluated to the examiner by placing the hands, palms down, on the child's chest, thumbs resting on the costal margin for the anterior chest or midspine at the tenth rib for the posterior chest.

As the chest expands with deep inspiration, the examiner observes the thumbs to see if their movement is equal.

Auscultation is done using the diaphragm of the stethoscope. The chest is auscultated in a systematic fashion from side to side moving from top to bottom, including anterior and posterior and the lateral aspects. Respiratory rate and depth are recorded. There is an increase in volume in children prolonged expiration and nasal sounds often audible in the chest.

Breath sounds are evaluated as to type, quality, pitch, duration, and intensity. Advantageous sounds: rales, rhonchi, wheezing are noted.

Breasts should be examined in both males and females. During inspection of the anterior chest, the nipples should be checked for color, spacing, placement, symmetry, fissures, inversions, secretions, scaling and lumps.

The Heart

Auscultation is the most informative method of assessing cardiac function. It is used to evaluate the quality, rate, and rhythm of the heart and to detect abnormal heart sounds.

First the apical pulse rate, intensity, and rhythm are noted. The heart is auscultated with both the bell and the diaphragm of the stethoscope. The bell picks up low frequencies, and the diaphragm picks up high frequencies.

The examiner begins by evaluating heart sounds for quality, intensity, rhythm, and unusual sounds.

The heart sounds are evaluated for quality, intensity, and splitting. The rhythm of the heart is evaluated by listening carefully to determine if any irregularity exists. Finally, the cardiovascular pulses are palpated for presence or absence, regularity, and intensity. The carotid, radial, femoral, popliteal, and pedal pulses are palpated and compared. A thorough examination of the heart should include blood pressure.

The Abdomen

Examination of the abdomen requires inspection, auscultation, palpation, and percussion of its four major division: right upper quadrant, right lower quadrant, left upper quadrant, and left lower quadrant.

Inspection allows the examiner to determine shape and contour, movement and peristalsis, distention, bulges, and condition of the rectus muscle.

The abdomen should be inspected from front and from the sides to determine the extent of the distention; it is then palpated and percussed.

The umbilicus is inspected closely for bulging, color, and discharge.

Finally the abdomen is inspected for distended veins and obvious pulsations.

Auscultation follows inspection of the abdomen so that peristaltic sounds are not disturbed by palpation or percussion. The diaphragm of the stethoscope is placed firmly over the abdomen and the examiner listens in all four quadrants of peristaltic sounds.

Percussion follows auscultation and is done with the child supine. The examiner begins with the child's thorax at the left midaxillary line. The diaphragm is percussed above the spleen. Occasionally, tympany under the left diaphragm is percussed if a stomach bubble is present. This procedure is then repeated in the right side where liver dullness is expected at the anterior sixth inter space and at the posterior ninth rib. The remainder of the abdomen is then percussed.

The final method of examination is palpation. Light palpation begins the examination and should proceed in a systematic fashion. Using the fingertips, the examiner gently and superficially palpates the quadrants in the following order: left lower, left upper, right upper, and right lower.

The Female Genitalia

Every child should have a thorough examination of the genitalia. The female genitalia are inspected and palpated with gloved hands for presence or absence and symmetry of the external structures. Evidence of edema, color changes, moisture, lesions, and masses should be identified and recorded.

The Male Genitalia

The male genitalia are also examined thoroughly. The examiner should begin by first inspecting and palpating the penis for size and consistency. It should be noted if the child has been circumcised.

The meatal opening is inspected for size, position, and any discharge.

The scrotum is inspected and palpated for edema, inflammation, masses, and color. The scrotal sac should be palpated for the presence or absence of testes and for their size and any masses or tenderness. The inguinal canal is palpated to rule out a possible hernia.

The Rectum and Anus

The rectum is inspected for fissures, prolapse, hemorrhoids, polyps, inflammation, rashes and lesions. Patency should also be determined.

A rectal examination is not done routinely in children.

The Musculoskeletal System

A general inspection of the skeletal system begins with observation as the child walks into the examination room. During the actual examination, soft tissues and muscles are inspected and palpated for symmetry, contractures, erythema, swelling, and tenderness.

With both hands simultaneously the child should squeeze the examiner's hands and fingers; this allows the examiner to evaluate strength and symmetry. The examiner should also apply pressure to the child's arms while they are held in the following positions: raised above the head, out to the sides, and straight out in front. The lower extremities are observed for shape. The lower extremities are checked for equality in length. Strength of the legs is checked in much the same way as strength in the upper extremities. The legs are flexed, and the examiner tries to straighten them.

Range of motion of the hips, knees, ankles, and toes should also be checked.

The feet are inspected for equality of size and shape and for position.

Finally, children are observed for gait, balance, and stance.

Inspection and palpation of the spine should be done with the child standing if possible. The examiner checks for symmetry of bony landmarks, alignment and for other skin manifestations such as dimples, cysts, and tufts of hair.

The Neurological System

Cerebral Function

This area is evaluated using both an interview and developmental test.

Evaluation of specific cerebral function includes testing three functional areas:

- * Cortical sensory interpretation – the ability to recognize objects through the use of senses: visual, tactile, auditory, and somatic
- * Cortical motor integration – the ability to perform purposeful acts
- * Language: expressive, receptive

Cranial Nerves

Evaluation of the 12 pairs of cranial nerves is easily integrated into the physical examination.

Cerebellar Function

Tests for cerebellar function involve primarily assessment of balance and coordination. General cerebellar examination begins with observing gait, watching the child walk heel to toe, and checking the ability to dress and undress, button, stack blocks, throw, kick, etc. Balance is specifically evaluated by observing the gait and having the child stand with the eyes both open and closed.

Evaluating the Motor System

Examination of the motor system includes evaluation of muscle size, muscle tone, muscle strength, and abnormal muscle movements.

The Sensory System

Both primary and discriminatory sensations are evaluated as part of the assessment of the neurological system.

Reflex Action

The reflexes evaluated in the older child and adult fall into the categories: superficial and deep. While superficial reflexes may not always be elicited as part of the neurologic examination, deep tendon reflexes usually are. DTR responses are usually graded using the following scoring system: 0 = absent, +1 = sluggish, +2 = active, +3 = hyperactive, +4 = transient clonus, and +5 = permanent clonus. Deep reflexes are evaluated for strength and symmetry from side to side and from upper to lower extremities.

Developmental Screening

Developmental screening is an absolutely vital component of child health assessment. Unfortunately, it is often omitted during routine health assessment. It is important to carry out developmental screening accurately.

Speech Screening

No developmental screening would be complete without a speech evaluation. Speech and language development is also evaluated by direct observation of the child's verbal skills, in addition to speech patterns and history of speech patterns and development.

Nutritional Assessment

Nutrition is a significant factor that influences and is influenced by growth and development. There are four major purposes for assessing food intake:

1. To identify dietary practices of the family
2. To obtain baseline data on caloric and nutrient intake and appropriate anthropometric measurements from which progress can be measures.
3. To promote healthful dietary practices through counseling and teaching.
4. To provide parents with the opportunity to ask questions and about nutrition and feeding behaviors.

Laboratory Screening

Blood Specimens

Hematocrit

One of the most frequently used laboratory screening tests is the hematocrit. The hematocrit is a comparison of packed red blood cell volume and the volume of whole blood. This is generally a screening test used for anemia.

Hemoglobin

A Hemoglobin test refers to the measurement of hemoglobin, a protein, within each blood cell.

Phenylketonuria

Phenylketonuria (PKU), a disorder of amino acid metabolism, causes abnormal accumulation of the amino acid phenylalanine in the blood, resulting in brain damage. Testing for PKU has become mandatory on all newborns in most states in the U.S.

Lead

Both blood and urine testing do screening for toxicity. Blood testing requires venous blood.

Blood lead concentration and erythrocyte-protoporphyrin (EP) level are the commonly used tests.

Urine Specimens

A standard urinalysis includes an examination for the color, pH, and specific gravity; testing for glucose, ketones, and protein; and a microscopic determination for cells, bacteria, and crystalline content. Urine cultures are done on children who are suspected of having a urinary tract infection and on children with routine urinalysis results indicating abnormal microscopic finding.

D. BIBLIOGRAPHY

McCance, Kathryn; Huether, Sue E., Pathophysiology The Biologic Basis for Disease in Adults and Children. CV. Mosby. 1994

Morton, PatriciaGonie: Davis's Clinical Guide to Health Assessment 2nd Ed; FA Davis Co. 1995.

Seidel, Ball, Davis, Benedict. Mosby's Guide to Physical Examination; CV Mosby. 1997.

Warner, David. Where There is no Doctor

7. A breast exam should be done on both male and female clients.

True or False

8. When doing an abdominal assessment, it is necessary to auscultate for _____ seconds in each quadrant of the abdomen.

- a. 60 b. 15 c. 30 d. 5

9. The musculoskeletal system provides for:

10. When doing a neurological assessment, level of consciousness includes:

11. A measurement of head circumference should be done at each well child visit during the first year only.

True or False

12. Weight and height measurements done on the pediatric patient should be plotted on a growth chart.

True or False

13. Universal precautions need to be used only when a patient is identified as infectious.

True or False

14. Techniques used in the physical exam include:

F. POST TEST EVALUATION

Physical Assessment

1. A physical assessment is:
 - a. A process in any order to collect data without the clients input
 - b. A systematic process by which the nurse, through interaction with the patient and significant others, collects and analyzes information about the client
 - c. A verbal interaction of data collection with the client only
 - d. None of the above

2. When asking a patient to define history of a current problem the nurse should ask:

3. The skin is the sensory organ for:

4. The four parts of the heart include:

5. Smoking and chewing tobacco increases the risk of oral cancer.

True or False

6. When using an audioscope to inspect the tympanic membrane in an adult, the nurse should pull the auricle downward.

True or False

7. A breast exam should be done on both male and female clients.

True or False

8. When doing an abdominal assessment, it is necessary to auscultate for _____ seconds in each quadrant of the abdomen.

- a. 60 b. 15 c. 30 d. 5

9. The musculoskeletal system provides for:

10. When doing a neurological assessment, level of consciousness includes:

11. A measurement of head circumference should be done at each well child visit during the first year only.

True or False

12. Weight and height measurements done on the pediatric patient should be plotted on a growth chart.

True or False

13. Universal precautions need to be used only when a patient is identified as infectious.

True or False

14. Techniques used in the physical exam include:

G. HANDOUTS

Physical Assessment Teaching Tools

List of tools for course completion for each participant:

Stethoscope
Sphygmomanometer
Tuning fork
Spelling chart
Audioscope
Reflex hammer
Penlight
Gloves
Tongue blade or spoon

For general use:

Spelling chart
Breast exam model
Laminated charts
Cardiac assessment
Respiratory assessment
Head and neck assessment
Skin, hair and nails assessment
Gastro intestinal assessment
Genital urinary assessment
Musculoskeletal assessment
Neurological assessment
Heart sounds and breath sounds

Competency check off

The participant will be able to demonstrate competency in the following skills:

Blood pressure, use of sphygmomanometer

Respiratory assessment/respiratory rate-use of stethoscope

Pulse

Cardiac assessment/apical pulse, use of stethoscope

Pupil assessment, use of penlight

Reflex assessment, use of reflex hammer

Hearing assessment, use of tuning fork

Tympanic membrane assessment, use of audioscope

Breast exam lab, use of breast module

Visual acuity, use of Spelling chart

Sample Interview Questions for Children and Families

1. How are you?
2. How is your family getting along?
3. What questions and concerns do you have today?
4. What do you enjoy most about Bobby?
5. Do you think Jane hears all right? Sees all right?
6. What is Ann eating now?
7. How does Joey get from one place to another?
8. How does Bobby let you know what he wants?
9. What are Tommy's sleeping habits?
10. Have there been any major stresses or changes in your family since the last visit?