NR 509 Midterm Study Guide Week 3

Ch. 1

- **Basic and Advanced Interviewing Techniques**

Basic Interviewing Techniques

- **Active listening: Active listening means closely attending to what the patient is communicating, connecting to the patient's emotional state, and using verbal and nonverbal skills to encourage the patient to expand on his or her feelings and concerns.**
- **Empathic responses: Empathy has been described as the capacity to identify with the patient and feel the patient's pain as your own, then respond in a supportive manner.**
- **Guided questioning: Guided questions show your sustained interest in the patient's feelings and deepest disclosures and allows the interviewer to facilitate full communication, in the patient's own words, without interruption.**
- **Nonverbal communication: Nonverbal communication includes eye contact, facial expression, posture, head position and movement such as shaking or nodding, interpersonal distance, and placement of the arms or legs—crossed, neutral, or open.**
- **Validation: Validation helps to affirm the legitimacy of the patient's emotional experience.**
- **Reassurance: Reassurance is an appropriate way to help the patient feel that problems have been fully understood and are being addressed.**
- **Partnering: When building rapport with patients, express your commitment to an ongoing relationship.**
- **Summarization: Giving a capsule summary of the patient's story during the course of the interview to communicate that you have been listening carefully.**
- **Transitions: Inform your patient when you are changing directions during the interview.**
- **Empowering the patient: Empower patients to ask questions, express their concerns, and probe your recommendations in order to encourage them to adopt your advice, make lifestyle changes, or take medications as prescribed.**

Advanced Interview Techniques

- **Determine scope of assessment: Focused vs. Comprehensive:**
  - **Comprehensive: Used patients you are seeing for the first time in the office or hospital. Includes all the elements of the health history and complete physical examination.**
    - **Is appropriate for new patients in the office or hospital**
    - **Provides fundamental and personalized knowledge about the patient**
    - **Strengthens the clinician-patient relationship**
    - **Helps identify or rule out physical causes related to patient concerns**
    - **Provides a baseline for future assessments**
    - **Creates a platform for health promotion through education and counseling**
    - **Develops proficiency in the essential skills of physical examination**
  - **Focused: For patients you know well returning for routine care, or those with specific "urgent care" concerns like sore throat or knee pain. You will adjust the scope of your history and physical examination to the situation at hand, keeping several factors in mind: the magnitude and severity of the patient's prob- lems; the need for thoroughness; the clinical setting—inpatient or outpatient, primary or subspecialty care; and the time available.**
    - **Is appropriate for established patients, especially during routine or urgent care visits**
    - **Addresses focused concerns or symptoms**
    - **Assesses symptoms restricted to a specific body system**
    - **Applies examination methods relevant to assessing the concern or problem as thoroughly and carefully as possible**
- **Being aware of your reactions helps develop your clinical skills.**
- **Your success in eliciting the history from different types of patients grows with experience, but take into account your own stressors, such as fatigue, mood, and overwork.**
- **Self-care is also important in caring for others. Even if a patient is challenging, always remember the importance of listening to the patient and clarifying his or her concerns.**

- **Components of the Health History**
- **Initial information**
  - **Date and time of history-time is especially important in emergent**

situations

- **Identifying data-age, gender, marital status, occupation-identify source of history ie: family member, friend etc.**
- **Reliability-usually documented at end of interview ie: "patient is vague when describing symptoms".**

- **Chief Complaint(s)**
  - **Try to quote the patients words**
- **Present Illness**
  - **Complete, clear and chronological description of the problem prompting the patient visit**
  - **Onset, setting in which it occurred, manifestations and any treatments**
  - **Should include 7 attributes of a symptom:**
    - **Location**
    - **Quality**
    - **Quantity or severity**
    - **Timing, onset, duration, frequency**
    - **Setting in which it occurs**
    - **Aggravating or relieving factors**
    - **Associated manifestations**

Differential diagnosis is derived from the "pertinent positives" and "pertinent negatives" when doing Review of Systems that are relevant to the chief complaint.

Present illness should reveal patient's responses to his or her symptoms and what effect this has on their life.

Each symptom needs its own paragraph and a full description.

Medication should be documented, name, dose, route, and frequency. Home remedies, non-prescriptions drugs, vitamins, mineral or herbal supplements, oral contraceptives, or borrowed medications.

Allergies-foods, insects, or environmental, including specific reaction

Tobacco use, including the type. If someone has quit, note for how long

Alcohol and drug use should always be investigated and is often pertinent to the Presenting Illness.

- **Past history**
  - **Childhood Illness: measles, rubella, mumps, whooping cough,**

chickenpox, rheumatic fever, scarlet fever, and polio. Also include any chronic childhood illness

- **Adult illnesses: Provide information in each of the 4 areas:**
  - **Medical: diabetes, hypertension, hepatitis, asthma and HIV; hospitaliations; number and gender of sexual partners; and risk taking sexual practices.**
  - **Surgical: dates, indications, and types of operations**
  - **Obstetric/gynecologic: Obstetric history, menstrual history, methods of contraception, and sexual function.**
  - **Psychiatric: Illness and time frame, diagnoses, hospitalizations, and treatments.**

Health Maintenance: Find out if they are up to date on immunizations and screening tests.

- **Family history**
  - **Outlines or diagrams age and health, or age and cause of death, of siblings, parents, and grandparents**
  - **Documents presence or absence of specific illnesses in family, such as hypertension, coronary artery disease, elevated cholesterol levels, stroke, diabetes, thyroid or renal disease, arthritis, tuberculosis, asthma or lung disease, headache, seizure disorder, mental illness, suicide, substance abuse, and allergies, and symtoms reported by patient.**
  - **Ask about history of breast, ovarian, colon, or prostate cancer**
  - **Ask about Genetically transmitted diseases**

Personal or social history

- **Describes educational level, occupation, family of origin, current household, personal interests, and lifestyle**
- **Capture the patients personality and interests, sources of support, coping style, strengths, and concerns**
- **Includes lifestyle habits that promote health or create risk, such as exercise and diet, safety measures, sexual practices, and use of alcohol, drugs, and tobacco**
- **Expanded personal and social history personalizes your relationship with the patient and builds a rapport**

- **Review of systems**

- **Documents presence or absence of common symptoms related to each of the major body systems**
- **Understanding and using Review of Systems questions may seem challeng- ing at first. These “yes-no” questions should come at the end of the inter- view. Think about asking a series of questions going from “head to toe.” It is helpful to prepare the patient by saying, “The next part of the history may feel like a hundred questions, but it is important to make sure we have not missed anything.”**
- **Most Review of Systems questions pertain to symptoms, but on occasion, some clinicians include diseases like pneumonia or tuberculosis.**
- **Note that as you elicit the Present Illness, you may also draw on Review of Systems questions related to system(s) relevant to the Chief Complaint to establish “pertinent positives and negatives” that help clarify the diagnosis.**
- **For example, after a full description of chest pain, you may ask, “Do you have any history of high blood pressure . . . palpitations . . . shortness of breath . . . swelling in your ankles or feet?” or even move to questions from the Respiratory or Gastrointestinal Review of Systems**
- **The Review of Systems questions may uncover problems that the patient has overlooked, particularly in areas unrelated to the Present Illness. Significant health events, such as past surgery, hospitalization for a major prior illness, or a parent’s death, require full exploration. Keep your technique flexible.**
- **Remember that major health events discovered during the Review of Systems should be moved to the Present Illness or Past History in your write-up. ■**
- **Some experienced clinicians do the Review of Systems during the physical examination, asking about the ears, for example, as they examine them. If the patient has only a few symptoms, this combination can be efficient. If there are multiple symptoms, however, this can disrupt the flow of both the history and the examination, and necessary note taking becomes awkward**

The Review of Systems

General: Usual weight, recent weight change, clothing that fits more tightly or loosely than before; weakness, fatigue, or fever.

Skin: Rashes, lumps, sores, itching, dryness, changes in color; changes in hair or nails; changes in size or color of moles.

Head, Eyes, Ears, Nose, Throat (HEENT):

Head: Headache, head injury, dizziness, lightheadedness.

Eyes: Vision, glasses or contact lenses, last examination, pain, redness, excessive tearing, double or blurred vision, spots, specks, flashing lights, glaucoma, cataracts.

Ears: Hearing, tinnitus, vertigo, earaches, infection, discharge. If hearing is decreased, use or nonuse of hearing aids.

Nose and sinuses: Frequent colds, nasal stuffiness, discharge, or itching, hay fever, nosebleeds, sinus trouble.

Throat (or mouth and pharynx): Condition of teeth and gums, bleeding gums, dentures, if any, and how they fit, last dental examination, sore tongue, dry mouth, frequent sore throats, hoarseness.

Neck: "Swollen glands," goiter, lumps, pain, or stiffness in the neck.

Breasts: Lumps, pain, or discomfort, nipple discharge, self-examination practices.

Respiratory: Cough, sputum (color, quantity; presence of blood or hemoptysis), shortness of breath (dyspnea), wheezing, pain with a deep breath (pleuritic pain), last chest x-ray. You may wish to include asthma, bronchitis, emphysema, pneumonia, and tuberculosis.

Cardiovascular: "Heart trouble"; high blood pressure; rheumatic fever; heart murmurs; chest pain or discomfort; palpitations; shortness of breath; need to use pillows at night to ease breathing (orthopnea); need to sit up at night to ease

(*continued*)

The Review of Systems (*continued*)

breathing (paroxysmal nocturnal dyspnea); swelling in the hands, ankles, or feet (edema); results of past electrocardiograms or other cardiovascular tests.

Gastrointestinal: Trouble swallowing, heartburn, appetite, nausea. Bowel movements, stool color and size, change in bowel habits, pain with defecation, rectal bleeding or black or tarry stools, hemorrhoids, constipation, diarrhea. Abdominal pain, food intolerance, excessive belching or passing of gas. Jaundice, liver, or gallbladder trouble; hepatitis.

Peripheral vascular: Intermittent leg pain with exertion (claudication); leg cramps; varicose veins; past clots in the veins; swelling in calves, legs, or feet; color change in fingertips or toes during cold weather; swelling with redness or tenderness.

Urinary: Frequency of urination, polyuria, nocturia, urgency, burning or pain during urination, blood in the urine (hematuria), urinary infections, kidney or flank pain, kidney stones, ureteral colic, suprapubic pain, incontinence; in males, reduced caliber or force of the urinary stream, hesitancy, dribbling.

Genital: *Male:* Hernias, discharge from or sores on the penis, testicular pain or masses, scrotal pain or swelling, history of sexually transmitted infections and their treatments. Sexual habits, interest, function, satisfaction, birth control methods, condom use, and problems. Concerns about HIV infection. *Female:* Age at menarche, regularity, frequency, and duration of periods, amount of bleeding; bleeding between periods or after intercourse, last menstrual period, dysmenorrhea, premenstrual tension. Age at menopause, menopausal symptoms, postmenopausal bleeding. If the patient was born before 1971, exposure to diethylstilbestrol (DES) from maternal use during pregnancy (linked to cervical carcinoma). Vaginal discharge, itching, sores, lumps, sexually transmitted infections and treatments. Number of pregnancies, number and type of deliveries, number of abortions (spontaneous and induced), complications of pregnancy, birth-control methods. Sexual preference, interest, function, satisfaction, any problems, including dyspareunia. Concerns about HIV infection.

Musculoskeletal: Muscle or joint pain, stiffness, arthritis, gout, backache. If present, describe location of affected joints or muscles, any swelling, redness, pain, tenderness, stiffness, weakness, or limitation of motion or activity; include timing of symptoms (e.g., morning or evening), duration, and any history of trauma. Neck or low back pain. Joint pain with systemic symptoms such as fever, chills, rash, anorexia, weight loss, or weakness.

Psychiatric: Nervousness, tension, mood, including depression, memory change, suicidal ideation, suicide plans or attempts. Past counseling, psychotherapy, or psychiatric admissions.

Neurologic: Changes in mood, attention, or speech; changes in orientation, memory, insight, or judgment; headache, dizziness, vertigo, fainting, blackouts; weakness, paralysis, numbness or loss of sensation, tingling or "pins and needles," tremors or other involuntary movements, seizures.

Hematologic: Anemia, easy bruising or bleeding, past transfusions, transfusion reactions.

Endocrine: "Thyroid trouble," heat or cold intolerance, excessive sweating, excessive thirst or hunger, polyuria, change in glove or shoe size.

- **Subjective versus Objective Data**
- Subjective versus Objective Data (pg. 7)

Subjective Data (symptoms)	Objective Data (signs)
What the patient tells you	What is observed during physical examination
Patients history, from Chief	Laboratory information, test

Complaint through Review of Systems	data

- **Documentation**

Documentation needs to be CLEAR, CONCISE, COMPREHENSIVE.

SOAP (subjective, objective, assessment, & plan) note is used for providers of various backgrounds/specialties to communicate with each other.

Ch. 2

1. **Clinical Decision Making**
2. **Critical Thinking and Reasoning**
3. **Differential Diagnoses**

Differential Diagnosis: A list with potential causes of patient specific problem/CC

- **A chief complaint (CC) must be identified first.**
- **The differential diagnosis will include all medical disease that may possibly explain problem/ CC.**
- **The differential diagnosis must include the most likely diagnosis and even at times the most serious diagnoses that have serious consequences if undiagnosed and untreated.**
- **The differential diagnosis list should begin with the most likely explanation or etiology for the problem/CC.**

EX: C/O vomiting blood

1. **Peptic ulcer**
2. **Cirrhosis with bleeding esophageal varices**
3. **Acute hemorrhagic gastritis**

4. **Pathological and Physiological Processes**
5. **Problem List**
6. Problem List- All information is from Bates textbook pg. 37

-After you complete the clinical record, it is good clinical practice to generate a Problem List that summarizes the patient's problems that can be placed in the front of the office or hospital chart. List the most active and serious problems first and record their date of onset. Some clinicians make separate lists for active or inactive problems; others make one list in order of priority.
-A good Problem List helps you to individualize the patient's care. On follow-up visits, the Problem List provides a quick summary of the patient's clinical history and a reminder to review the status of problems the patient may not mention.
-An accurate Problem List allows better population management of patients, by using EHRs to track patients with specific problems, recall patients who are behind on appointments, and follow up on specific issues. The Problem List also allows other members of the health care team to learn about the patient's health status at a glance.
-Clinicians organize problem lists differently, even for the same patient. Problems can be symptoms, signs, past health events such as a hospital admission or surgery, or diagnoses. You might choose different entries from those above. Good lists vary in emphasis, length, and detail, depending on the clinician's philosophy, specialty, and role as a provider. Some clinicians would find this list too long. Others would be more explicit about "family stress" or "varicose veins."

7.
8. **Prioritization**
9. **Generate problem list with all problems noted, differential diagnoses should cover all possible causes of chief complaint. Prioritize which complaints/problems are highest priority (urgent) for this visit. (i.e., Tina has diabetes, htn, and a slew of other issues, but utmost importance is her foot wound and ankle pain)**

Ch. 3

- **Interpretation and Analysis**
- **Logical Sequence**
- **Associated Symptoms**

Seven Attributes of a Symptom

1. **Location**

2. **Quality**
3. **Quantity or severity**
4. **Timing, including onset, duration, and frequency**
5. **The setting in which it occurs**
6. **Factors that have aggravated or relieved the symptom**
7. **Associated manifestations**
    -

- **Adaptive Questioning (pg. 69-71)**
- **Adaptive questioning also known as guided questioning**
-
- **Techniques of Guided Questioning**
- **•Moving from open-ended to focused questions**
- **Using questioning that elicits a graded response**
- **•Asking a series of questions, one at a time**
- **•Offering multiple choices for answers •Clarifying what the patient means**
- **•Encouraging with continuers**
- **•Using echoing**

- **Challenging Patients**

Challenging Patients: The silent patient. The confusing patient. The patient with impaired capacity. The talkative patient. The angry or disruptive patient. The patient with a language barrier. The patient with low literacy or low health literacy. The hearing impaired patient. The blind patient. The patient with limited intelligence. The patient seeking personal advice. The seductive patient.

Ch. 4

- General Approach to the Physical Examination
- Interview Facilitation
    - Use open-ended questions-helps to encourage the patient to describe what they are experiencing
    - Listen and ask common-sense questions
    - Follow a thorough and systematic sequence to history taking and physical

examination

- Keep an open mind toward both the patient and the clinical data
- Always include "the worst-case scenario" in your list of possible explanations of the patient's problem, and make sure it can be safely eliminated
- Analyze any mistakes in data collection or interpretation
- Confer with colleagues and review the pertinent clinical literature to clarify uncertainties
- Apply the principles of evaluating clinical evidence to patient information and testing
- As you talk with and examine the patient, heighten your focus on the patient’s mood, build, and behavior
- 1. Reflect on your approach to the patient: When greeting the patient identify yourself as a student, beginners spend more time in certain areas and that is ok but just warn the patient that you may want to listen to their heart a little longer but that does not mean anything is wrong
    - Avoid interpreting your findings, you are not the patients primary care provider
    - Avoid negative reactions or showing distaste when finding abnormalities
- 2. Adjust the lighting and the environment: set the stage so that both you and the patient are comfortable; good lighting and a quiet environment enhance what you see and hear however may be hard to arrange
- 3. Check your equipment: The following equipment is needed:
    - An ophthalmoscope and an otoscope. If you are examining children, the otoscope could allow pneumatic otoscopy.
    - ●A flashlight or penlight
    - ● Tongue depressors
    - A ruler and a flexible tape measure, preferably marked in centimeters
    - ●Often a thermometer
    - ●A watch with a second hand
    - ●A sphygmomanometer
    - ●A stethoscope with the following characteristics:
    - ●Ear tips that fit snugly and painlessly. To get this fit, choose ear tips of the proper size, align the ear pieces with the angle of your ear canals, and adjust the spring of the connecting metal band to a comfortable tightness.
    - ●Thick-walled tubing as short as feasible to maximize the transmission of sound: ∼30 cm (12 inches), if possible, and no longer than 38 cm (15 inches)
    - ●A bell and a diaphragm with a good changeover mechanism
    - ●A visual acuity card

        - ●A reflex hammer
        - ●Tuning forks, both 128 Hz and 51
        - Cotton swabs, safety pins, or other disposable objects for testing sensation and two-point discrimination
        - ●Cotton for testing the sense of light touch
        - ●Two test tubes (optional) for testing temperature sensation
        - ●Gloves and lubricant for oral, vaginal, and rectal examinations
        - ● Vaginal specula and equipment for cytologic and bacteriologic studies
        - ●Paper and pen or pencil, or desktop or laptop computer
    - 4. Make the patient comfortable. Show sensitivity to privacy and patient modesty; this conveys respect for the patients vulnerability
    - 5. Observe standard and universal precautions.
    - 6. Choose the sequence, scope, and positioning of examination
        - Four classic techniques for for physical examination:
            - Inspection
            - Palpitation
            - Percussion
            - Auscultation
    -
- Vital Signs

CCh. 6

- Integumentary Assessment and Modification for Age
- Normal VS. Abnormal Findings and Interpretation
- Melanoma Clinicians should apply the ABCDE rule. (page 178)

  ABCDE Rule:

  Asymmetry: (compare one side to the other)

  Border irregularity: look for ragged, notched or blurred

  Color variations: more than 2 colors(blue black) (brown red), loss of pigment, or redness

  Diameter >6 mm: size of pencil eraser

  Evolving: changing rapidly in size, symptoms, or morphology (usually asymmetrical)

Also look for elevation, firmness to palpate, growing progressively over several weeks.

Self skin exams are recommended by the ACS and AAD. They should be done in a well lit room with a full length mirror. Patients with a family history of melanoma, prior history of melanoma, or history of high sun exposure should do exams more frequently. Teach patient the appearance of different skin cancers and provide internet reliable resources for patients. Usually seen in fair colored patients.

- Primary and Secondary Skin Lesion Nomenclature

- Psoriasis (Hollier page 139) https://www.aad.org/practicecenter/quality/clinical-guidelines/psoriasis
    - Characterized by a chronic, pruritic, inflammatory skin disorder characterized by rapid proliferation of epidermal cells. Exacerbations are common.
    - Most common forms (plaque psoriasis, plaque like lesions)
    - Unknown etiology but common with family history, Beta hemolytic strep in children.

Risk factors:

- Strep, family hx, stress, diabetes, obesity, local trauma, sunburn, drugs (lithium, beta blockers, systemic steroids/ rebound effect)
- Assessment findings:
- Silvery white scales on erthymatous base, pruritis, common distribution of elbows, knees, scalp, gluteal cleft, finger/toenails, nails may be pitted in 50% of patients
- Positive Auspitz sign (bleeding when lesions scraped)
- Intergluteal leasions are pink/smooth

PROFOUND NEGATIVE SELF IMAGE/ SELF ESTEEM

Differential diagnosis:

- Scalp- Seborrheic dermatitis
- Trunk- pityriasis rosea, tinea corporis
- Candida infections
- Contact dermatitis
- Eczema

Diagnostic studies:

- Swab for strep, biopsy, ESR/CRP usually elevated

Prevention:

- Avoid sun, sudden withdrawl from steroids, stimulating drugs (ACE inh, BB, NSAIDS, PCN, Salicylates, sulfonamides, tetracyclines)

Non-pharm management:

- Warm soaks, UV radiation, Oatmeal bath, wet dressings (burows solution)

Pharmacological management:

- 80% of patients have mild disease and require only topical agents
- Hollier page 140 list of steroids from high to low potency. Lowest hydrocortisone 1.0 or 2.5 % BID for 2 weeks, caution face.

*Consult Dermatologist since this is a chronic condition

- Tinea
- Tinea: group of fungal infections affecting various parts of the body. It is common. More prevalent in summer months, warm climates.
- Hair shedding and breakage at the hair shaft caused by tinea capitis (ringworm). There are round scaling patches of alopecia, mostly seen in children. There may be “black dots” of broken hairs and comma or corkscrew hairs on dermoscopy. Usually caused by Trichophyton tonsurans from humans, and less commonly, Microsporum canis from dogs or cats. Boggy plaques are called kerions.

  Assessment findings

Tinea capitis: Round patchy scales on scalp, occasionally alopecia develops, most common in pediatric patients

Tinea corporis: rash, pruritus, well-circumscribed, red, scaly plaque usually on the trunk, may occur in groups of 3 or more

Tinea cruris: pruritus, well-marginated half moon plaques in groin and/or upper thighs, may appear as vesicles, may take on eczema appearance from chronic scratching, does not affect the scrotum or penis, rare in pediatric patients before puberty

Tinea pedis: itching, malodorous, and burning of feet, laceration in toe webs, scaling or blistering on soles of feet, bacterial super infections possible, spreads easily to groin area and hands

Tinea versicolor: well-marginated lesions of varying colors (white, red, brown); hence the name versicolor, rare itching, common in axillary, shoulders, chest, back (sebum rich areas)

- Bilateral erythematous, geographic patches with peripheral scaling, on inner thighs bilaterally, sparing the scrotum; tinea cruris. Fungal infection known as jock itch. Itchy, red, often ring-shaped rash in these warm, moist areas of your body.
- Prevention: good personal hygiene, remove wet clothes as soon as possible, dry between toes after showering and bathing, avoid direct contact with surfaces in public bathing facilities, put socks on before undergarments, avoid sharing clothing, Sports equipment, or towels with other people.

- Pityriasis
- An oval pink or rose colored rash that starts as a large patch. One large patch usually remains the first week followed by several more patches. The patches occur particularly on the back and abdomen. The pattern is similar to a Christmas tree. They usually disappear without treatment. They last 6-8 weeks. The cause is unknown.
- Lyme Disease

Ch. 7

- Lymph Nodes

Lymph Nodes

Are variably classified. Chapter 7 pg. 259 has a chart of the classification and the direction of how the lymph nodes drain.

Nodes are normally round or ovoid, smooth and smaller than the submandibular gland. The gland is larger and has a lobulated, slightly irregular surface.

***Note that the tonsillar, submandibular, and submental nodes drain portions of the mount and throat as well as the face.*

**Lymphatic drainage patterns are helpful for assessing possible malignancy or infection. To look for this, look for enlargement of the neighboring regional lymph nodes; when a node is enlarged or tender, look for source in its nearby drainage area.

Techniques for examining lymph nodes:

First inspect the neck- is it symmetrical? Do you see any masses or scars? Look for enlargement of the parotid or submandibular glands, and note any visible lymph nodes.

> ***If you see a scar from a past thyroid surgery, this is a clue to an unsuspected thyroid or parathyroid disease*.

Second, palpate the lymph nodes:

1) Use pads of your index finger and middle fingers, press gently, moving the skin over the underlying tissues in each area.
2) Make sure the patient is relaxed, with the neck flexed slightly forward and if needed, turned slightly toward the side being examined.
3) ***You can usually examine both sides at once, noting both the presence of lymph nodes as well as asymmetry. However, for the submental node, it is helpful to feel with one hand while bracing the top of the head with the other hand.*
4) Sequence for the following nodes:
    - Preauricular- in front of the ear
    - Posterior auricular- superficial to the mastoid process (behind the ear).
    - Occipital- at the base of the skull posteriorly
    - Tonsillar- at the angle of the mandible
    - Submandibular- midway between the angle and the tip of the mandible. These nodes are usually smaller and smoother than the lobulated submandibular gland against which they lie.
    - Submental- in the midline a few cm's behind the tip of the mandible.

- Superficial cervical- superficial to the sternocleidomastoid
- Posterior cervical- along the anterior edge of the trapezius
- Deep cervical chain- deep to the sternocleidomastoid and often inaccessible to examination. ***Hook your thumb and fingers around either side of the sternocleidomastoid muscle to find them*.
- Supraclavicular- deep in the angle formed by the clavicle and the sternocleidomastoid.
- ****Enlargement of the supraclavicular node, especially on the left, suggest possible metastasis from a thoracic or an abdominal malignancy.

5) Note the following when assessing lymph nodes:
   - Node size
   - Shape
   - Delimitation (discrete or matted together)
   - Mobility
   - Consistency
   - Tenderness
6) Small, mobile, discrete, nontender nodes, sometimes called “shotty” are frequently found in normal people.
7) Describe enlarged lymph nodes in two dimensions, maximal length and width, for example, 1 cm x 2 cm. Also note any overlying skin changes (erythema, induration, drainage or breakdown).
8) If enlarged or tender nodes, if unexplained call for (1) re-examination of the regions they drain and (2) careful assessment of the lymph nodes in other regions to identify regional from generalized lymphadenopathy.
9) Techniques for preauricular and cervical lymph nodes:
   - Using the pads of the second and third fingers palpate the preauricular nodes with a gentle rotary motion. Then examine the posterior auricular and occipital lymph nodes.
   - ****Tender* nodes suggest inflammation; hard or fixed nodes suggest malignancy.
   - Palpate the anterior superficial and deep cervical chains, located anterior and superficial to the sternocleidomastoid. Then palpate the posterior cervical chain along the trapezius and along the sternocleidomastoid.
   - Flex the patient’s neck slightly forward toward the side being examined.
   - Examine the supraclavicular nodes in the angle between the clavicle and the sternocleidomastoid.
   - ****If you feel supraclavicular lymph nodes, a through work-up is warranted.*
10) Generalized lymphadenopathy is seen in multiple infectious, inflammatory, or malignant conditions such as HIV or AIDS, infectious mononucleosis, lymphoma, leukemia, and sarcoidosis.
11) Occasionally, you mistake a band of muscle or an artery for a lymph node. Unlike a muscle or an artery, you should be able to roll a node in two directions: up and down, and side to side. Neither a muscle nor an artery will pass this test.

- Cranial Nerves
- HEENT Assessment and Modification for Age
- Normal VS. Abnormal Findings and Interpretation
- Visual Acuity
- Visual Acuity (Pg. 231)

To test visual acuity, you are to use a well-lit Snellen eye chart, if possible

Patient must wear correction lenses (glasses/contacts) if available

Patient is to be positioned 20 feet away from Snellen eye chart

Patient must cover one eye at a time and test each eye individually and then test vision with both eyes uncovered

Patient must identify the smallest line of print possible where they can identify more than half the letters

--Visual Acuity is expressed as two numbers (20/30): the first indicates the distance of the patient from the chart, and the second number is the distance at which a normal eye can read the line of letters

Testing near vision with a hand-held card at the bedside can help identify the need for correction lenses for reading (card to be held 14 inches from patients' eyes)

- Glaucoma
- Epistaxis

- Retinal Issues

  Retinal artery hypertension, increased pressure damages the vascular endothelium, leading to deposition of plasma macromolecules and thickening of the arterial wall, causing focal and generalized narrowing of the lumen and light reflex.

Copper wiring: sometimes the arteries, especially those close the disc, become full and somewhat tortuous and develop an increased light reflex with a bright coppery luster, called copper wiring.

Silver wiring: occasionally the wall of a narrowed artery becomes opaque so there is no visible blood called silver wiring.

AV Crossing is when the arterial walls lose their transparency, changes appear in the arteriovenous crossing. Decreased transparency of the retina probably also contributes to Concealment or AV Nicking and Tapering.

Concealment or AV Nicking: the vein appears to stop abruptly on either side of the artery.

Tapering: the vein appears to taper down the either side of the artery.

Banking: the vein is twisted on the distal side of the artery and forms a dark wide knuckle.

Superficial Retinal Hemorrhages: small, linear, flame-shaped, red streaks in the fundi, shaped by the superficial bundles of the nerve fibers that radiate from the optic disc in the pattern illustrated (0= optic disc, F=fovea). Sometimes the hemorrhages are seen in severe hypertension papiledema and occlusion of the retinal vein among the other conditions. An occasional superficial hemorrhage has a white center consisting of fibrin, which has many causes.

Preretinal hemorrhage: develops when the blood escapes into the potential space between the retina and vitreous. This hemorrhage is typically larger than retinal hemorrhages. Because it is anterior to the retina, it obscures any underlying retinal vessels. In an erect patient, red cells settle, creating a horizontal line of demarcation between plasma above and cells below. Causes include a sudden increase in intracranial pressure.

Deep Retinal Hemorrhages: small, rounded, slightly irregular red spots that are sometimes called dot or blot hemorrhages. They occur in a deeper layer of the retina than flame-shaped hemorrhages. Diabetes is a common cause.

Microaneurysms: Tiny, round, red spots commonly seen in and around the macular area. They are minute dilations of the very small retinal vessels, the vascular

connections are too small to be seen with an opthalmoscope. A hallmark of diabetic retinopathy.

Hypertensive Retinopathy: marked arteriolar-venous crossing changes are seen, especially along the inferior vessels. Copper wiring of the arterioles is present. A cotton-wool spot is seen just superior to the disc. Incidental disc drusen are also present but are unrelated to the hypertension.

Hypertensive Retinopathy with Macular Star: note the punctate exudates are readily visible, some are scattered, others radiate from the fovea to form a macular star. Note the two small, soft exudates about 1 disc diameter from the disc. Find the flame-shaped hemorrhages sweeping toward 7,8, 10 o'clock, These two fundi show changes typical of severe hypertension retinopathy, which is often accomplished by the papliledema. (see page 283 for picture to better understand).

Diabetic Retinopathy: (see page 284 for pictures)

Ch. 8

- Lung/Thorax Assessment and Modification for Age
- Normal VS. Abnormal Findings and Interpretation
- Lung Sounds

-Auscultation is the most important examination technique for assessing air flow through the tracheobronchial tree. Auscultation involves (1) listening to the sounds generated by breathing, (2) listening for any adventitious (added) sounds, and (3) if abnormalities are suspected, listening to the sounds of the patient's spoken or whispered voice as they are transmitted through the chest wall. Before beginning auscultation, ask the patient to cough once or twice to clear mild atelectasis or airway mucus that can produce unimportant extra sounds.
-Listen to the breath sounds with the diaphragm of your stethoscope after instructing the patient to breathe deeply through an open mouth. Always place the stethoscope directly on the skin. Clothing alters the characteristics of the breath sounds and can introduce friction and added sound
-Normal breathing is quiet and easy—barely audible near the open mouth as a faint whish. When a healthy person lies supine, the breathing movements of the thorax are relatively slight.
-Audible high-pitched inspiratory whistling, or stridor, is an ominous sign of upper

airway obstruction in the larynx or trachea that requires urgent airway evaluation. Wheezing is either expiratory or continuous.

Learn to identify breath sounds by their intensity, their pitch, and the relative duration of their inspiratory and expiratory phases. Normal breath sounds are:

o Vesicular, or soft and low pitched. They are heard throughout inspiration, continue without pause through expiration, and then fade away about one third of the way through expiration.

o Bronchovesicular, with inspiratory and expiratory sounds about equal in length, at times separated by a silent interval. Detecting differences in pitch and intensity is often easier during expiration.

o Bronchial, or louder, harsher and higher in pitch, with a short silence between inspiratory and expiratory sounds. Expiratory sounds last longer than inspiratory sounds.

o Tracheal, or loud harsh sounds heard over the trachea in the neck

Listen for any added, or adventitious, sounds that are superimposed on the usual breath sounds. Detection of adventitious sounds—crackles (sometimes called rales), wheezes, and rhonchi—is an important focus of your examination, often leading to diagnosis of cardiac and pulmonary conditions.

o Crackles can arise from abnormalities of the lung parenchyma (pneumonia, interstitial lung disease, pulmonary fibrosis, atelectasis, heart failure) or of the airways (bronchitis, bronchiectasis)

o Wheezes arise in the narrowed airways of asthma, COPD, and bronchitis.

o Many clinicians use the term “rhonchi” to describe sounds from secretions in large airways that may change with coughing.

1. In some normal people, crackles may be heard at the anterior lung bases after maximal expiration. Crackles in dependent portions of the lungs may also occur after prolonged recumbency.

2. If you hear wheezes or rhonchi, note their timing and location. Do they change with deep breathing or coughing? Beware of the silent chest, in which air movement is minimal. In the advanced airway obstruction of severe asthma, wheezes and breath sounds may be absent due to low respiratory airflow (the “silent chest”), a clinical emergency.

3. Note that tracheal sounds originating in the neck such as stridor and vocal cord dysfunction can be transmitted to the chest and mistaken for wheezing, leading to inappropriate or delayed treatment.

4. Note any pleural rubs, which are coarse, grating biphasic sounds heard primarily during expiration.

- Pneumonia

  Acute illness: timing varies with causative agent

  Associated Symptoms: Pleuritic pain, cough, sputum, fever, though not necessarily present

  Mycoplasma and Viral Pneumonias
  Cough and Sputum: Dry and hacking often with mucoid sputum Associated Symptoms and
  Setting: Acute febrile illness, often with malaise, headache, and possibly dyspnea

  Bacterial Pneumonias
  Cough and Sputum: Sputum is mucoid or purulent; may be blood-streaked, diffusely pinkish, or rusty
  Associated Symptoms and Setting: Acute illness with chills, often high fever, dyspnea, and chest pain. Commonly from Streptococcus pneumonia, Haemophilus influenza, Moraxella catarrhalis; Klebsiella in alcoholism
  (Chapter 8 The Thorax and Lungs)

- Asthma

Ch. 16

Musculoskeletal Assessment and Modification for Age

Normal VS. Abnormal Findings and Interpretation

Back pain

Low Back Pain. The estimated lifetime prevalence of low back pain in the United States population is over 80%. Spinal disorders are among the most frequent reasons for adult outpatient visits, and the annual U.S. economic costs attributed to diagnosing and managing low back pain and lost productivity exceed $100 billion. Most patients with acute low back pain get better within 6 weeks; for patients with nonspecific symptoms, clinical guidelines emphasize reassurance, staying active, analgesics, muscle relaxants, and spinal manipulation therapy.Overall, about 10% to 15% of patients with acute low back pain develop chronic symptoms, often associated with long-term disability. Factors associated with poor outcomes include inappropriate beliefs that low back pain is a serious clinical condition, maladaptive pain-coping behaviors (avoiding work, movement, or other activities for fear of causing back damage), multiple nonorganic physical examination

findings, psychiatric disorders, poor general health, high levels of baseline functional impairment, and low work satisfaction. Review the nonorganic physical findings (the Waddell signs) on p. 674.31 Appropriate treatments for chronic low back pain include treatments for acute low back pain as well as back exercises and behavioral therapy. Opioids should be used cautiously, given their adverse effects and risks for abuse.

Start by asking “Do you have any back pain?,”—at least 40% of adults have low back pain at least once during their lifetime, usually between the ages of 30 and 50 years, and low back pain is one of the most common reasons for office visits. There are numerous clinical guidelines, but most categorize low back pain into three groups: nonspecific (>90%), nerve root entrapment with radiculopathy or spinal stenosis (∼5%), and pain from a specific underlying disease (1% to 2%).4,20 Note that the term “nonspecific low back pain” is preferred to “sprain” or “strain.” Using open-ended questions, get a clear and complete picture of the problem, especially the location of pain and prior history of pain!

Knee Pain

The knee joint is the largest joint in the body. It is a hinge joint involving three bones: the femur, the tibia, and the patella (or knee cap), with three articular surfaces, two between the femur and the tibia and one between the femur and the patella. Note how the two rounded condyles of the femur rest on the relatively flat tibial plateau. There is no inherent stability in the knee joint itself, making it dependent on four ligaments to hold its articulating femur and tibia in place. This feature, in addition to the lever action of the femur on the tibia and the lack of padding from overlying fat or muscle, makes the knee highly vulnerable to injuries.

Pain is a common complaint in knee problems, and localizing the structure causing pain is important for accurate evaluation.

Tenderness over the tendon or inability to extend the knee suggests a partial or complete tear of the patellar tendon.

Pain and crepitus arise from the roughened undersurface of the patella as it articulates with the femur. Similar pain may occur when using the stairs, or getting up from a chair.

Pain with compression and patellar movement during quadriceps contraction occurs in chondromalacia. Two of the three findings are most diagnostic of patellofemoral pain syndrome: pain with quadriceps contraction; pain with squatting; and pain with palpation of the posteromedial/or lateral patellar border.

You will often need to test ligamentous stability and integrity of the medial and lateral menisci, the MCL and LCL, the patellar tendon, and the ACL and PCL (not palpable), particularly when there is a history of trau- ma or knee pain. Always examine both knees and compare findings.

ACL tears are notably more frequent in women, attributed to ligamentous laxity related to estrogen cycling and to differences in anatomy and neuro- muscular control. ACL injury prevention programs are now common.

Absent plantar flexion is a positive test for Achilles tendon rupture. Sudden severe pain “like a gunshot,” an ecchy- mosis from the calf into the heel, and a flat-footed gait with absent “toe-off” May also be present.

Elbow Pain

Rheumatoid Arthritis (RA):

RA: chronic inflammation of synovial membranes with secondary erosion of the adjacent cartilage and bone, and damage to ligaments and tendons.

Common Locations: hands-initially small joints (PIP and MCP joints), feet (MTP joints, wrists, knees, elbows, ankles

Pattern of spread: symmetrically additive: progresses to other joints while persisting in initial joints

Onset: usually insidious, human leukocyte antigen (HLA) genes account for >50% of risk of disease, involves proinflammatory cytokines

Progression and Duration: often chronic (in >50%) with remissions and exacerbations

Swelling: frequent swelling of synovial tissue in joints or tendon sheaths: also

subcutaneous nodules

Redness, warmth, and tenderness: tender, often warm, but seldom red.

Stiffness: prominent, often for an hour or more in the mornings, also after inactivity

Limitation of Motion: often develops, affected by associated joint contractures and subluxation, bursitis, and tendinopathy

Generalized symptoms: weakness, fatigue, weight loss, and low fever are common.

Assess for joint pain: Articular or Extra-articular* joint pain may be polyarticular, involving several joints, typically four or more. If polyarticular, what is the pattern of involvement.. Migrating from joint to joint or steadily spreading from one joint to multiple joints?.Is the involvement symmetric, affecting similar joints on both sides of the body? ***In RA, the pattern is additive and progressive with symmetric involvement. Inflammatory arthritides are more common in women.

Inflammatory or non-inflammatory: Try to determine whether the joint pain is inflammatory or noninflammatory. Different mechanisms appear to be involved-interleukins and tumor necrosis factor in inflammatory joint pain, and prostaglandins, chemokines, and growth factors on noninflammatory pain ***Inflammatory disorders have many causes: immune-related for RA

Localized or diffuse. Ask the patient which joints are painful. Joint pain can be monoarticular, oligoarticular involving two to four joints, or polyarticular. If there is pain in more than one joint, si the pattern of involvement symmetric or asymmetric*** Polyarthritis may be viral or inflammatory from RA

Inspection: look for symmetry involvement: *** RA is typically polyarticular and symmetrical

Inspection and Palpation: assess the surrounding tissues, noting skin changes, subcutaneous nodules, and muscle atrophy. ***Look for subcutaneous nodules in RA

Rheumatoid nodules: in chronic RA, look for small lumps on the helix or antihelix and additional nodules elsewhere on the hands and along the surface of the ulna distal to the elbow (p.702), and on the knees and heels. Ulceration may result from

repeated injuries. These nodules may antedate the arthritis

Test range of motion and maneuvers to demonstrate limitations in ROM or joint instability from excess mobility of joint ligaments called ligamentous laxity***decreased ROM is present in arthritis with tissue inflammation or surrounding fibrosis or bony fixation (ankylosis) Anterior cruciate ligament (ACL) laxity occurs in knee trauma: muscle atrophy and weakness seen in RA

Joint pain: associated constitutional symptoms and systemic manifestation symptoms such as fever, chills, rash, fatigue, anorexia, weight loss, and weakness.***constitutional symptoms are common in RA, SLE, PMR and other inflammatory arthritides. High fever and chills suggest an infectious cause.

Assessing the four signs of inflammation

1.) Swelling
2.) Warmth
3.) Redness: redness overlying skin is the least common sign of inflammation near the joints and is usually seen in more superficial joints like fingers, toes, and knees. ***redness over a tender joint suggests septic or crystalline arthritis, or possibly RA
4.) Pain or tenderness

Palpate the metatarsophalangeal (MTP) joints for tenderness. Compress the forefoot between the thumb and fingers. Exert pressure just proximal to the heads of the first and fifth metatarsals. ***Tenderness on compression is an early sign of RA.

Acute RA : tender, painful, stiff joints in RA, usually with symmetric involvement on both sides of the body. The distal interphalangeal (DIP), metacarpophalangeal (MCP), and wrist joints are the most frequently affected. Note the fusiform or spindle-shaped swelling of the PIP joints in acute disease.

Chronic RA: In chronic disease, note the swelling and thickening of the MCP and PIP joints. ROM becomes limited, and fingers amy deviate toward the ulnar side. The interosseous muscles atrophy. The fingers may show “swan neck” deformities (hyperextension of the PIP joints with fixed flexion of the distal interphalangeal (DIP) joints. Less common is a boutonniere deformity (persistent flexion of the PIP joint with hyperextension of the DIP joint). Rheumatoid nodules are seen in the acute or the chronic stage. Subcutaneous nodules may develop at pressure points along the extensor surface of the ulna in patients

with RA or acute Rheumatic fever. They are firm and nontender. They are not attached to the overlying skin but may be attached to the underlying periosteum. They can develop in the area of the olecranon bursa, but often occur more distally.

CCh. 17

Neurological Assessment and Modification for Age

The neurological exam can be organized into 6 or 7 categories:

(1) mental status: used to establish the reliability of the rest of the neuro exam.

Most of the mental status assessment can be completed via observation and through their answers to your questions during history taking. (making eye contact, does not drift or need things repeated, able to converse normally, and answers questions about medical history and recent eventing in a consistent manner)

7 areas of mental status need to be considered:

1. Level of awareness.

2. Attentiveness: Is the patient paying attention to you and your questions or is he distractible and requiring re-focusing?

3. Orientation: to self, place, time. Disorientation to time typically occurs before disorientation to place or person. Disorientation to self is typically a sign of psychiatric disease.

4. Speech & language: includes fluency, repetition, comprehension, reading, writing, naming.

5. Memory: includes registration and retention.

6. Higher intellectual function: includes general knowledge, abstraction, judgment, insight, reasoning.

7. Mood and affect: The primary purpose of assessing mood and affect in the neurological exam is to determine if psychiatric disease may be interfering with the

neurological assessment. We're not looking for a DSM-IV psychiatric diagnosis.

(2) Cranial nerves: SEE BELOW FOR A LIST

Please note: 1) their absence does not necessarily provide useful information (e.g., sense of smell and taste may be absent or reduced in the setting of an upper respiratory infection; gag reflex is absent in many hospitalized patients as well as normal elderly patients) or 2) testing multiple functions of a particular cranial nerve may not add new information (e.g., if pupillary reaction to light is present, then assessing pupillary reaction to accommodation does not give any new information). Again, though, you need to know how to perform these tests in the event that they are relevant to the patient's complaints or illness. Olfaction must be assessed if the patient complains of a disturbance in taste or smell or if a lesion of the olfactory groove is suspected. Similarly, taste should be assessed when there is a pertinent complaint (though the complaint usually turns out to be due to loss of smell). Pupillary response to accommodation must be assessed if the pupils do not react to light. Corneal reflex must be tested if the patient complains of sensory disturbance in the face (because it is an objective indication of trigeminal nerve dysfunction whereas sensory complaints are subjective) or if the patient is comatose (because you cannot ask the patient if facial sensation is symmetric).

(3) Motor system:

Strength-shoulder abduction, elbow extension, wrist extension, finger abduction, hip flexion, knee flexion, ankle dorsiflexion

Gait- casual, heel walk, toe walk, tandem walk

Coordination- fine finger movements, finger to nose, heel-knee-shin

The motor exam is affected not only by muscle strength, but also by effort, coordination, and extrapyramidal function. Tests of dexterity and coordination are most sensitive to picking up upper motor neuron and cerebellar abnormalities, whereas direct strength testing is more sensitive to lower motor neuron dysfunction. Other aspects of the motor exam include (1) patterns of muscle atrophy or hypertrophy, (2) assessment of muscle tone (e.g., spastic or clasp knife, rigid or lead pipe, flaccid) with passive movement of joints by the examiner, (3) disturbances of movement (e.g., the slowness and reduced spontaneity of movement in parkinsonism), (4) endurance of the motor response (e.g.,

the fatigability of myasthenia gravis), and (5) whether any spontaneous movements are present (e.g., fasciculations or brief twitches within the muscle). Strength of proximal and distal muscles in all limbs should be assessed. For the screening exam, specific muscle testing in the lower extremities is not necessary for patients who are able to walk normally (including on the toes and heels) and to get out of a chair without using their arms to push themselves up. When testing individual muscle strength, be sure to (1) position the limb in such a way as to permit the muscle being examined to act directly and to minimize the recruitment of other muscles having similar function and (2) always give yourself the advantage. For example, test the iliopsoas by pushing down on the foot of the outstretched leg rather than on the thigh. Be aware of normal variability in strength based on age, sex, handedness (i.e., the muscles on the dominant side may be stronger), and muscle (e.g., in a patient with normal strength, you should never be able to overcome the ankle plantar flexors but you will likely be able to overcome the abductor digiti minimi).

(4) Reflexes:

Reflex testing is the most objective part of the neurological exam and is the least dependent on cooperation (but note that reflexes can be reinforced or decreased voluntarily to some extent, as occurs in guarding). The muscle stretch reflexes (a.k.a. “deep tendon reflexes,” which is incorrect terminology since it is the indirect stretching of the muscle that elicits the reflex; the tendon just happens to be conveniently located to apply the stimulus to) are obtained by placing the muscle in a state of slight tension and then quickly tapping either the tendon or the periosteum to which the muscle is attached and observing the vigor and briskness of the response. The muscle contraction should be seen and felt and compared side-to-side. If reflexes are diminished or absent, try reinforcing the reflex by distracting the patient or having the patient contract other muscles (e.g., clench teeth). Note, however, that symmetrically brisk, diminished, or even absent reflexes may be found in normal people. The muscle stretch reflexes that are the most clinically relevant and that you should know how to obtain include the biceps, triceps, knee, and ankle. The superficial (cutaneous) reflexes are elicited by applying a scratching stimulus to the skin. The only superficial reflex that you need to know other than the corneal is the plantar reflex. An abnormal plantar reflex (extension of the great toe with fanning out of the other toes upon stimulation of the plantar surface of the foot) is a specific indicator of corticospinal tract dysfunction and may be the only sign of ongoing disease or the only residual sign of previous disease.

(5) Sensory system:

The sensory exam can be frustrating at times because of its subjective nature and reliance on cooperation. It is prudent to test sensation early in your exam if you anticipate poor cooperation to be a factor. Explain to your patients what you are going to do and what you expect of them, then have them close their eyes for the testing. Be aware of the fact that patients may report differences in sensation in the presence of normal sensory function because of actual differences in the stimulus intensity applied—you are not a machine and cannot apply identical pressure each time you poke with a pin. Both superficial and deep sensation should be tested in all four limbs. Always compare side-toside, asking, “Are these about the same?” rather than leading questions like, “Is this sharp?” or “Which is stronger?” Remember that thresholds for detecting a stimulus are very low in distal or hair covered areas and higher over thick skin. Superficial sensation (pain and temperature) is mediated by unmyelinated and small myelinated nerve fibers via the spinothalamic tract. Pain sensation can be tested with a safety pin or the broken end of a cotton swab; temperature sensation can be tested with a cool metal object (like a tuning fork). In the patient complaining of sensory symptoms, demonstrate what the pin/temperature should feel like in an uninvolved area. Since the boundary between “dull” and “sharp” or “warm” and “cool” is usually more readily perceived by the patient if you move your stimulus from the abnormal area to the normal area rather than vice versa, asking the patient to report when the stimulus begins to feel stronger is the best way to identify the margins of a hypesthetic area. Sometimes it is useful to apply the stimulus to an uninvolved part of the body and say, “If this sharpness/coolness is worth $1, how much is this worth?” and then apply the pin/cool object elsewhere. Deep sensation (pressure, position sense, and vibration) is mediated by large fibers via the dorsal and lateral columns. Vibration and position sense (proprioception) should be tested at the most distal joint of the limb. If sensation at this joint is impaired, increase the intensity of the stimulus and/or move proximally. Emphasis should be on the toes and feet, where the longest, large myelinated fibers are most likely to be impaired. The appropriate tuning fork to use in testing vibration is 128-Hz. You should know your own tuning fork perception and the usual time it takes to fade away. But there are no absolutes for how long a normal person should be able to feel a vibratory stimulus at a particular joint because this is dependent on how hard you strike a tuning fork, the patient’s age, etc. It is most important to compare side-to-side perception. For position sense testing, stabilize the joint with one hand and avoid a push-pull stimulus that lets the patient cheat. For example, in the great toe, steady the interphalangeal joint with one hand and hold the sides of the distal phalanx with the other to move it up and

down. Make sure the patient understands the only choices are up or down—there is no sideways or middle. Normal thresholds should be no more than 2 or 3 degrees. There is a third category of sensation, integrative sensation, which requires higher level processing of the above primary sensory modalities and includes such functions as stereognosis (ability to recognize objects by touch), graphesthesia (ability to recognize letters or numbers drawn on the finger or palm), 2-point discrimination (ability to detect two sharp stimuli that are presented simultaneously at decreasing distance on the skin), double simultaneous stimulation (ability to detect two stimuli applied simultaneously to opposite sides of the body), and constructional ability (copying simple and complex forms, drawing a clock). You will learn more about integrative sensation next year and in your third year clerkship. The Romberg test is another maneuver that is used to detect impaired sensory input. The patient is first asked to stand with the feet together and eyes open and then to close the eyes. An abnormal response ("positive Romberg sign") is for the patient to be able to stand upright when the eyes are open, but to sway/fall when the eyes are closed. Contrary to popular belief, a positive Romberg sign is not an indication of cerebellar disease—the patient with cerebellar or other motor dysfunction will have a hard time maintaining an upright posture with the feet together regardless of whether the eyes are open or closed. Rather, it is an indication of either impaired proprioception or vestibular dysfunction. There are three sensory inputs to maintain truncal stability—vision, proprioception, and vestibular function. Patients with impairment of one of these systems are usually able to compensate and maintain truncal stability. They cannot usually compensate when a second system (vision, when the eyes are closed) is removed. For the screening sensory exam, you should perform one test of superficial sensation (pain or temperature) and one of deep sensations (proprioception is more useful than vibration since distal vibratory sense is lost in otherwise healthy elderly patients) in each limb. Since the majority of asymptomatic sensory deficits you will pick up are neuropathies and the majority of these begin distally, testing at the most distal aspect of the limb is usually sufficient.

(6) Coordination and gait

Test coordination at rest and with action, in the trunk (e.g., ability to maintain an erect posture), and in the limbs. Impairment of coordination may be detected through simple observation of the patient performing routine acts such as signing his name, reaching for objects, or getting onto the examination table. Specific tests to look for impaired coordination in the limbs include finger-to-nose (patient alternately touches your outstretched finger and his nose), heel-knee-shin (patient runs the heel of one foot

down the shin of the other), rapid alternating movements (patient alternately taps the dorsal and plantar surface of one hand onto the other hand), and finger or toe tapping. In all cases, you should be looking at rhythm, steadiness, speed, and precision of movements. Loss of the ability to judge and control distance, speed, and power of a motor act is termed dysmetria. Since walking requires proper functioning of the cerebellum and motor, sensory, and vestibular systems as well as a whole host of reflexes, assessment of gait can provide important information to guide the focus of the rest of the neurological exam. It is for this reason that many physicians like to watch the patient walk at the very beginning of the exam. The specific aspects of gait for you to pay attention to include body and extremity posture; length, speed, and rhythm of steps; base of gait (how far apart are the legs); arm swing; steadiness; and turning. Testing tandem gait (walking heel to toe) can be helpful, though many otherwise normal elderly patients cannot perform the task. The screening exam must include an assessment of gait.

Approach the exam systematically and establish a routine so as not to leave anything out.

During the course of the exam it is important to look for the distribution of abnormalities (e.g., proximal vs. distal, arms vs. legs, left vs. right). For sensory testing in particular, it is important to let patients know what you are going to do and what you expect of them.

Perform a screening neuro exam in all patients, even those w/o neuro complaints, that is sufficient for detection of significant neurologic disease.

<u>The essential screening neurological exam for adults and older children</u>

Mental status (tested through history taking).

Observation of eyes, face, voice, and coordination during history taking and as patient moves about the

exam room. Look for extraneous movements.

Gait including arising from chair without hands, walking on toes, heels, and heel to toe (tandem).

Visual fields.

Fine finger movements and toe tapping.

Reflexes ankles (may need to compare to patellar), plantar.

Sensation: vibration in toes; pinprick in feet; Romberg or proprioception in feet.

The essential screening neurological exam for young children

Mental status (tested through observation and with specific questions for language

development).

Observation of eyes, face, voice, limb movement, and coordination during history taking and

as patient moves about in the parent's lap or on the exam table. Look for extraneous movements.

Gait including walking and running; tandem gait and skipping, if possible.

Head circumference; palpate fontanels in infants.

Vision/eye movements tracking object, look for strabismus (misalignment of the eyes).

Hearing.

Coordination manipulate an object, throw and catch a ball.

Tone (ventral suspension and resistance to passive movement) in infants.

Primitive reflexes (Moro, rooting, placing) in infants.

Your observation of the young child should include a note of whether the child is able to sit still and pay attention. Make sure all limbs are being used equally. Pre-school children should be asked age appropriate questions to assess language development. Ask them to name objects and colors and ensure that they can comprehend simple tasks (without nonverbal cues). Head circumference should be measured in all young children and plotted on a chart. Note if head shape is normal. Fontanels should be palpated in infants. (The anterior fontanel closes between about 7 and 19 months; the posterior fontanel

may be closed at birth.) Vision is tested in young children by verifying that they follow a small object moved across their visual field. Hearing is tested by looking for a behavioral response to a loud sound. I omitted reflexes as essential in the examination of normal young children, but note the same caveat as above: parents may feel deprived if you omit this test. If you opt to check the plantar reflex, be aware that it changes over the first year of life. Almost all mainstream clinicians believe that the normal plantar response in infants is extensor. Test tone in infants by assessing for resistance to passive movement and holding the infant in ventral suspension. Healthy newborns and young infants have a number of reflexes that become inhibited when the cerebral cortex matures. These should be tested because their absence suggests global injury and their persistence beyond the newborn period suggests lack of normal brain maturation. The Moro reflex is symmetric abduction followed by adduction of both arms elicited by supporting the infant in a supine position and gently allowing the back of the head to drop. This normally disappears by 4-6 months. The rooting reflex is turning of the head towards a stimulus applied to the side of the mouth with latching on and sucking. The placing response is elevation and moving forward of the foot upon touching of the dorsal surface of the foot, which results in the appearance of attempting to stand and take steps. This response disappears by 5-6 weeks.

- Normal VS. Abnormal Findings and Interpretation
- Seizure Disorders
- Syncope

Begin by finding out if the patient actually lost consciousness. Did the patient hear voices or noises throughout the episode, feel light headed or weak, but fail to lose consciousness, determining near syncope and actual syncope is vital.

True syncope is defined as a sudden but temporary loss of consciousness and postural tone from transient global hypoperfusion of the brain.

Nurse practitioners need to obtain a complete description of the event. What was the patient doing when the event occurred, was the patient standing, sitting, or lying down. Were there any triggers or warning symptoms? How long the episode lasted and could voices still be heard?

It is important to obtain how fast or slow the onset and offset of the episode was. Did the patient have any palpitations present for the episode? Is there a history of heart

disease or seizure disorders.

If onset was abrupt and without warning seizure should be considered. Interview witnesses that were present if possible. Vasovagal syncope is the most common cause of syncope and includes early symptoms of nausea, diaphoresis, and pallor triggered by a fearful or unpleasant event, medicated hypotension, with a slow onset and offset.

Other reasons for syncope include orthostatic hypotension, arrhythmias such a VT, and bradyarrhythmias. If both hemispheres are affected, stroke or subarachnoid hemorrhage can cause syncope.

See table 17-3 for detailed description reasons/disorders of syncope, mechanism, factors and recovery.

Types include:

Vasovagal/Vasodepressor Orthostatic hypotension

Cough Syncope Micturition Syncope

Arrhythmias Aortic Stenosis and Hypertrophic Cardiomyopathy Syncope

Hypocapnia due to hyperventilation Hypoglycemia

Conversion Disorder with fainting

Seizures were reclassified in 2010 as focal or generalized.

Focal seizures- are conceptualized as originating within networks limited to one hemisphere. They are discretely localized or more widely distributed. They originate in subcortical structures. Focal seizures do not fall into any recognized set of natural causes. Ictal onset is consistent from one seizure to another. In some cases, more than one seizure type is seen, but each individual seizure type has a consistent site of onset.

Focal seizures without impairment of consciousness include :

Jacksonian- Tonic than clonic movements that start unilaterally in hand, foot, or face and spread to other body parts on the same side.

Other Motor- Turning of the head and eyes to one side, or tonic and clonic movement of

an arm or leg without the jacksonian spread.

Autonomic symptoms- a funny feeling in the epigastrium, nausea, pallor, flushing, lightheadedness.

With subjective sensory or psychic phenomena- numbness, tingling, auditory, hallucinations, olfactory symptoms.

Focal seizures with impairment of consciousness- may or may not start with the autonomic and psychic symptoms described above, consciousness is impaired amd motor behaviors such as lip smacking, unbuttoning clothes and chewing are seen. Patient usually becomes amnesic to seizure afterwards, and has a headache.

Generalized seizures- are conceptualized as originating at some point within, and rapidly engaging bilaterally distributed networks that include cortical and subcortical structures, but do not necessarily include the entire cortex. In generalized seizures the location and lateralization are not consistent from one seizure to another. They can be asymmetric. They usually begin with body movements, impaired consciousness, or both.

If onset of tonic-clonic seizures begins after age 30 years, suspect a partial seizure that has become generalized or a generalized seizure caused by a toxic or metabolic disorder.

Types of Generalized Seizures include:

Tonic-clonic seizure-patient loses consciousness suddenly, sometimes with a cry, body stiffens into tonic extensor rigidity. Breathing stops, and patient becomes cyanotic. A clonic phase of rhythmic muscular contraction follows. Breathing resumes and is often noisy with excessive salivation. Injury, tongue biting, and urinary incontinence may occur.

Absence seizure- A sudden brief lapse of consciousness, with momentary blinking, staring, or movements of the lips and hands but no falling. 2 types are seen: Typical: lasts <10 secs and stops abruptly, Atypical: lasts >10 secs.

Myoclonic seizures- sudden, brief, rapid jerks, involving the trunk or limbs. Associated with a variety of disorders.

Myoclonic Atonic-Sudden loss of consciousness with falling but no movements. Injury can occur.

Pseudoseizures- mimics seizures but are due to conversion disorders. Do not usually

follow a neuroanatomic pattern.

- Cranial Nerves
    - 12 cranial nerves
        - I-Olfactory-sense of smell
            - To test: present familiar smell that is non irritating with eyes open and compressing each nare then have them close their eyes and test each nostril, by compressing each nare with different smells than the familiar
                - Loss of smell can occur in sinus conditions, head trauma, smoking, normal aging, Parkinson's disease, and cocaine use
        - II-Optic-Vision
            - To test visual acuity: have the patient stand 20 feet from Snellen eye chart, if they wear glasses for other than reading they should be wearing them, cover one eye with a card and not fingers to prevent being able to see through the fingers and have them read the smallest line they can- the vision is placed in a 2 number series such as 20/50, the first number indicates the distance of the patient from the chart and the second number is the distance at which a normal eye can see the same line
            - To test pupils: will test reaction to light-dilation and constriction using a pen light
            - Look into the pupil to look at the fundi for changes in arteries, papilledema, pallor, cup enlargement
        - III-Oculomotor-pupil constriction, opening the eyelid (elevation), most extraocular movements
        - IV-Trochlear-downward and internal rotation of the eye
        - V-Trigeminal
            - Motor function: jaw clenching, lateral jaw movement
            - Sensory function: this nerve has 3 divisions
                - Ophthalmic
                - Maxillary
                - Mandibular
                    - To test: have the patient to clench teeth and note the strength and then have them move

jaw side to side
- Will test the sensory portion test sharp and soft feeling at the different areas of the face and forehead

- VI-Abducens-lateral deviation of the eye
  - Testing of III, IV, and VI with eye movement you have the patient follow your finger in the 6 cardinal directions looking for asymmetric movement

- VII-Facial
  - Motor: facial movements including expressions, closing the eye, and closing mouth
  - Sensory-taste of salty, sweet, sour and bitter on anterior ⅔ of tongue and sensation from the ear
  - To test: noting asymmetry in facial expressions, wrinkle forehead, close eyes so you can't open, tense neck muscles, puff out cheeks
- VIII-Acoustic-Hearing (cochlear division) Balance (vestibular)
  - To test: whispered voice test
    - Conductive loss: air through ear transmission impairment
    - Sensorineural: damage to the cochlear branch
  - Weber test at the top of the head with a tuning fork
  - Renee test: test at the back of the head
- IX-Glossopharyngeal
  - Motor: pharynx
  - Sensory:posterior portions of the eardrum and canal, pharynx, posterior tongue taste
- X-Vagus
  - Motor: palate, pharynx, and larynx
  - Sensory-pharynx and larynx
    - To test IX and V have the patient say ahhh and observe the soft palate rise and fall as well as the uvula remaining centered and the pharynx moving laterally like a curtain-all of this should be simultaneous and symmetrical
    - Test the gag reflex
- XI-Spinal Accessory:

- Motor: the sternocleidomastoid and the upper trapezius
- Sensory: none
    - To test motor: from behind ask patient to shrug shoulders against hands noting strength of the shrug; from in front of the patient have them turn their chin into your hand noting strength and observing the contraction of the opposite side of the sterno muscle

■ XII-Hypoglossal

- Motor: tongue
    - To test listen to the patient articulation of words, look for asymmetry of movement of tongue from talking and then sticking out the tongue and moving side to side
- Sensory: none
    -

- Intracranial Pressure

Causes of increased intracranial pressure (ICP):

Increase in brain volume

Generalized swelling of the brain or cerebral edema from a variety of causes such as trauma, ischemia, hyperammonemia, uremic encephalopathy, and hyponatremia

Mass effect

- Hematoma
- Tumor
- Abscess
- Blood clots

Increase in cerebrospinal fluid

- Increased production of CSF
- Choroid plexus tumor

Decreased re-absorption of CSF

- Obstructive hydrocephalus
- Meningeal inflammation or granulomas

Increase in blood volume

- Increased cerebral blood flow during hypercarbia, aneurysms
- Venous stasis from
- Venous sinus thromboses,
- Elevated central venous pressures, e.g., heart failure

Other causes

- Idiopathic or benign intracranial hypertension
- Skull deformities such as craniosynostosis
- Hypervitaminosis A, tetracycline use

Signs and symptoms:

-headaches, vomiting, and altered mental status varying from drowsiness to coma.
-visual changes can range from blurred vision, double vision from cranial nerve defects, photophobia to optic disc edema and eventually optic atrophy.

-infants in whom the anterior fontanelle is still open may have a bulge overlying the area.

Cushing triad is a clinical syndrome consisting of hypertension, bradycardia and irregular respiration and is a sign of impending brain herniation.

Evaluation of increased ICP should include:

-a detailed history taking

-physical examination

-funduscopic exam can reveal papilledema which is a tell-tale sign of raised ICP as the cerebrospinal fluid is in continuity with the fluid around the optic nerve.

- computed tomography (CT) of the head or magnetic resonance imaging (MRI) can reveal signs of raised ICP such as enlarged ventricles, herniation, or mass effect from

causes such as tumors, abscesses, and hematomas, among others.

Infants:

-Bulging fontanelle is concerning for increased intracranial pressure