Common or Concerning Symptoms

• Eyes
  ▪ Visual disturbances, spots (scotomas), flashing lights, use of corrective lenses, pain, redness, excessive tearing, double vision (diplopia)

• Ears
  ▪ Hearing loss, ringing (tinnitus), vertigo, pain, discharge
Common or Concerning Symptoms

• Nose
  ▪ Drainage (rhinorrhea, congestion, sneezing, nose bleeds (epistaxis))

• Oropharynx
  ▪ Sore throat, hoarseness, gum bleeding

• Neck
  ▪ Swollen glands, goiter
Observation and Palpation

- Inspection face & neck:
- Does anything appear out of ordinary in Head & Neck?
- Bumps/lumps, asymmetry, swelling, discoloration, bruising/trauma?
- Anything hidden by hair?
- Inspection & palpation of scalp, hair
Head Inspection

- Hair distribution and quantity
- Scalp – scaling, nevi
- Skull – size, contour
- Face – expression, contours
- Skin – color, pigmentation, hair distribution, lesions
Head Palpation

- Hair texture
- Skull – lumps
- Face – sinuses
- Skin – texture, temperature
Lymph Nodes of Head & Neck

Physiology

- Major lymph node groups located symmetrically either side of head & neck.
- Each group drains specific region.
Fig. 20-11. Lymphatic drainage of the head and neck. The head and neck contain many lymph nodes (and associated lymphatic vessels) that are often of clinical significance in certain infections and cancers.
Fig. 20-12. Palpation of the posterior cervical lymph nodes. The pads of the fingertips are used to palpate (feel) along the anterior surface of the trapezius muscle and then moved slowly in a circular motion to the posterior surface of the sternocleidomastoid muscle. Swollen lymph nodes may be a sign of infection, cancer, blocked lymphatic drainage, or some other abnormal condition.
Lymph Node Enlargement

Major Causes

• Enlarged if inflammation (most commonly infection) or malignancy

• Infection: Acute, tender, warm
  • Primary region drained also involved
    • (e.g neck nodes w/strep throat)
  • Sometimes get diffuse enlargement in response to generalized infection or systemic inflammatory process
    • (e.g TB, HIV, Mono)
• Enlarged if inflammation (most commonly infection) or malignancy
• Malignancy:
  ▪ Slowly progressive, firm, multiple nodes involved, stuck together & to underlying structures.
  ▪ Primary site malignancy could be nodes (e.g. lymphoma) or adjacent region (e.g. squamous cell cancer, breast cancer)
Lymph Node Anatomy & Drainage

- Ant Cervical Nodes drains into throat, tonsils, post pharynx, thyroid
- Post Cervical Nodes drains into back of skull
- Tonsillar Nodes drains into tonsils, posterior pharynx
- Sub-Mandibular Nodes drains into floor of mouth
- Sub-Mental Modes drains into teeth
- Supra-Clavicular Nodes drains into thorax
- Pre-Auricular Nodes drains into ear
Fig. 20-11. Lymphatic drainage of the head and neck. The head and neck contain many lymph nodes (and associated lymphatic vessels) that are often of clinical significance in certain infections and cancers.
Lymph Node Exam

- Gently walk fingers along general regions – comparing R to L
Function CN 7 – Facial Nerve

- Observe facial symmetry
- Motor functions
  - Wrinkle forehead (frontalis)
  - Keep eyes closed against resistance (orbicularis oculi)
  - Smile, puff out checks (orbicularis oris)
  - Tense neck muscles (platysma)
Function CN 7 – Facial Nerve

- Visceral Motor
  - Lacrimal, submandibular glands, sublingual glands, mucous membranes of nasopharynx, soft and hard palates

- Special Sensory
  - Anterior 2/3 of tongue, soft and hard palates

- General Sensory
  - Small area behind ear
Pathology: Peripheral CN 7
Bell’s Palsy

• Patient can’t close L eye, wrinkle L forehead or raise L corner mouth

L CN 7 (i.e. LMN) Dysfunction
Function CN 5 - Trigeminal

- Sensation: 3 regions of face:
  - Ophthalmic, Maxillary & Mandibular
- Motor
  - Temporalis & Masseter muscles
Function CN 5 – Trigeminal

- Motor
  - Temporalis (clench teeth)
  - Masseter (move jaw side-to-side)
- Sensory
  - Ophthalmic (V1)
  - Maxillary (V2)
  - Mandibular (V3)
  - Corneal Reflex: Blink when cornea touched - Sensory CN 5, Motor CN 7
Testing CN 5 - Trigeminal

- Sensory
  - Ask patient to close eyes
  - Touch each of 3 areas (ophthalmic, maxillary, & mandibular) lightly, noting if patient detects stimulus.

- Motor
  - Palpate temporalis & mandibular areas as patient clenches & grinds teeth
Testing CN 5 - Trigeminal

- Corneal Reflex
  - Tease out bit of cotton from q-tip
    - Sensory CN 5, Motor CN 7
  - Blink when touch cornea with cotton wisp
  - Examination of Trigeminal Nerve
The Ear – Functional Anatomy and Testing (CN 8 – Acoustic)

- Crude tests hearing
  - Rub fingers next to either ear; whisper & ask patient to repeat words
- If significant hearing loss, determine if Conductive (external canal up to but not including CN 8) vs. Sensorineural (CN 8)
Ear Examinations

- **ENT - Ear Examination - Otoscopy**
CN 8 - Defining Cause of Hearing Loss - Weber Test

- 512 Hz tuning fork - this is well within range normal hearing & used for testing
  - Get turning fork vibrate by striking ends against heel of hand or squeeze tips between thumb & 1st finger
    - Place vibrating fork midline skull
  - Sound should be heard equally R & L which means bone conducts to both sides
Weber’s Test

512 Hz Tuning Fork placed in midline.

‘Where can you hear the buzzing noise?’
CN 8 - Weber Test

- If **conductive** hearing loss (e.g. obstructing wax in canal on L) it will be louder on L as less competing noise.
- If **sensorineural** loss it will be louder on R
- Finger in ear mimics conductive loss
CN 8 - Defining Cause of Hearing Loss - Rinne Test

- Place vibrating 512 hz tuning fork on mastoid bone (behind ear).
- Patient states when can’t hear sound.
- Place tines of fork next to ear. Should hear it again, as air conducts better then bone.
- If BC better then AC, suggests conductive hearing loss.
- If sensorineural loss, then AC still > BC
Rinne’s Test

With a 512 Hz tuning fork press against the mastoid bone and then hold it 1cm away from the ear.

‘Which is louder, behind the ear or in front?’
Examining the External Structures of The Ear - Observation

- Mastoid
- External Canal
- Tragus
Swollen external canal, narrowed by inflammation
Internal Ear Anatomy

- Outer Ear
- Middle Ear
- Inner Ear

- Vestibular system
- Balance nerve
- Cochlea
- Facial nerve
- Auditory nerve

- Pinna
- Ear drum
- Ear canal
- Malleus
- Stapes
- Incus
- Eustachian tube
Normal Tympanic Membrane

Left Ear

Nose

Malleus always points down and back
Otitis Media
Perforated Tympanic Membrane

RIGHT EAR
CENTRAL PERFORATION

LEFT EAR
CENTRAL PERFORATION
Wax on – Wax off !!
Using Your Otoscope

- Make sure battery’s charged!
- Gently twist Otoscopic Head (clockwise) onto handle
- Twist on disposable, medium sized speculum
- Hold in R hand for R ear, L hand for L ear
Otoscopy Basics

- Make sure patient seated comfortably & ask them not to move
- Place tip speculum in external canal under direct vision
- Gently pull back on top of ear
- Advance scope slowly as look thru window – extend pinky to brace hand
- Avoid fast, excessive movement – Stop if painful!
Eye Anatomy

• Eye composed of three layers or tunics: sclera, uvea & retina and also is filled with vitreous humor.

• **Sclera** - white fibrous tissue, covers the “white” of the eye

• **Uvea** consists of:
  • Choroid - vascular layer
  • Iris - colored part of eye
  • Pupil - contractile center of Iris, responds to light
  • Ciliary body - thickened part of vascular portion of eye between iris and choroid.
  • Lens
  • Anterior/posterior chambers
  • Aqueous humor
Eye Anatomy

• **Retina**- inner most layer of the eye, which receives image formed by the lens

• **Vitreous Humor**- gel-like fluid that fills much of eye, helps maintains curve of cornea

• [Eyes Assessment - Adult Health Assessment](#)
Assessment of Eye: Subjective

- Any visual difficulty - decreased acuity, blurring of vision
- Pain
- Strabismus, diplopia
- Watering of eyes, discharge, redness
- Any hx. of eye problems
- Use of glasses or contact lenses
Eye Exam - Inspection

• General appearance
• Conjunctiva - pink, moist, without lesions  Conjunctiva over sclera-transparent
• Lacrimal gland - palpation, look for excessive tearing, discharge
• Sclera - usually white, even yellowing indicates jaundice
Eye Exam - Inspection

• Orbital area: edema, sagging, lesions, drainage, lacrimal glands
• Eyelids, lashes, brows
• Conjunctivae and sclera
• Movement of eyes: strabismus, nystagmus
• Corneal clarity – shine light directly at persons eyes; should see equal reflection in each eye
  [ also an extraocular function test]
Eye Exam - Inspection

- Iris – colored part
- Pupils-round, regular, equal, 3-5mm
- Pupillary light reflex - darken room, focus on distant object, shine light from the side results in direct light reflex and consensual light reflex
Eye Inspection

• **Accommodation and convergence:**
  focus on a distant object then hold finger about 2” from persons’ eyes, ask person shift focus to finger as it moves closer to his/her nose…resulting in:

  • Accommodation-pupils constrict
  • Convergence- eyes move inward
Testing Visual Acuity

- 20 feet distance – Snellen eye chart, may wear glasses.
- Visual Acuity is written as a fraction
- Numerator = distance person stood from chart
- Denominator = distance normal eye can read the line of letters
Testing Visual Acuity

- Nearsightedness
- Larger denominator - poorer the vision
- $20/100 = \text{person had to be as close as } 20' \text{ to read what normal vision person can read at } 100'$
Testing Visual Fields

• Confrontation Test
  ▪ Face person 2-3’ away
  ▪ Person covers L. eye, examiner covers R. look at each others uncovered eyes.
  ▪ Fully extend L. arm – bring your hand in along main axis of visual fields – Superior, inferior, temporal and nasal.
  ▪ Wiggle your fingers and instruct person to indicate when finger is first seen.
Extraocular Muscle Function

- Positions Test
  - Follow finger and keep head stationary, move through 6 fields of gaze, returning to central starting point before going to next field
- Corneal light reflex
  - Reflection of light same spot on each eye.
Inspecting Ocular Fundus

- Ophthalmoscope enlarges view of inner eye
- Beam of light through the pupil illuminates inner structures
Inspection of Ocular Fundus

• General background of Fundus-color normally varies from light red to dark brown – red, generally corresponding with skin color.

• View should be clear, without lesions obstructing retinal structures.
Ophthalmic Exam

• Darkened room, instruct person to look at distant point and keep focused.
• Hold with your R. hand when inspecting R. eye, lens set at 0. Keep both of your eyes open
• Begin– 15 degrees lateral to person’s line of vision – shine ophthalmoscope toward R. pupil
• Red Reflex – orange red coloration of fundus (anterior chamber) visible through pupil.
Ophthalmic Exam

• Move toward person, till examiner’s forehead almost touches thumb placed on person’s forehead
• Move scope toward positive numbers, inspect anterior chamber and lens for transparency.
• Rotate lens back to 0, then focus on retinal structures, rotate lens to sharpest focus.
• Inspect optic disc, if can’t find it, follow a vein along and it will lead to disc.
Optic Disc

- **Optic disc**: on nasal side of retina
- **Color**: creamy yellow-orange to pink
- **Shape**: round or oval
- **Margins**: Distinct and sharply demarcated, nasal edge may be slightly fuzzy
Ophthalmic Exam

- **Physiologic cup** - is slightly depressed and lighter in color than the remainder of cup; the cup occupies \( \frac{1}{2} \) of disc diameter.

- **Cup disc ratio** - When visible, physiologic cup is a brighter yellow-white and width is not more than \( \frac{1}{2} \) disc diameter.
Summary-Assessment Includes:

- Subjective data
- Inspection
- Visual Acuity
- Visual Fields
- EOMuscle functioning
- Ophthalmic Exam
The Nose

• Observe external structure for symmetry
• Check air movement through each nostril separately.
• Smell (CN 1 – Olfactory) not usually assessed
  ▪ Screen w/alcohol pad smell test
  ▪ Detect odor from pad when presented @ 10cm
  ▪ Test each nostril separately
• Look into each nostril using otoscope w/speculum
  ▪ Note color, septum (medial), turbinates (lateral)
Sinuses

- Normally Air filled (cuts down weight of skull), lined w/upper respiratory epithelium
  - Keeps antigens/infection from lung
- Maxillary & frontal accessible to exam (others not)
- Exam only done if concern of sinus infection or pathology
Palpate or Percuss Sinuses in areas outlined below
Sinuses Examination

- Palpate(or percuss) sinus
  - elicits pain if inflamed or infected
- Transilluminate
  - room must be dark
  - normally, light passes across sinus
  - visible thru roof of mouth
  - with infection will have swelling & fluid which prevents transmission
- Placed otoscope on infra-orbital rim while look in mouth for light
Transillumination
Oropharynx

- Inspect posterior pharynx (back of throat), tonsils, mucosa, teeth, gums, tongue – use tongue depressor & light – otoscope works as flashlight.
- Can grasp tongue w/a gauze pad & move it side to side for better visualization.
- Palpate abnormalities (gloved hand).
Oropharynx: Anatomy & Function

- CN 9 (glosopharyngeal), CN10 (vagus), CN12 (hypoglossal)
- Uvula midline-CN 9
  - Stick out tongue, say “Ahh”–use tongue depressor if can’t see palate/uvula rise -CN 9, 10
  - Gag Reflex–provoked w/tongue blade or q tip - CN 9, 10
- Tongue midline when patient sticks it out
  - CN 12 check strength by directing patient push tip into inside of either cheek while you push from outside
Selected Pathology of Oropharynx

Left CN 9 Palsy – note uvula pulled to right
Selected Pathology of Oropharynx

Left peri-tonsilar abscess – uvula pushed to R
Left CN 12 palsy – tongue deviates Left
What about the Teeth?

- Dental health has big implications
  - Nutrition (ability to eat)
  - Appearance Self esteem
  - Employability
  - Social acceptance
- Systemic disease
  - Endocarditis, ? Other
  - Local problems: Pain, infection
- Profound lack of access to care
Anatomy & Exam

- 16 top, 16 bottom
- Examine all
- Observation teeth, gums
- Gloved hands, gauze, tongue depressor & lighting if abnormal

Look for
- General appearance? All present
- Broken, Caries, etc?
- Areas pain, swelling
- ? Infection
- ? Tooth, gum, extent
Crown

Enamel

Dentin

Pulp

Cementum

Periodontal ligament

Nerve and blood supply
Meth Teeth
Common Dental Pathology

Facial Swelling (left)
Secondary to Tooth Abscess
Thyroid Anatomy

Notch Atop Thyroid Cartilage

Circo-Thyroid Membrane

Lobes of Thyroid Gland

Thyroid Cartilage

Carotid Arteries
Thyroid Anatomy

- Cricoid cartilage
- Thyroid gland
- Parathyroid glands
Thyroid Exam

• Observe (obvious abnormalities, trachea)
• From front or behind
  ▪ Identify landmarks (touch and vision)
• Palpate as patient swallows (drinking water helps)
• Focal or symmetric enlargement, nodules.
Neck Movement
CN 11 – Spinal Accessory

- Turn head to L into R hand for function of R SCM
- Turn head to R into L hand for function of L SCM
Neck Movement
CN 11 – Spinal Accessory

- Shrug shoulders into your hands
Summary Of Skills

- Wash hands
- Observation head & scalp; palpation lymph nodes
- Facial symmetry, expression (CN 7)
- Facial sensation, muscles mastication (CN 5)
- Auditory acuity; Weber & Rinne Tests (CN 8)
- Ear: external and internal (otoscope)
- Nose: observation, nares/mucosa (otoscope)
  - Smell (CN 1)
Summary Of Skills

• Sinuses: palpation, transillumination
• Oropharynx: Inspection w/light & tongue depressor uvula, tonsils, tongue (CNs 9, 10, 12); “Ahh”; Gag reflex; Teeth
• Thyroid: Observation, palpation
• Neck/Shoulders: Observation, range motion, shrug (CN 11)

• Cranial Nerve Examination