The Patient Encounter:
Not-so-complete Approach to Clinical Reasoning

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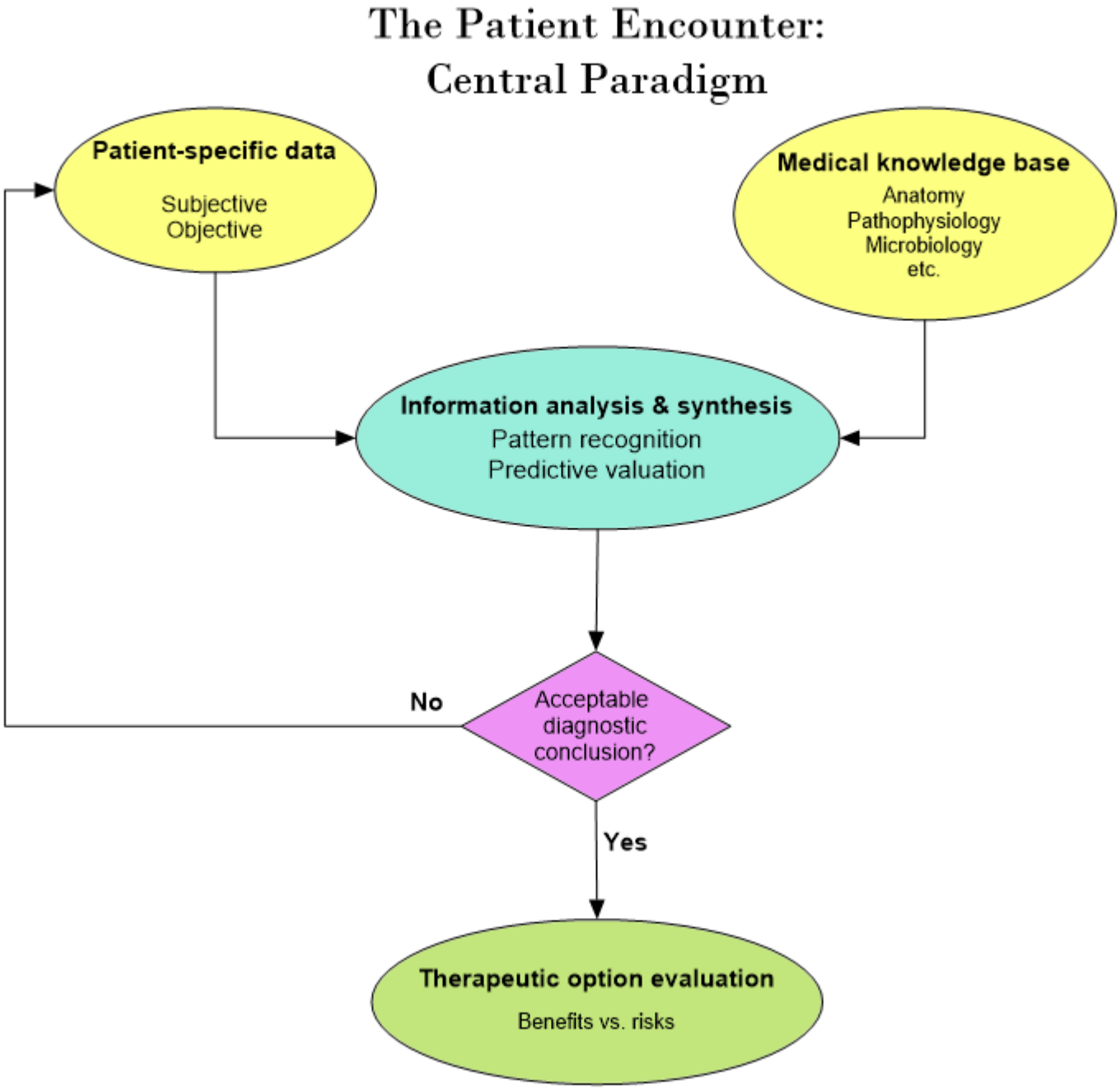
Contents

1 Components of The Clinical Encounter

- History (Subjective) : CC, HPI, ROS, PSFHx
- Physical Examination (Objective)
- Assessment
- Medical Decision Making (Plan)

Most of the time, the patient will tell you the diagnosis if you ask the right questions. Or you recognize a familiar clinical pattern. Everything else is confirmation.

Summary of Clinical Reasoning Approach



- 1. Define the problem in clinically unambiguous terms
- 2. Set out a framework in which the problem can be solved (anatomic, physiologic, biochemical, psychosocial, environmental, etc.)
- 3. Produce a set of viable diagnostic hypotheses to explain the problem
- 4. Using heuristic probabilistic reasoning, distinguish between the competing diagnostic hypotheses by using the *a priori* likelihood (prevalence) of each along with knowledge of the sensitivity and specificity of various manifestations (signs, symptoms, diagnostic findings) associated with each hypothesis.
- 5. Determine appropriate interventions based upon the *a posteriori* likelihood of remaining viable diagnostic hypotheses:
- 5A.To choose among diagnostic interventions, take into consideration the sensitivity and specificity of the intervention as well as the urgency/necessity of determining whether a diagnosis is present.
- 5B. To choose among therapeutic interventions, compute their relative utilities - take into consideration possible clinical outcomes, their likelihoods and a semiquantitative assessement of the patient's perception of the positive/negative impact of that outcome.

The simplest and most comprehensive though inefficient and impractical manner of proceeding through this process is indiscriminate acquisition of the clinical information via checklists. During a real-world encounter, the clinician implements step 3 at at the Chief Complaint. The clinician then SELECTIVELY obtains clinical information at step 4 to increase the likelihood of a diagnostic hypothesis (high positive predictive values – rule in) and/or decrease the likelihood of a diagnostic hypothesis (high negative predictive values – rule out) to reformulate the list.

Assessment and Plan, whether written, oral or internally conceptualized, are analogous to the closing arguments an attorney would make to a jury just prior to the conclusion of a trial. The purpose is to convince the applicable parties (including the clinician themselves) that the Assessment and Plan that are offered are appropriate and directly follow from the clinical information that was obtained.

1.1 The Wellness Exam

Goals:

- Detection of presymptomatic disease
  (secondary prevention)
- Assess current health status, habits and practices
  (primary prevention)
- Obtain interval health history
  (tertiary prevention)
- Provide opportunity to present problems, concerns, questions
  (problem-oriented management)

1.2 The Consultation Exam

You, the consultant, are being asked a question or questions by the requestor. What question(s) is/are being asked? Most commonly - "Will the patient die if I do this surgery on them?"

2 History

- Introduce yourself OR provide general greeting
- Handshake if appropriate
- Maintain eye contact
- **NEVER** Interrupt
  EXCEPTION: manics & certain psychotics (who will never stop talking until they collapse)
  EXCEPTION: agenda-bearers (who will try to continue to talk until you give them what they want)
- The patient will nearly always tell you the diagnosis if you ask the right questions. The rest is just confirmatory.

2.1 Agenda

The standard agenda of a patient encounter is "What is wrong with me and what should we do about it?" **The standard agenda does not always apply!!** Patients may amplify, minimize, omit or even add symptoms in order to fulfill an alternate agenda. Clinical data must sometimes be unfiltered when an alternate agenda is suspected.

Common alternate agendas

- Fear of a fatal, disabling or hereditary disease
- Work or school excuse/modification/qualification
- Disability/insurance compensation
- Legal matters(competence, adoption, driving)
- Drug seeking
- Third party request
- The Immortality Delusion
- Psychiatric illness (e.g. somatization disorders)

2.2 Chief Complaint

In the patient's own words

What brings you here today?
What is the reason for today's visit?
How can we help you today?

2.3 History of Present Illness (HPI)

The HPI is a chronological description of the development of the patient's present illness from the first sign and/or symptom or from the previous encounter to the present.

For trauma, also include mechanism of injury

Symptom description: **FLACCID PORT TEMP**

Frequency	how often does it happen?
Location*	where is it?
Associated symptoms*	what else happens with it?
Character* (Quality)	what words would you use to describe the symptom?
Context*	what are you doing when it happens?
Intensity* (Severity)	how strong is it?
Duration*	how long does it last?
Progression **(FLID)**?	is it getting more frequent, spreading, getting stronger or lasting longer
Onset	when did it start?
Radiation	where does it move to?
Timing*	when does it happen?
	Modifying factors*
Termination	what makes it stop?
Exacerbation	what makes it worse?
Mitigation	what makes it better?
Precipitation	what makes it start?

*(8) recognized components of HPI for billing/documentation purposes (ACCT MILD)

2.4 Past Medical History (PMHx*)

The patient's past experiences with illnesses, operations, injuries and treatments.
Besides your problem today, what other medical problems do you have or have you had?"

- What (diseases surgery, hospitalizations, injuries, genetic disorders)
- When
- Aftereffects

2.5 Personal/Social History (PSHx*)

A context-appropriate review of past and current activities
Tell me about –

Residential	Where do you live? In what type of dwelling?
Domestic	Who do you live with?
Occupational/Avocational	What do you do? Current/past activities?
Health habits	Diet, exercise, sleep, stress
Substances	Tobacco, alcohol, recreational drugs
Travel	Foreign, rural, exotic. Wnen/where?
(F) Ob/Gyn history	Menses, pregnancies
	Last menstrual period, current pregnancy status
Environmental exposures	Inhaled, ingested, topical
Domestic violence	
	The following are sensitive questions and need
	to be carefully phrased in a nonjudgmental manner:
Gender identity	*Is there anything I need to know about your gender identity*
	that is important for this visit?
Sexuality	*Is there anything I need to know about your sexual identity or activity*
	that is important for this visit?
Ethnicity	*Is there anything I need to know about your ethnic background*
	that is important for this visit?
Religion	*Is there anything I need to know about your religious practices*
	that is important for this visit?

2.6 Family History (FamHx*)

A review of medical events in the patient's family, including diseases which may be hereditary or place the patient at risk.
What medical problems have your family members had?"

- What (diseases, surgery, hospitalizations, genetic disorders)
- Relationship
- When
- Age

*** PMHx, PSHX, FamHx are the 3 recognized components of PSFH for billing/documentation purposes**

2.7 Medication History

Medication, dose, frequency, route, directions for use

2.8 Allergies/Adverse Effects

Substance, nature of effect

2.9 Review of Systems

A Review of Systems is an inventory of body systems obtained through a series of questions seeking to identify signs and/or symptoms that the patient may be experiencing or has experienced (elicited by provider as opposed to offered by the patient.

1. General	Feverishness, chills, sweats, fatigue, change in appetite, unexplained change in weight
2. Eye	Blurring, blind spots, photophobia, tearing, pain, discharge, diplopia, redness, itching
3A. Ear	Otalgia, otorrhea, hearing loss, tinnitus
3B. Nose	Epistaxis, rhinorrhea, congestion, hyposmia, anosmia, dysosmia
3C. Throat	Mouth/throat pain, difficulty chewing, pain/difficulty with swallowing, voice problems, ageusia, dysgeusia
4. Respiratory/Thorax	Cough, wheeze, shortness of breath, chest pain
5. Cardiovascular	Palpitations, lightheadedness, rapid/irregular heartbeat, skipped heartbeats
6. GI	Abdominal pain, nausea, vomiting, heartburn Change in bowel habits/stool character, fecal incontinence, excess gas, bloating, distention
7. GU	Dysuria, hematuria, frequency, urgency, hesitation, incomplete evacuation, incontinence (urge, stress, dribbling, leaking) Polyuria, pain with intercourse M: Urethral discharge/bleeding, erectile dysfunction F: Vaginal discharge, bleeding, dryness, change in menstrual cycle
8. Neuro	Headache, difficulty with balance/gait/coordination/fine motor control, Focal numbness/tingling/weakness, tremor, abnormal movements, fainting
9. Musculoskeletal	Joint pain/stiffness/swelling/redness/warmth Myalgias, spasm Neck/back pain Hand/foot swelling
10. Endocrine	Heat or cold intolerance, polydipsia
11. Skin	Rashes/ulcers/lesions/sores/eruptions/lumps/masses Itching, pigment changes Changes in hair or nails
12. Hem/Lymph	Excess or spontaneous bleeding or bruising, swollen glands
13. Psych	Anxiety, depression, concentration difficulty, memory loss
14. Allergy/Immunology	hives, sneezing, facial/lip swelling, topical/ingested/inhaled exposures

2.10 Closure

Is there anything you would like to say about your problem?
Have we covered everything you think I need to know?
How is this problem concerning to you?

3 Physical Examination

- Inspection
- Auscultation
- Percussion
- Palpation

Physical Exam Components	
1. General/constitutional	General appearance
	Apparent age/gender
	Nutritional status
	Behavior/demeanor
	Dress/grooming/hygiene
	Speech
	Mental status
	Vital signs
Head	
2. Eyes	Lids, lashes, conjunctiva, pupils, irises, fundi, sclera
	Extraocular movements, pupillary reactivity
3. ENT	External exam, otoscopic, hearing, Weber/Rinne
	Rhinoscopic
	Oral mucosa, salivary glands, hard and soft palates, tongue, tonsils, posterior pharynx, airway
	Lips, teeth, gums
4. Neck	Appearance, symmetry, mass, tenderness, deformity
	Trachea, thyroid
5. Respiratory/Thorax	Respiratory effort
	Appearance, symmetry, tenderness, deformity
	Percussion, auscultation
	Egophony, whispered pectoriloquy, tactile fremitus
6. Cardiovascular	PMI, thrill, S1/S2, murmurs, rubs, S3/S4
	Carotids
	Abdominal aorta
	Peripheral pulses
	Venous: pedal edema, varicosities, venous stasis, JVD

Physical Exam Components (continued)	
7. Chest (breasts)	Symmetry, abnormality, deformity, nipple discharge
8. Gastrointestinal (abdomen)	Appearance, bowel sounds, tympany, masses, tenderness
	Liver/spleen enlargement
	Hernias
	Rectal exam
9. Genitourinary (male)	Penis, scrotum, prostate
10. Genitourinary (female)	External genitalia
	Vagina
	Cervix
	Uterus
	Adnexa
11. Lymphatic	Cervical, supraclavicular, axillary, inguinal
12. Musculoskeletal	Posture, gait
	Digits
	Neck/Back
	Extremities
13. Skin	Lesions, pigment changes
	Palpable masses, textural abnormalities
	Hair, nails
14. Neurologic	Cranial nerves
	Deep tendon reflexes, pathologic reflexes
	Sensation (light touch, pinprick, position, vibration)
	Motor strength, tone, tremor/abnormal movements
	Cerebellar function
15. Psychiatric	Alertness
	Orientation
	Memory
	Judgment/insight
	Mood/affect

3.1 Constitutional

Appearance	General, gender, age, nutritional status, identifying features, activity, level of consciousness
Dress/grooming/hygiene	Appropriateness. Comment upon specifics if relevant.
Eye contact	Appropriate, avoidant, fixed
Behavior	***Sample behavioral descriptors***
	Aggressive, agitated, angry, anxious, assaultive
	Childish, combative, cooperative, coy
	Defensive, depressed, despondent, distant, distractible, distressed
	Euphoric, evasive, exhibitionistic
	Fearful, fidgety, frail, frightened
	Guarded, hostile, hypervigilant
	Impatient, indifferent, ingratiating, irritable
	Jocular, manipulative, negativistic
	Oppositional, overdramatic, overfriendly
	Sad, seductive, shy, subdued, submissive, sullen, suspicious
	Tearful, tense, threatening
Speech	Rate, rhythm, volume, quantity
Mental status	Aspects of mental status that might impact upon the remainder of the data gathering process should be noted under General. Otherwise, mental status can be evaluated and documented separately
Vital signs	BP, HR, Temp, O2 sat, RR

3.1.1 Appearance

Examiner provides a description of what they see and hear

	Visual observations
General	Well appearing, healthy appearing, fit appearing, toxic appearing, acutely ill appearing, chronically ill appearing, robust appearing, frail appearing, uncomfortable
Gender	Apparent gender (male, female, indeterminate)
Age	Looks to be (younger than - approximately - older than) stated age
Nutritional	Cachectic - undernourished - well nourished - obese - morbidly obese
Identifying features	Observed physical disabilities/deformities, aids (glasses, cane, splint, cast, etc.), pregnancy Build, posture, scars, tattoos
Activity	Tremor, mannerisms, gesture, tics, psychomotor retardation
Level of consciousness	Alert, clouded, somnolent, lethargic, obtunded, stuporous, comatose, unresponsive, delirious
	Auditory observations (Speech)
Rate	decreased - normal - increased (pressured)
Rhythm	normal articulation, latency, slurring, dysarthria, monotone, prosody
Volume	Inaudible - soft - normal - inappropriately loud. Hoarseness, rhinolalia
Quantity	Sparse, impoverished, appropriate, loquacious

3.2 Mental Status

Orientation	Person, place, time
Expressive language	Unimpaired, mutism, pressured, circumstantial, tangential, anomia/dysnomia, echolalia, perseveration, incoherent, embroidery, neologisms, word salad
Receptive language	Unimpaired, comprehension difficulty
Memory	Recent/remote (quality and accuracy of history)
Thought processes	Unimpaired, blocking, clang associations, confabulation, delusion, depersonalization, flight of ideas, grandiosity, ideas of reference, loose associations, magical thinking, obsession, suicidality, threats of violence (self, examiner, others)
Mood/affect	Mood is self reported, affect is observed by examiner Depressed - euthymic - elevated Range: Flat - blunted - constricted - normal - labile Congruence: between mood and affect
Delusions, hallucinations, illusions	Witnessed by examiner, admitted by patient
Judgment/insight	Realistic assessement of current or other situations Ability to make competent decisions (this is situation specific)

3.3 Cognition

Obtaining consent might be appropriate

Orientation	Day, date, month, year, time, season
	Location, home address, President
Memory	3-word recall, immediate/delayed
Attention	Serial 7's, WORLD/DLROW
Abstraction	How are a deer and a cow alike? How are they different?
	Proverb interpretation:
	What does it mean when we say "A bird in the hand is worth two in the bush?"

3.4 Integument

3.4.1 Skin lesion descriptors

- Primary morphology
- Secondary changes
- Configuration
- Size/color/visible texture/border
- Palpable texture
- Grouping
- Anatomic location/distribution

Skin lesions : Primary morphologic types				
Flat		Change in surface color	< 5 or 10 mm	Macule
		Without elevation or depression	> 5 or 10 mm	Patch
		Translucency/wrinkling	Epidermal atrophy	
Raised	Solid	Circumscribed surface elevation of skin,	< 5 or 10 mm	Papule
		No visible fluid	> 5 or 10 mm	Plaque
	Edematous		any size	Wheal
	Fluid filled	Circumscribed surface elevation of skin,	< 5 or 10 mm	Vesicle
		Clear fluid	> 5 or 10 mm	Bulla
		Cloudy fluid	any size	Pustule
	Nodular	Circumscribed subcutaneous lesion	< 5 or 10 mm	Exophytic
		causing skin elevation		Nodule
			> 5 or 10 mm	Tumor
	Stalked	Base is narrower than body		Polyp
Depressed		Discontinuity of skin	Epidermal	Erosion
			Dermal or deeper	Ulcer
		Translucency/discoloration	Dermal atrophy	
Vascular		Subcutaneous hemorrhage	< 2 mm	Petechia
			2-10 mm	Purpura
			> 10 mm	Ecchymosis
		Enlargement of superficial blood vessels		Telangectasia
		to the point of being visible		

Skin lesions: Secondary changes	
Crusting	Dried sebum, pus, or blood mixed with epithelial and sometimes bacterial debris
Eschar	Black, dry necrotic tissue usually adherent to an underlying tissue bed
Excoriation	Superficial abrasion of the skin via mechanical means
Fissuring	Linear crack(s) in the skin, narrow but deep
Keratosis	Overgrowth of stratum corneum wthout lamination
Lichenification	Epidermal thickening characterized by visible and palpable thickening of the skin with accentuated skin markings
Maceration	Softening and blanching of the skin due to being consistently wet
Scaling	Dry or greasy laminated masses of keratin that represent thickened stratum corneum
Slough	Yellow/white devitalized tissue, stringy or thick, and adherent to a tissue bed
Ulceration	Loss of tissue from all or part of a raised lesion (not a primary ulcer)

Skin lesions: Configuration (Morphology of individual lesions)	
Annular or circinate	Ring-shaped with central clearing
Arciform or arcuate	Arc-shaped
Digitate	With finger-like projections
Discoid or nummular	round with uniform color
Figurate	with a particular (specified) shape
Geographic	large area with irregular borders (resembling a geographic area on a map)
Guttate	resembling drops of liquid
Gyrate	coiled or spiral-shaped
Linear	
Mammillated	with rounded, breast-like projections
Ovoid	
Reticular or reticulated	resembling a net, web or lace
Serpiginous	with a wavy border
Stellate	star-shaped
Targetoid	resembling a bullseye

Skin lesions: texture	
Visible	Glistening, opaque, pearly, shiny, translucent, velvety, verrucous, waxy
Palpable	Fluctuant, friable, greasy, indurated, sclerotic, waxy
	Soft ⇒ firm ⇒ hard
	Smooth ⇒ coarse ⇒ uneven ⇒ lumpy

Skin lesions: grouping
Solitary
Scattered
Arcuate (forming an arc)
Clustered (agminate)
Coalescent/confluent
Linear
Polycyclic (groups of confluent circular lesions)

Skin lesions: anatomic distribution
Solitary
Localized
Generalized
Symmetric
Dermatomal
Phototrophic

3.4.2 Nail abnormalities

Nail abnormalities	
Beau's line	Single transverse indentation
Koilonychia	Thin, flat/concave nails
Leukonychia	Opaque white nail plates
Lines of Mees	Transverse white bands
Melanonychia	Hyperpigmentation of the nail plate
Onychauxis	Thickening and yellowing of nail plate
Onychocryptosis	Ingrown nail
Onychodystrophy	Any nail abnormality not involving pigmentary change
Onychogryposis	Thickened, curved nail plates
	("Ram's horn nail")
Onycholysis	Separation of the nail plate from the nail bed
Onychomycosis	Fungal infection of any part of the nail unit
Onychopathy	Any abnormality of the nails
Onychorrhexis	Brittle nails that easily split
Onychoschizia	Splitting nails
Paronychia	Infection of a nail fold
Splinter hemorrhage	
Subungual hematoma	
Terry's nails	Leukonychia with distal sparing
Trachonychia	Longitudinal striations of the nail plate

3.4.3 Descriptors of a palpable mass

- Location
- Size
- Discreteness
- Consistency
- Mobility
- Tenderness
- Overlying skin change

3.5 Eye

Work from exterior to interior

- Visual acuity
- Visual fields
- Periorbital tissue/eyebrows
- Lids/lashes/lacrimal structures
- Conjunctiva/sclera
- Lens/anterior chamber
- Extraocular movements
- Pupillary accomodation
- Fundoscopic exam

3.6 ENT

Weber: place vibrating tuning fork in center of forehead; ask patient which side they hear the vibration more loudly
Rinne: Place handle of tuning fork on the mastoid; when the patient no longer hears the vibration, place the tines directly in front of the ear. Normal result is that they will hear the vibration again (air conduction > bone conduction)

Rinne R	Rinne L	Weber to	Dx
normal	normal	R	sensorineural hearing loss L
normal	normal	L	sensorineural hearing loss R
normal	abnormal	R	???
normal	abnormal	L	conductive hearing loss L
abnormal	normal	R	conductive hearing loss R
abnormal	normal	L	???
abnormal	abnormal	R	conductive hearing loss R > L
abnormal	abnormal	L	conductive hearing loss L > R

3.7 Musculoskeletal

For the musculoskeletal system, exam components are different:

- Inspection
- Palpation
- Function: Passive range of motion
- Function: Active range of motion (isotonic testing)
- Resisted contraction (isometric testing)
- Provocative testing (try to make it hurt by stretching or compressing it)

Type-of-structure discrimination			
Problem is/is of:	Joint (also Contracture)	Muscle	Tendon Ligament
Passive ROM	abnl	nl	abnl
Active ROM	abnl	abnl	abnl
Isometric	nl	abnl	abnl

3.7.1 Shoulder

Inspection	Scarring, deformity Asymmetry Scapular winging (long thoracic nerve) Overlying skin abnormality
Palpation	Clavicle AC joint Coracoid Subacromial space Greater tuberosity Scapular spine
Expected ROM	Flexion: 150 - 180° Extension: 40° Abduction: 180° Adduction: 30 - 40° External rotation: 80 - 90° Internal rotation: 90°

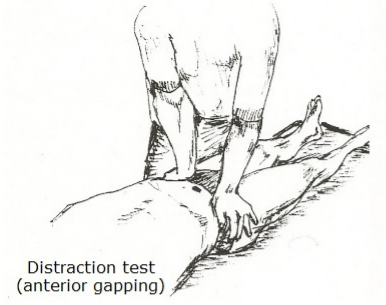
3.7.2 Knee

Inspection	Alignment deformity Muscle wasting Swelling Overlying skin abnormality
Expected ROM	Flexion: 0 - 150°
Palpation	Patella (sup/inf/med/lat) Joint lines (med/lat) Femoral condyles (med/lat) Tibial plateaus (med/lat) Patellar tendon Tibial tubercle Gerdy's tubercle Popliteal fossa Hamstrings
Provocative testing	Patellar grind/apprehension Varus/valgus stress (0°, 30°) Anterior drawer/Lachmann Posterior drawer McMurray's test x 3

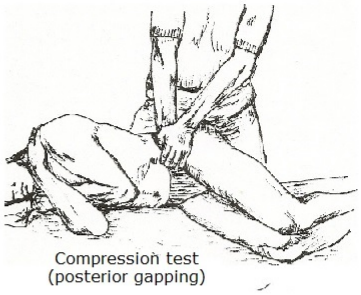
3.7.3 SI joint

Test	Tests for	Description
Distraction test Anterior gapping	Anterior ligaments	With patient supine, apply downward/outward pressure to the anterior superior iliac spines
Patrick's test FABER test	Anterior ligaments	**F**lex, **A**bduct and **E**xternally **R**otate at the affected hip
Compression test Posterior gapping	Posterior ligaments	With patient lying on unaffected side, apply downward pressure to the uppermost iliac crest
Sacral thrust Downward pressure test	Anterior ligaments & posterior ligaments	With patient prone, apply downward pressure to the sacrum
Posterior shear Thigh thrust	Anterior ligaments & posterior ligaments	With patient supine, knee flexed 90° apply compressive force at the knee
Gaenslen's test	Anterior ligaments & posterior ligaments	Patient supine, one hip on exam table fully flexed Extend opposite hip while off exam table
Yeoman's test	Anterior ligaments & posterior ligaments	With patient prone, Stabilize sacrum on affected side, extend opposite hip

Sacroiliac joint testing

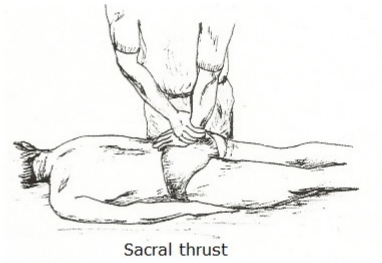


Distraction test
(anterior gapping)

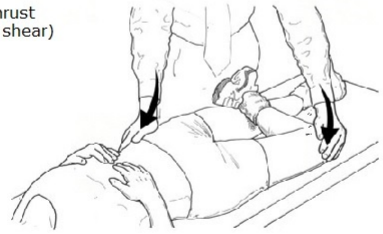


Compression test
(posterior gapping)

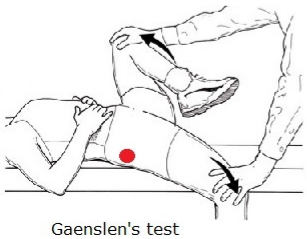
Thigh thrust
(posterior shear)



Sacral thrust



Patrick's test
(FABER)



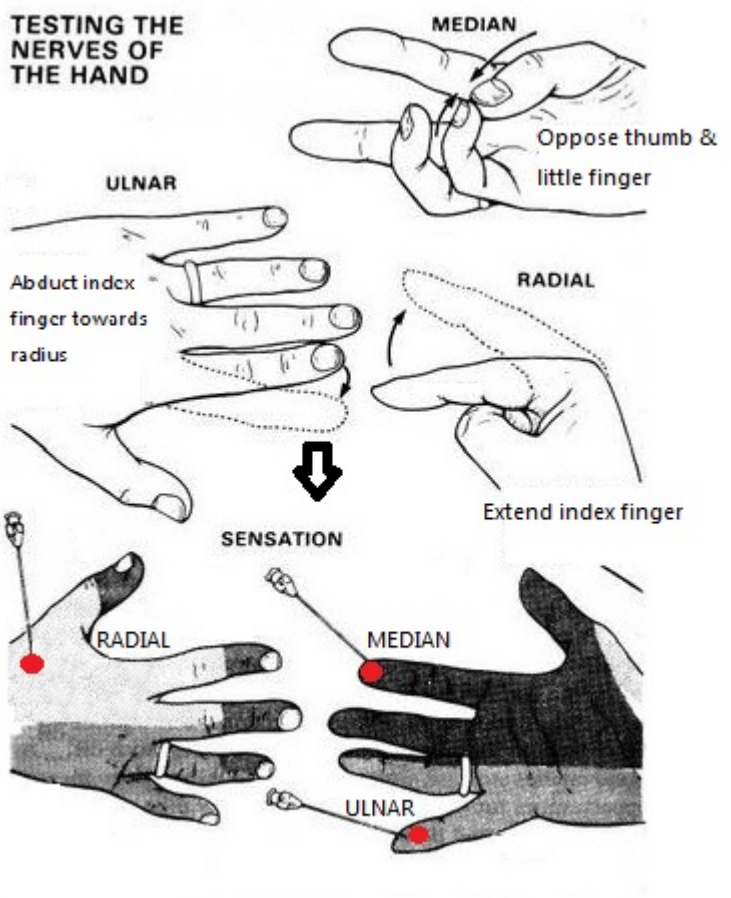
Gaenslen's test

Yeoman's test

3.8 Neurologic

Nerve root	Dermatome	Myotome
C2	Occipital protruberance	
C3	Supraclavicular fossa	
C4	Acromioclavicular joint	
C5	Lateral shoulder	Shoulder abduction
C6	1st webspace	Elbow flexion
C7	Dorsum of index finger	Elbow extension
C8	Dorsum of little finger	Finger flexion
T1	Medial epicondyle	Finger abduction
T4	Nipple line	
T10	Umbilicus	
L1	Inguinal crease	
L2	Anterior thigh	Hip flexion
L3	Medial knee	Knee extension
L4	Medial malleolus	Ankle dorsiflexion
L5	1st webspace	Hallux extension
S1	Lateral malleolus	Ankle plantar flexion
S2	Popliteal fossa	Knee flexion
S3	Ischial tuberosity	

The Upper Extremity Myotome Rap
C5 gives you shoulder abduction
C6 puts your biceps into production
C7 gets your arm back straight
To point your pointer you need **C8**
Spread your fingers with **T1**
Lower your arms cause now you're done



Hand nerve testing		
Radial	1st webspace	extend index finger
Median	index fingertip	oppose thumb/little finger
Ulnar	little fingertip	spread fingers

Classification of tremors	
Resting	Occurs in the absence of voluntary contraction or movement
Postural	Occurs while voluntarily maintaining a static position against gravity
Simple kinetic	Occurs with any voluntary movement
Intention	Occurs with purposeful movement toward a target
Isometric	Occurs with voluntary contraction in the absence of movement
Task-specific	e.g., writing, speaking

Gait abnormalities	
Antalgic	Short stance phase on affected leg
Ataxic (cerebellar)	Appears irregular, jerky, weaving and/or staggering
Arthrogenic	Lifts entire leg, tilts pelvis to clear the ground
Trendelenburg (myopathic)	Hip "pops" out on affected side
Lurching	Thorax moves posteriorly
Parkinsonian	Short shuffling steps
Scissor	One leg crosses in front of the other
Sensory	Slams foot on the ground
Steppage (neuropathic)	Lifts leg higher than normal to avoid scraping toes
Hemiplegic	Circumducts on affected side

4 Math

4.1 testing, aka diagnostic intervention

Why do a test?

- Confirm presence of condition (rule in)
- Confirm absence of condition (rule out)
- Monitor disease activity
- Monitor response to therapy
- Patient driven (reassurance, curiousity)

What makes a test necessary/indicated?

- Consequence of excluding a condition that is present
- Consequence of concluding a condition that is absent
- Patient driven "need"

4.2 relevant equations

Term	Symbol	Meaning
Diagnostic hypothesis	D	Disease, syndrome or condition under consideration
Finding	F	Diagnostic finding: (historical item, physical finding, test result, etc.)
Probability	$p()$	Likelihood of an event or observation (0 - 1)
Prevalence	$prev, p(D)$	fraction of a population with a disease
True positive	$TP,\ p(F\|D)$	Fraction of population WITH a disease who have a POSITIVE finding
True negative	$TN,\ p(\neg F\|\neg D)$	Fraction of population WITHOUT a disease who have a NEGATIVE finding
False positive	$FP,\ p(F\|\neg D)$	Fraction of population WITHOUT a disease who have a POSITIVE finding
False negative	$FN,\ p(\neg F\|D)$	Fraction of population WITH a disease who have a POSITIVE finding
Sensitivity	$sens$	Probability of presence of finding if disease is present
Specificity	$spec$	Probability of absence of finding if disease is absent
Predictive positive value	PPV	Probability of disease if finding is present High PPV is confirmatory for presence of disease (rule in)
Predictive negative value	PNV	Probability of absence of disease if finding is absent High PNV is confirmatory for absence of disease (rule out)
Odds ratio	$o() = \frac{p()}{1-p()}$	$\frac{p(\text{hypothesis is true})}{p(\text{hypothesis is false})}$

4.3 Equations

$$TP + FN = p(D)$$

$$TN + FP = p(\neg D)$$

$$TP + TN + FP + FN = p(D) + p(\neg D) = 1$$

$$TP + FP = p(F)$$

$$TN + FN = p(\neg F)$$

$$sens = \frac{TP}{TP + FN} = \frac{p(F|D)}{p(D)}$$

$$spec = \frac{TN}{TN + FP} = \frac{p(\neg F|\neg D)}{p(\neg D)}$$

Baye's Theorem:

$$PPV = p(D|F) = p(D)\frac{p(F|D)}{p(F)}$$
$$= \frac{TP}{TP+FP} = \frac{sens \cdot prev}{sens \cdot prev + (1-spec)(1-prev)}$$

$$PNV = p(\neg D|\neg F) = p(\neg D)\frac{p(\neg F|\neg D)}{p(\neg F)}$$
$$= \frac{TN}{TN+FN} = \frac{spec \cdot (1-prev)}{spec \cdot (1-prev) + (1-sens) \cdot prev}$$

$$\text{Prior odds ratio} = \frac{TP+FN}{TN+FP} = \frac{p(D)}{p(\neg D)}$$

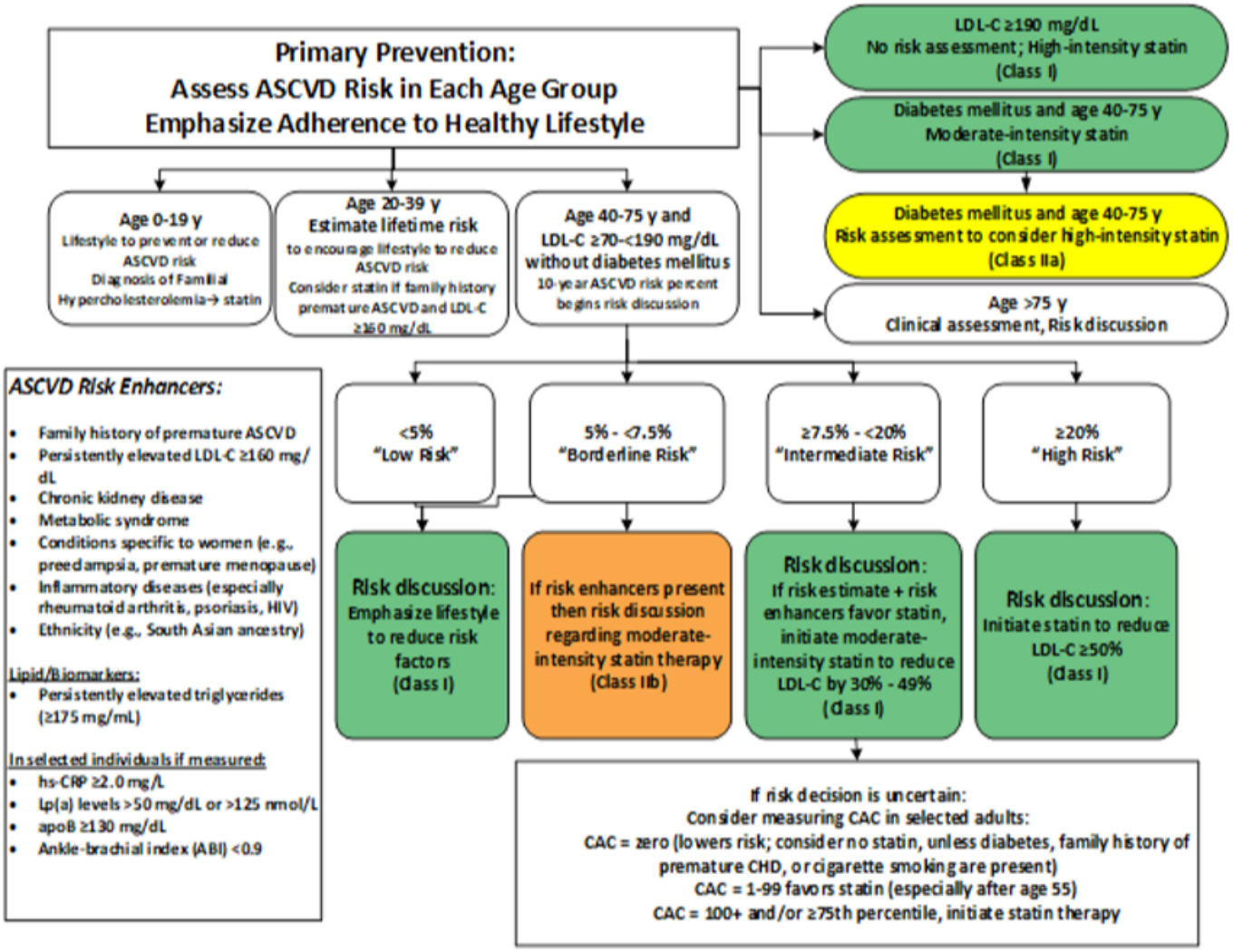
$$\text{Likelihood ratio} = \frac{sens \cdot (1-prev)}{(1-spec) \cdot (prev)} = \frac{p(F|D)}{p(\neg F|\neg D)}$$

$$\text{Posterior odds ratio} = \frac{TP}{FP} = \frac{p(D|F)}{p(\neg D|F)}$$

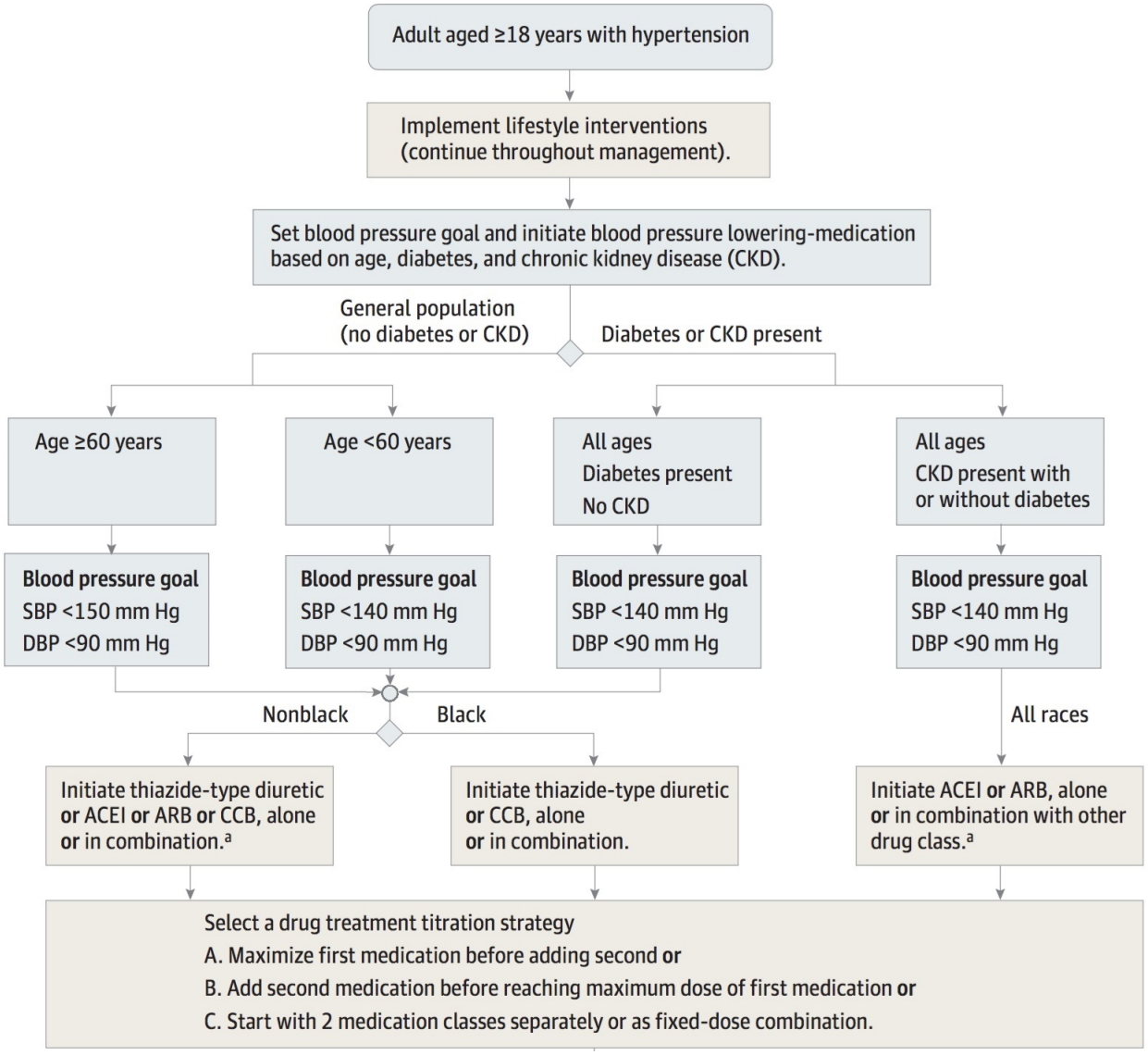
$$= \text{Prior odds ratio} \cdot \text{likelihood ratio}$$

5 Guidelines

5.1 Cholesterol



5.2 Hypertension



6 "Difficult" Patients

6.1 Techniques to satisfy nonstandard agendas

- Flattery: "You're such a great person for giving me what I want"
- Guilt: "You're such a lousy person for not giving me what I want"
- Pity: "It will be terrible for me if you don't give me what I want"
- Threat: "It will be terrible for you if you don't give me what I want "
- Disruption: "I am going to be a nuisance if you don't give me what I want"
- Lies: "The dog ate my ****, " etc.

6.2 Archetypes

Dependent Clinger
Corresponds to anxious/hypersensitive personality characteristics.
Driven by somatic preoccupation and catastrophic thinking
Naive and seductive, dramatic and suggestible; requires constant reassurance and attention.
Views the provider as inexhaustible and their needs as bottomless.
Initial provider-patient relationship involves extreme gratitude and making the provider feel special.
Common behaviors include challenging and violating time, space and resource boundaries (e.g., visits that routinely run over scheduled appointment time, frequent "emergency" contact outside of office hours, insatiable requests for elaborate/obscure laboratory tests, or the latest/expensive medication for routine ailments)
Evoked feelings: Aversion to contact
Recommended approaches:
1. Set firm limits as early as possible and maintain them.
2. Avoid promises that cannot be kept.

Entitled Demander
Corresponds to narcissistic personality characteristics.
Driven by anger at perceived injury, rejection and/or lack of attention
Overtly hostile, intimidating, guilt-inducing and bullying. Insistence upon attention, control and pointing out inadequacies
Evoked feelings: Fear and a wish to counterattack/thwart entitlement.
Recommended approaches:
1. Rechannel entitlement in direction of good medical care.
2. Tireless repetition that patient deserves first rate care.
3. Stressing that the provider and not the patient is most capable of determining the care that is indicated and will provide it

Manipulative Help Rejecter

Corresponds to passive-aggressive personality characteristics.
Driven by fear of abandonment
A vicious cycle where the satisfaction of having needs met requires the existence of needs
Opposite of entitled: "Nothing will help!"
What is sought is not cure but care; they seek an undivorcible marriage with an inexhaustible caregiver. As a result, may sabotage care.
Losing the symptom implies losing the relationship; a new symptom will develop or an old one will recur.
Evoked feelings: Pessimism, inadequacy, and guilt
Recommended approaches:
1. "Share" the pessimism
2. Emphasize ongoing treatment, not cure
3. Suspect underlying depression and consider psychiatric evaluation

Self-Destructive Denier

Corresponds to borderline personality characteristics.
Driven by the wish to have their rage observed and understood
Profoundly dependent and have given up hope ("chronic suicidality")
These patients "glory" in their own destruction
These patients furiously defeat attempts to preserve their lives
Evoked feelings: Malice, secret wish that patient will die and get it over with
Recommended approaches:
1. Lower personal expectations of delivering "perfect care"
2. Preserve the denier as long as possible as if they had a terminal illness
3. Obtain psychiatric consultation to determine if treatable depression exists

6.3 Universal Upset Person Protocol (UUPP)

- You find yourself facing an upset person. **SAFETY FIRST!!**
- Don't ignore the emotion - name it
  "You look/sound really upset"
- Person either agrees or renames the emotion
- Demonstrate a willingness to emotionally engage
  "Tell me all about it/tell me what happened"
- Demonstrate empathy
  "I'm so sorry this is happening to you/you feel this way"
- "What would you like to happen now"
- Close the loop
  "Let me know if I'm correct about what you are saying:"
- Manage expectations, set limits, define boundaries, re-direct when necessary (avoid hard "no" when possible)
  "Here's what I am comfortable doing"
- "Thank you so much for telling me this"
- MOVE ON to clinical care

7 Mnemonics

7.1 Addiction - the 5 C's

- **C**hronic use
- **C**ompulsive use
- **C**ontinued use despite harm
- **C**raving
- Impaired **C**ontrol over use

7.2 Behavioral Assessment - BATHE

- **B**ackground
- How does this **A**ffect you
- How does this **T**rouble you
- What have you done to **H**andle
- **E**ngage

7.3 Bipolar Disease - DIGFAST

- **D**istractibility
- **I**ndiscretion
- **G**randiosity
- **F**light of ideas (racing thoughts)
- **A**ctivity increase
- **S**leeplessness
- **T**alkativeness (pressured speech)

7.4 Depression - SIGECAPS

- **S**leep (insomnia or hypersomnia)
- Loss of **I**nterest (anhedonia)
- **G**uilt (also hopelessness, helplessness, worthlessness)
- Lack of **E**nergy
- Inability to **C**oncentrate (or indecisiveness)
- **A**ppetite change
- **P**sychomotor retardation/agitation
- **S**uicidal thoughts

7.5 Disease Characteristics

Dressed In a Surgeon's Gown, Every Physician Might Make Some Signficant Progress

- **D**efinition/diagnostic criteria
- **I**ncidence/prevalence
- **S**ex
- **G**eography
- **E**tiology
- **P**athogenesis
- **M**acroscopic pathology
- **M**icroscopic pathology
- **S**ymptoms
- **S**igns
- **P**rognosis

7.6 Headache Red Flags: SNOOP

- **S**ystemic symptoms (fever, weight loss, myalgias/arthralgias)
- **N**eurologic signs or symptoms
- **O**nset (rapid, e.g. thunderclap)
- **O**lder age (>40)
- **P**attern change, **P**ostural

7.7 Metabolic Syndrome - H-SPOT

- **H**DL (Low)
- **S**ugar (Hyperglycemia)
- **P**ressure (Hypertension)
- **O**besity
- **T**riglycerides (High)

7.8 Low Back Pain Red Flags: TUNAFISH

- **T**rauma
- **U**nexplained weight loss
- **N**eurologic signs/symptoms
- **A**ge (greater than 50)
- **F**ever
- **I**ntravenous drug use
- **S**teroid use
- **H**istory of cancer

7.9 Obstructive Sleep Apnea: STOP-BANG

STOP	BANG
Snoring	**B**MI > 35
Tiredness (daytime)	**A**ge > 50
Observed apnea	**N**eck > 16(F) 17(M)
High blood **P**ressure	**G**ender (Male)

7.10 Acute Pancreatitis: AIM HIGHEST

- **A**utoimmune
- **I**atrogenic
- **M**edication
- **H**ypercalcemia
- **I**nfectious
- **G**allstones
- **H**ereditary
- **E**thanol
- **S**tructural
- **T**riglycerides

7.11 Personality Disorders

Weird	**A**ccusatory	Paranoid
	Aloof	Schizoid
	Awkward	Schizotypal
Wild	**B**ad	Antisocial
	Borderline	Borderline
	Boastful	Narcissistic
	Flam**B**oyant	Histrionic
Worried	**C**owardly	Avoidant
	Compulsive	Obsessive-Compulsive
	Clingy	Dependent

7.12 Pituitary Hormones - FLAP GOAT

- **F**SH (anterior)
- **L**H (anterior)
- **A**CTH (anterior)
- **P**rolactin (anterior)
- **G**H (anterior)
- **O**xytocin (posterior)
- **A**DH (posterior)
- **T**SH (anterior)

7.13 Polyneuropathy - DANG THERAPIST

- **D**iabetes
- **A**lcohol
- **N**utritional (Vitamin B12, B1, B6, E deficiency)
- **G**uillain-Barre (AIDP)
- **T**oxins (Lead, arsenic, drugs)
- **HE**reditary (Friedreich's ataxia, Charcot-Marie-Tooth, Refsum's disease)
- **R**ecurrent (CIDP)
- **A**myloid
- **P**orphyria
- **I**nfection (Mononucleosis, leprosy, HIV, Lyme, diptheria)
- **S**ystemic (uremia, SLE, hypothyroidism)
- **T**umors (paraneoplastic, myeloma, MGUS)

7.14 Screening algorithm - DEFCON

- **D**efine the population at risk
- **E**nrich - biomarkers, sentinel signs/symptoms
- **F**ind by imaging/exploratory testing
- **CON**firm - biopsy/definitive testing

7.15 Vomiting - VOMITING

- **V**estibular/ **V**agal reflex (e.g. pain)
- **O**piates
- **M**igraine/ **M**etabolic (e.g. DKA)
- **I**nfection
- **T**oxicity (including drugs)
- **I**ncreased ICP/Alcohol **I**ngestion
- **N**eurogenic
- **G**astrointestinal/ **G**estation

8 Scoring Systems

8.1 Centor Strep Score

Tonsillar exudate or erythema	+1
Anterior cervical lymphadenopathy	+1
Absence of cough	+1
Fever	+1
Age 3-14	+1
Age 14-45	0
Age $>$ 45	-1

9 The Coding Game

The Coding Game - no fun to play
But do it right to get more pay
Document, but be aware
You're poaching time from patient care

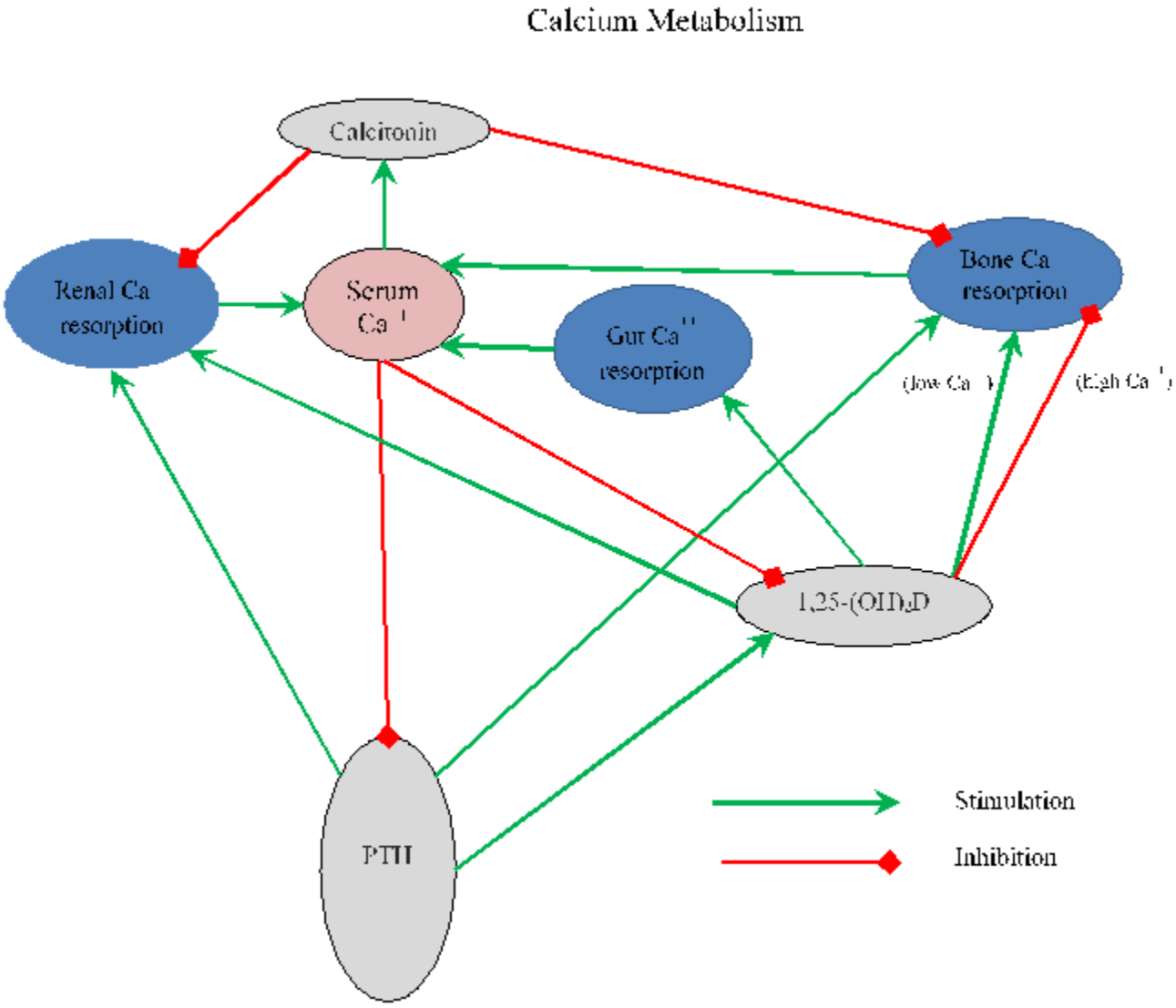
9.1 Coding: Documentation of History

4 components		
Chief complaint		
HPI	8 components	Location Quality Severity Duration Timing Context Modifying factors Associated signs/symptoms
ROS	14 components	Constitutional Symptoms Eyes Ears, Mouth, and Throat Cardiovascular Respiratory Gastrointestinal Genitourinary Musculoskeletal Integumentary (skin and/or breast) Neurological Psychiatric Endocrine Hematologic/Lymphatic Allergic/Immunologic
PSFH	3 components	Personal History Social History Family History

9.2 Coding: Documentation of Physical Exam

Body areas	Organ systems
Head/face	Constitutional
Neck	Eyes
Chest	ENT
Abdomen	Cardiovascular
Genitalia	Respiratory
Back	GI
RUE	GU
LUE	Musculoskeletal
RLE	Skin
LLE	Neurologic
	Psychiatric
	Hem/Lymph/Imm

10 Basic Science stuff



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