

Role of Physical Exam, General Observation, Skin Screening & Vital Signs

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POM – September 18, 2019

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Reading, Prep & Other Tools

- Bate's Guide To The Physical Examination and History Taking, 12th ed - Lynn Bickley
- Practical Guide To Clinical Medicine, Charlie Goldberg and Jan Thompson – Created *explicitly* for USCD SOM
<http://meded.ucsd.edu/clinicalmed/> & Links to other on-line resources
<http://meded.ucsd.edu/clinicalmed/links.htm>
- Catalog of Clinical Images <https://meded.ucsd.edu/clinicalimg/>
- Digital DDX <http://digitalddx.com/>

Check Lists

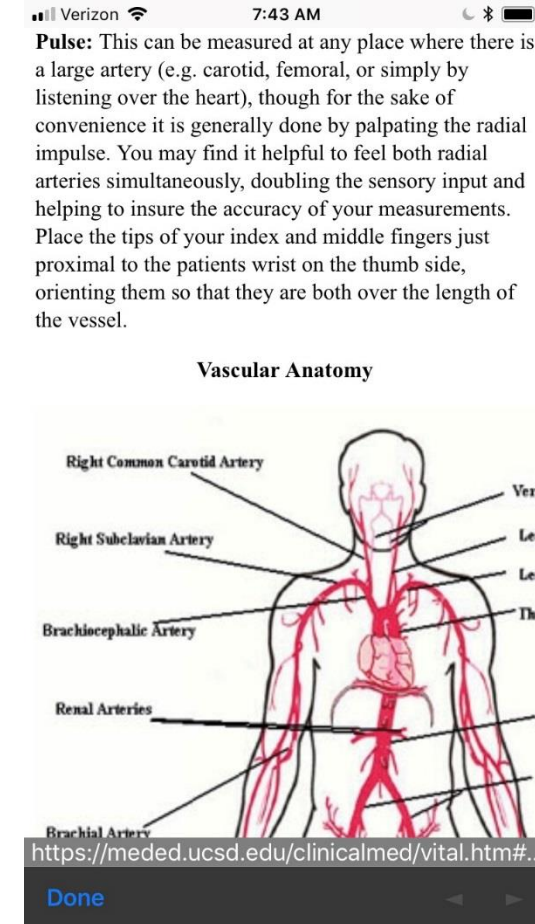
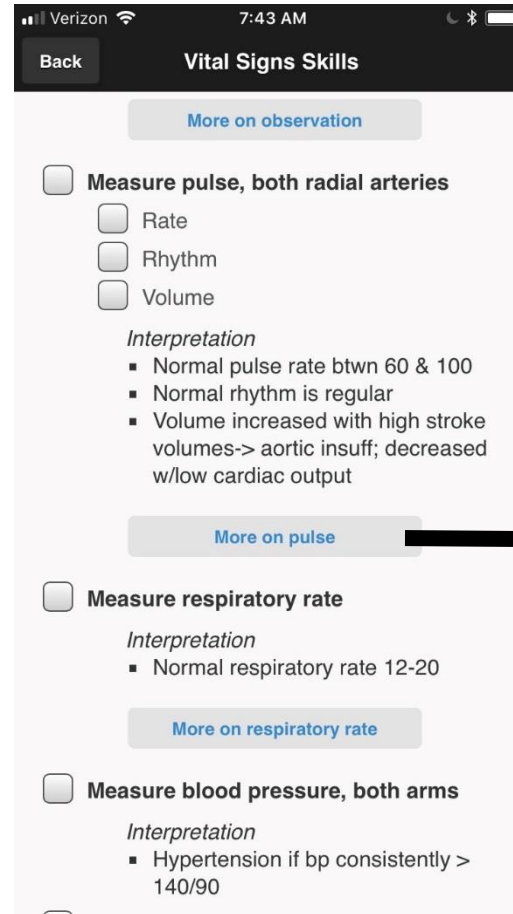
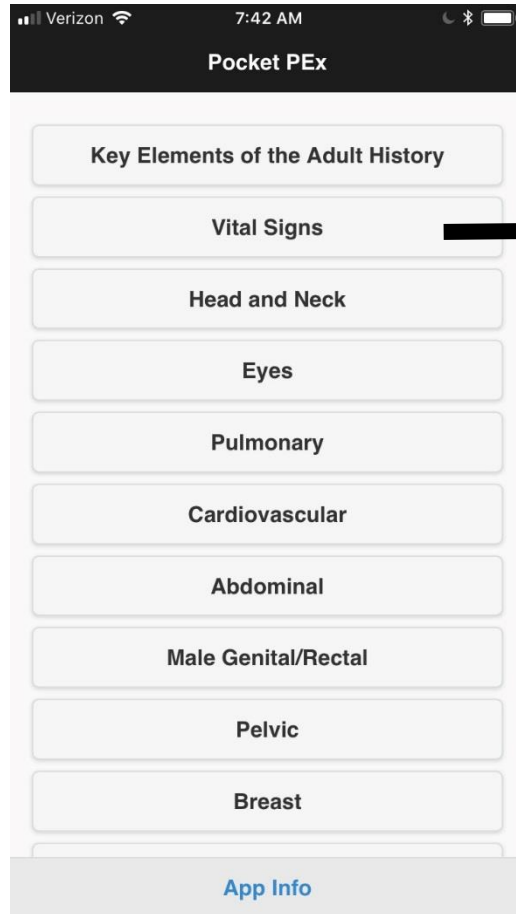
- Each session has a check list
 - Posted on POM1 Web Site – example below

Summary of Skills – Vital Signs

- 1. Wash Hands
- 2. General observation
- 3. Measure pulse in both radial arteries, noting: **rate, rhythm** and **volume**
- 4. Measure blood pressure, both arms, using stethoscope
(confirm by measuring blood pressure by palpation)
- 5. Measure blood pressure and pulse after positional changes (orthostatic)
- 6. Measure respiratory rate
- 7. Wash Hands

- Also via PocketPex App (free):
 - [iPhones](#), [android phones](#)

Pocket PEx



Pulse: This can be measured at any place where there is a large artery (e.g. carotid, femoral, or simply by listening over the heart), though for the sake of convenience it is generally done by palpating the radial impulse. You may find it helpful to feel both radial arteries simultaneously, doubling the sensory input and helping to insure the accuracy of your measurements. Place the tips of your index and middle fingers just proximal to the patients wrist on the thumb side, orienting them so that they are both over the length of the vessel.

Purpose Of The Physical Exam

- **Screening** for occult disease, assure **good health**, develop **relationship** w/patient
- Identify **cause** of **symptoms**, **guide** use of adjuvant **testing**
- Follow **known disease**, assist in adjusting **treatment**
- Part of **mystique & magic** of medicine – power of touch & observation
- *****Exam** inextricably **linked** to the **History*****

Review Of Systems (ROS) & Connection to Clinical Care

- List of questions, arranged by organ system (e.g. cardiac, pulmonary, neurologic, etc.) designed to uncover dysfunction and disease
 - Screening tool asked of every patient
 - Asked only of patients who fall into particular risk categories
 - Asked to better define the likely causes of a presenting symptom

Practical Approach To ROS

- Gain facility, so can apply right questions @ right time
 - grouped by organ system
- Helps to understand why these ?s, where they lead
- Example:
 - Patient w/cardiac RFs, [Cardiovascular ROS](#)
 - If positive for Chest Pain → Define w/“OLD CARTS”
Onset, **L**ocation/radiation, **D**uration, **C**haracter, **A**ggravating factors, **R**elieving factors, **T**iming and **S**everity

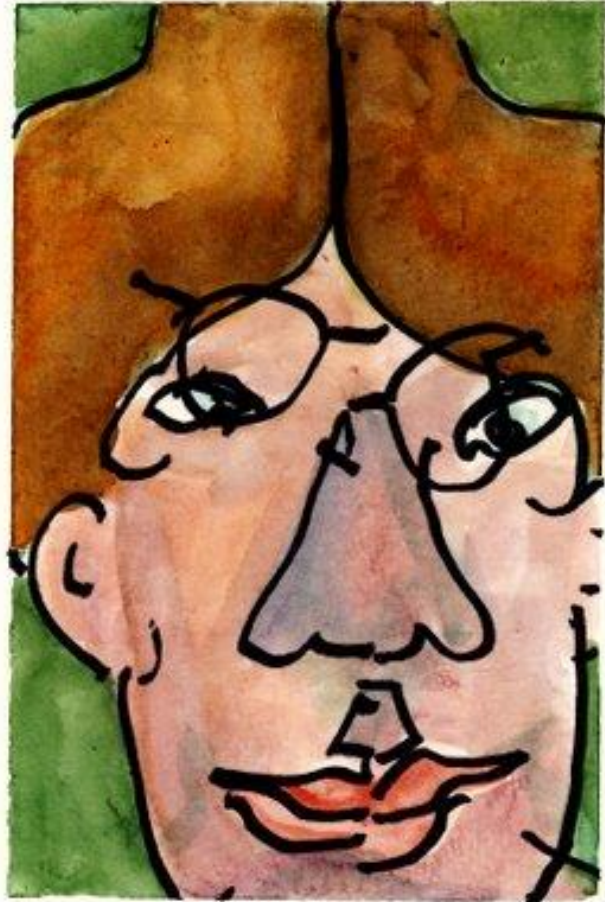
Physical Exam – *One* Piece of the Clinical Puzzle



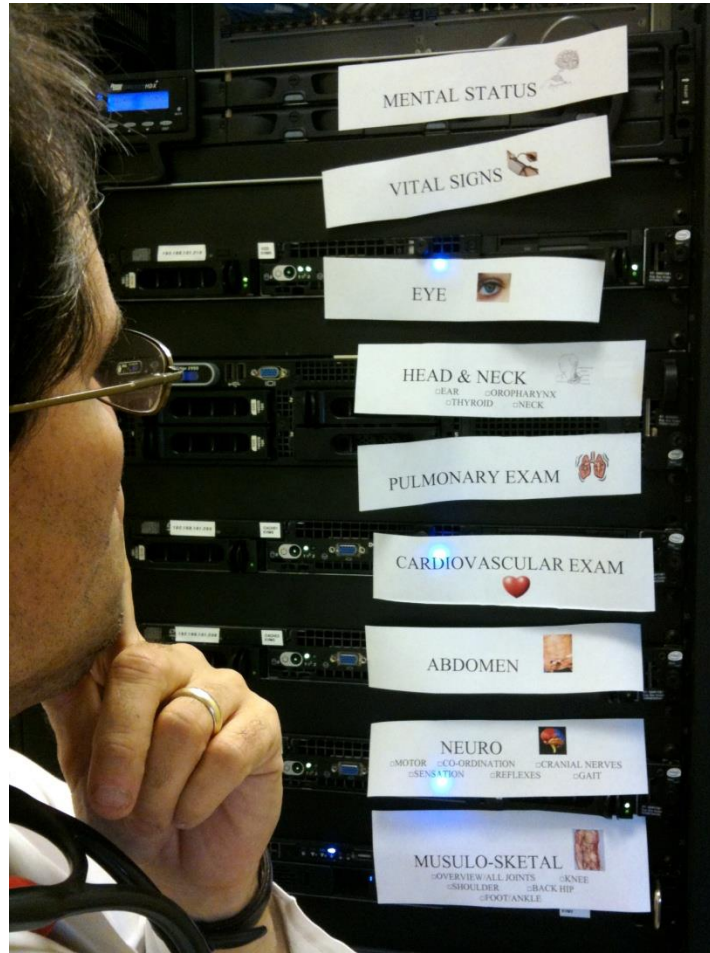
You Have To Put All The Elements Together Correctly...



... To Get a Reasonably Accurate Picture



The Modular Exam: Which Examination Components Do You Use????

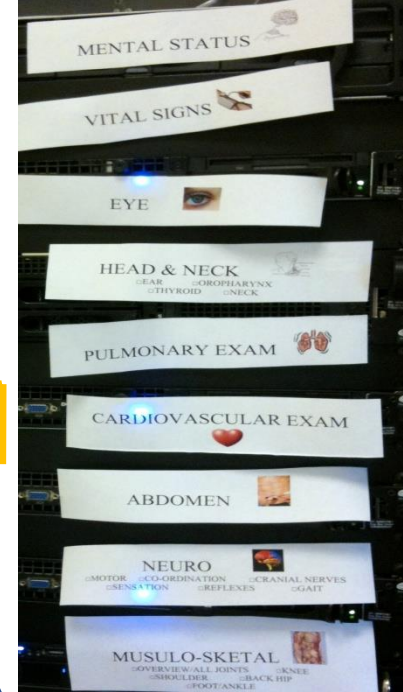


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It Depends on the Situation.....

What Parts Should I Examine?



50 yo w/Chest pain & Shortness of breath??

70 yo w/generalized weakness, falls & weight loss???



16 yo w/acute knee pain after soccer injury???

Which Exam, When?

- Components of exam performed depend on situation, what you're looking for
- With time & experience, you'll learn to:
 - Select “exam module(s)” v comprehensive exam based on clinical situation
 - How to link modules together so that the exam flows well
- Recognize that History & ROS are also modular – based on patient, symptoms, epidemiology, etc
- * **Each aspect must be done well to have value!**

Putting it all together: Using Medical Tools To Define the Patient's Problem



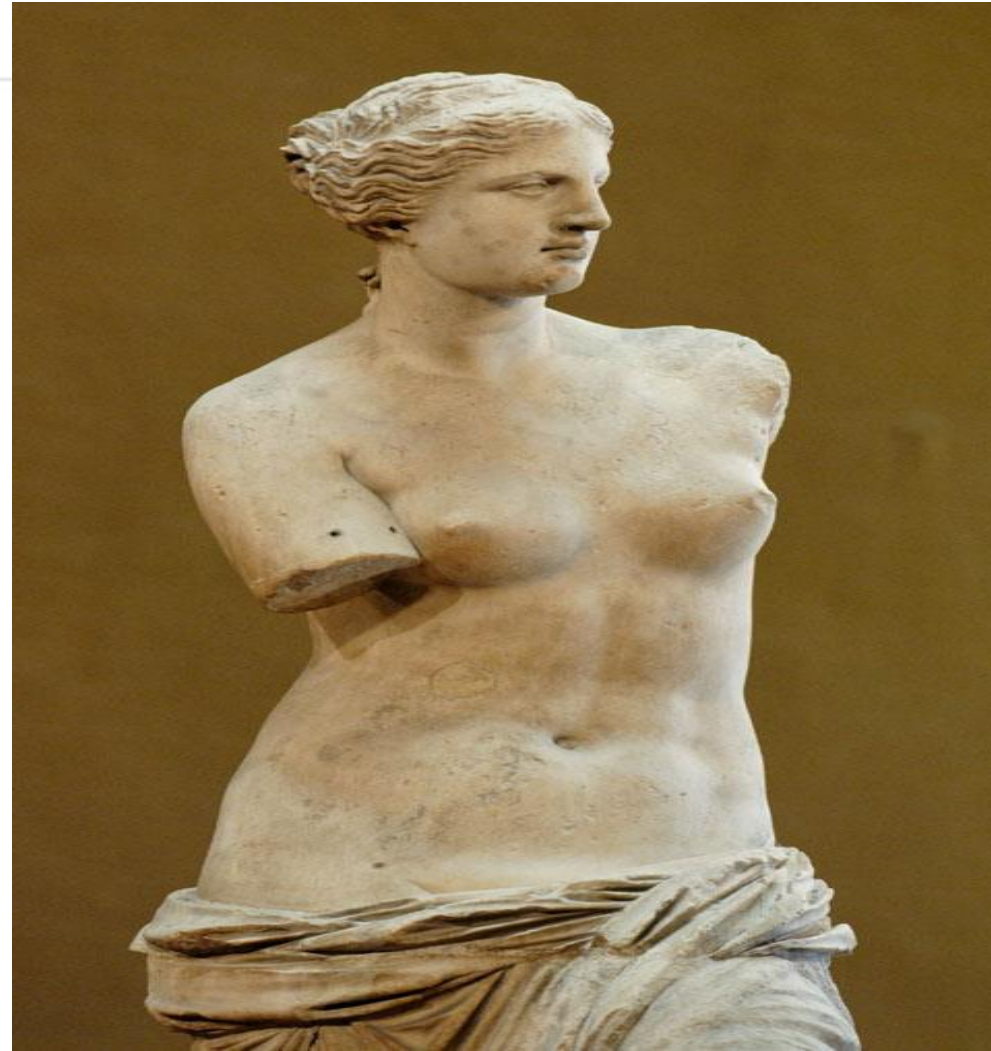
Putting it all together: Using Medical Tools To Define the Patient's Problem



Putting it all together: Using Medical Tools To Define the Patient's Problem



Putting it all together: Using Medical Tools To Define the Patient's Problem



Why Learning To Do This Well Is Important

- History (Hx) largely obtained from **patient..**
 - Smaller contribution from other data sources (e.g. prior imaging, studies, notes, etc.).
- Physical Exam (PE) findings based on your technical skills
- Accurate data (Hx and PE) is “construction material” for building your diagnostic house



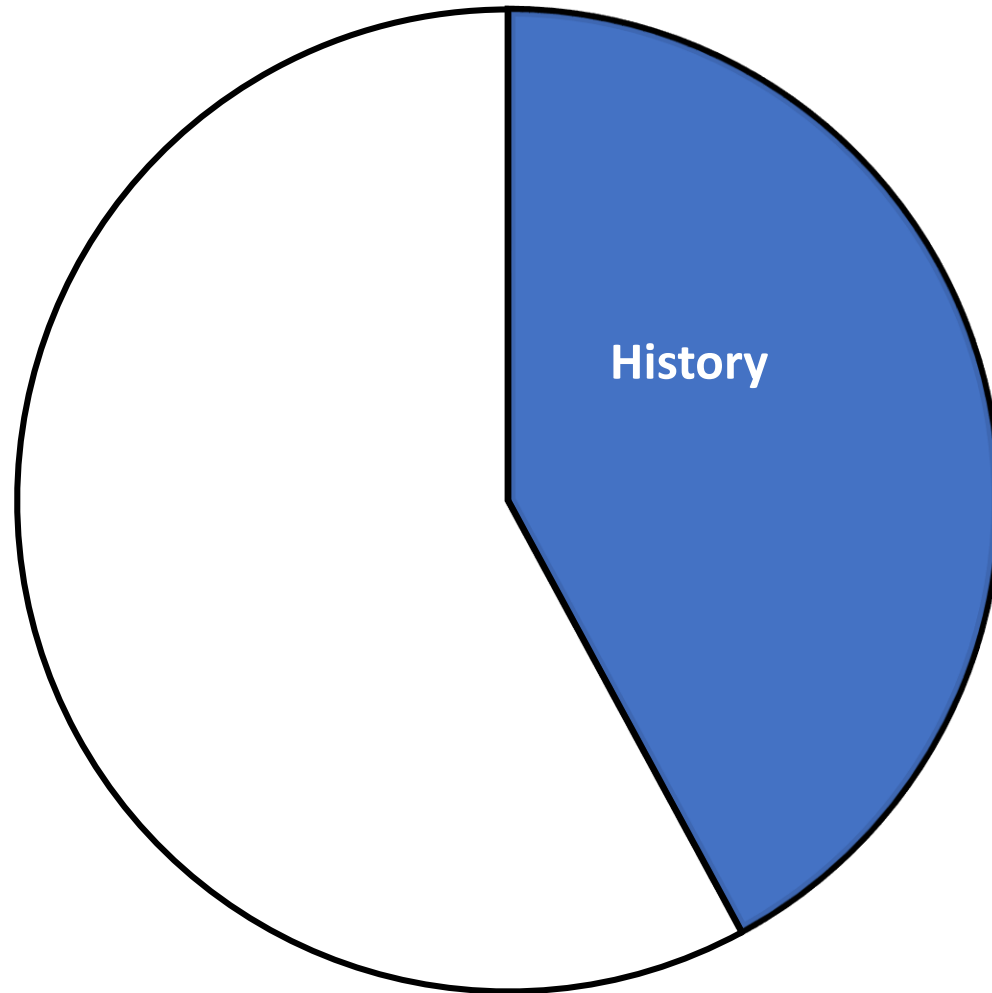
Diagnostic House of Cards

Vs



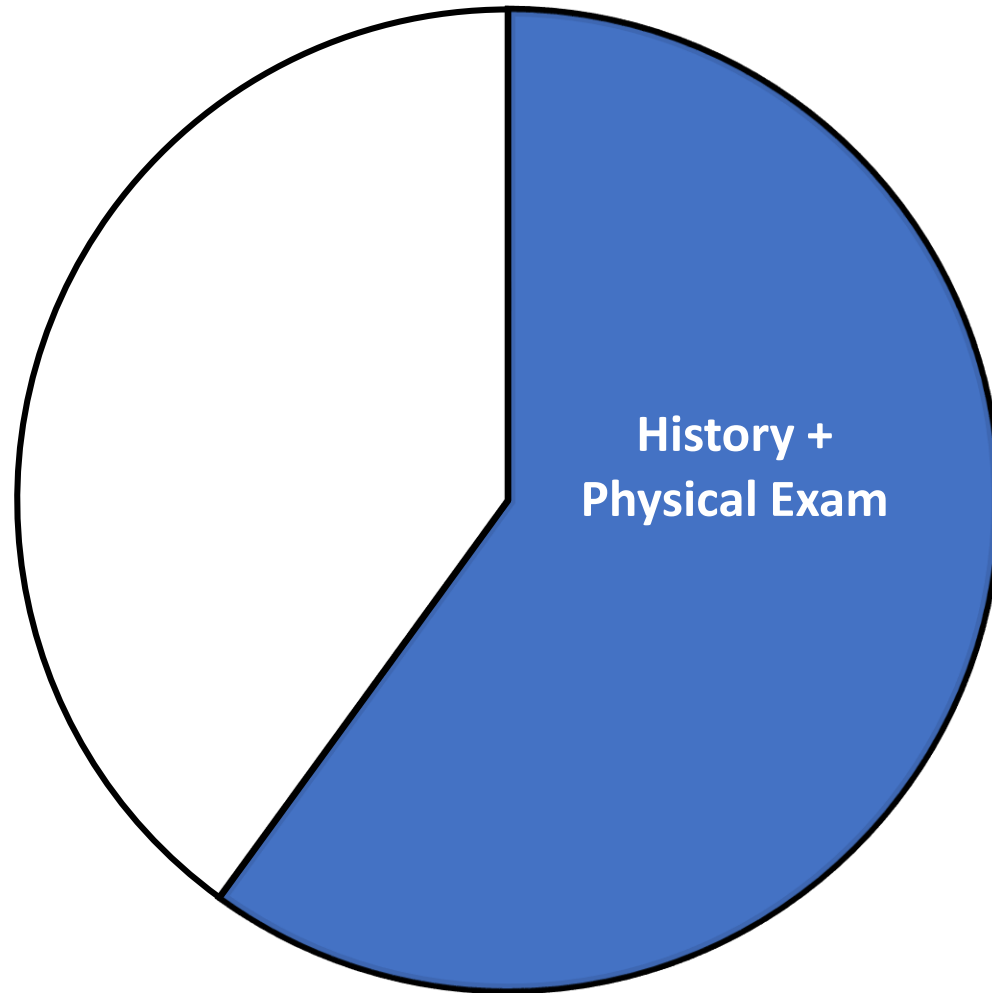
Diagnostic House of Brick

MAKING A CLINICAL DIAGNOSIS: THE POWER OF HISTORY



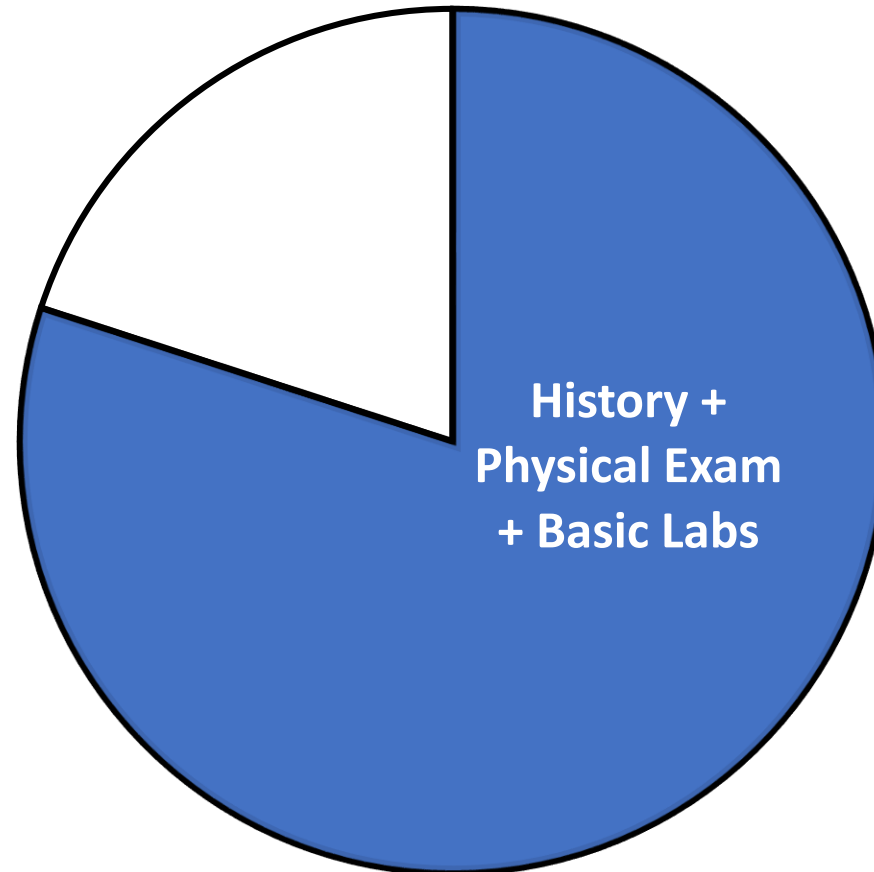
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Peterson MC. West J Med 1992; 156: 163-5
Paley L. Arch Int Med 2011; 171: 1394-6.

MAKING A CLINICAL DIAGNOSIS: THE POWER OF HISTORY + PE



Hampton JF. Br Med J 1972; 2: 486-9.
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MAKING A CLINICAL DIAGNOSIS: THE POWER OF HX + PE + BASIC LABS



Hampton JF. Br Med J 1972; 2: 486-9.
Peterson MC. West J Med 1992; 156: 163-5
Paley L. Arch Int Med 2011; 171: 1394-6.

Moving on to the Physical Exam: General Rules about the Patient Encounter

- Introduce yourself
- Wash your hands
 - NEJM - Hand Hygiene Video:
<http://www.nejm.org/doi/full/10.1056/NEJMvcm0903599#figure=preview.jpg>
- Set up for success
 - Quiet room, good lighting, warm space
 - Make sure you understand and are understood”
- Be respectful
 - Exchange of sensitive info isn’t “normal”
- Go slow & don’t cause pain
- Think and observe throughout

Become A Data Gathering Machine!

- Exam begins as soon as you see patient:
- General appearance
 - Sad, happy, angry, pain, anxious
- Patient's Dress (neat, disheveled, work clothing)?
- Gait → While walking to office
- Accompanied? By whom?
- Carrying things (books, bags, possessions)?
- While waiting → reading, sleeping, snoring/apnea?
- Etc.....

Patient's Ability To Engage/Interact Normally (*intuitive* mental status)

Ability to pay attention, focus & respond appropriately

- Ability to understand you?
- Are you able to understand them?
- Answers to questions are appropriate:
 - Content
 - Emotional response

*Above assessment done during all daily interactions – you just don't think about it! – if all ok, no further evaluation

- When abnormal → requires more sophisticated approach to define & characterize → formal mental status exam

Vital Signs

- There's a reason they're not called *Casual Signs!*
- Pulse, Blood Pressure, Respiratory Rate, Temperature
- Provide insight into:
 - **Asymptomatic disease** (e.g. hypertension)
 - Degree of **perturbation** caused by **acute** disease (e.g. dehydration)
 - **Compensation** for chronic diseases

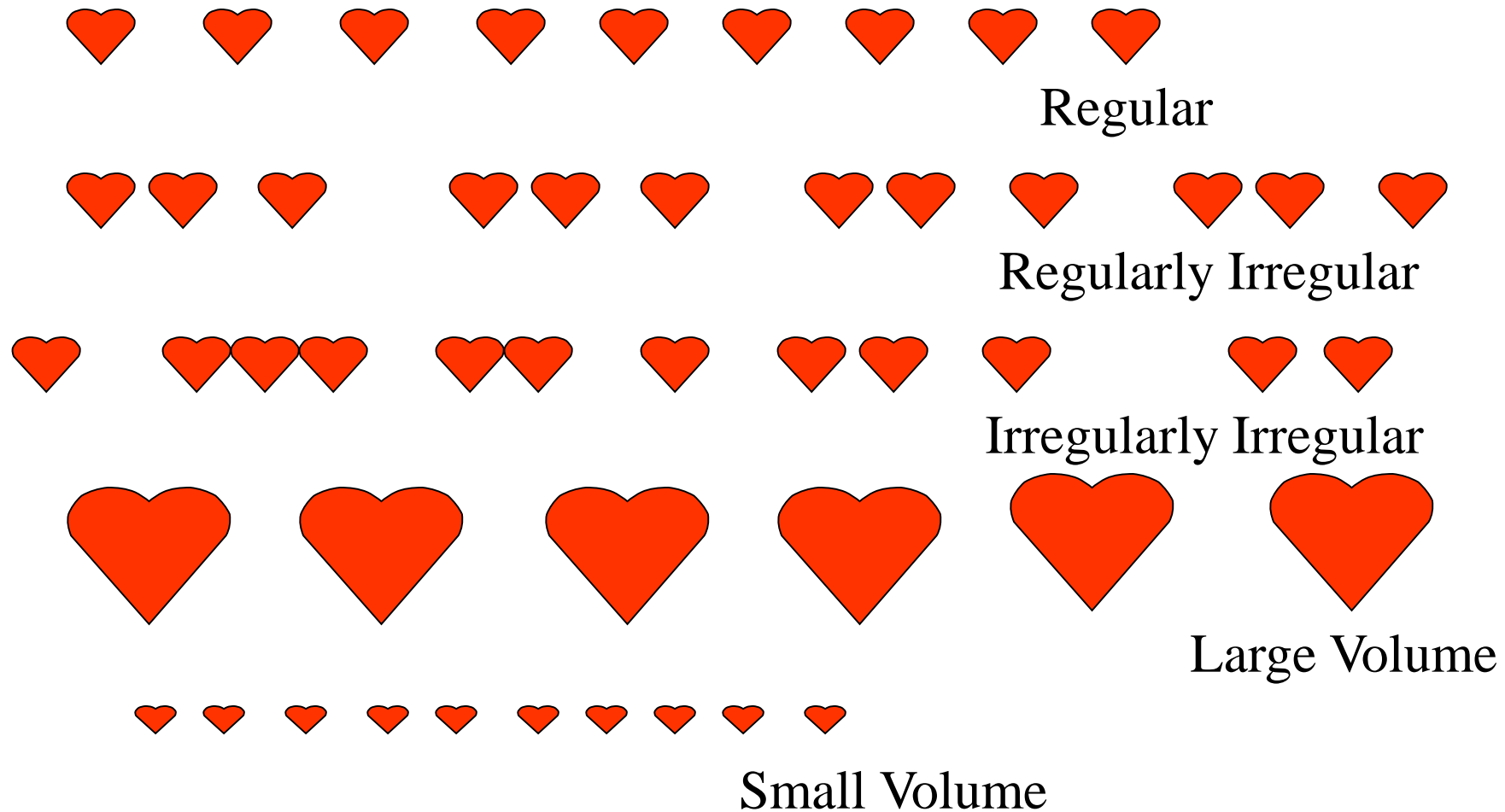
Pulse

- **Rate (heart beats/minute):** Generally measure for 15 seconds (get a watch!) x 4 – unless particularly slow or fast (then measure x 60 sec)
- **Regularity** – Normal → metronomic
 - Other:
 - Irregularly irregular
 - Regularly irregular
- **Volume** – Subjective sense of “how full” it feels

Rhythm Simulator:

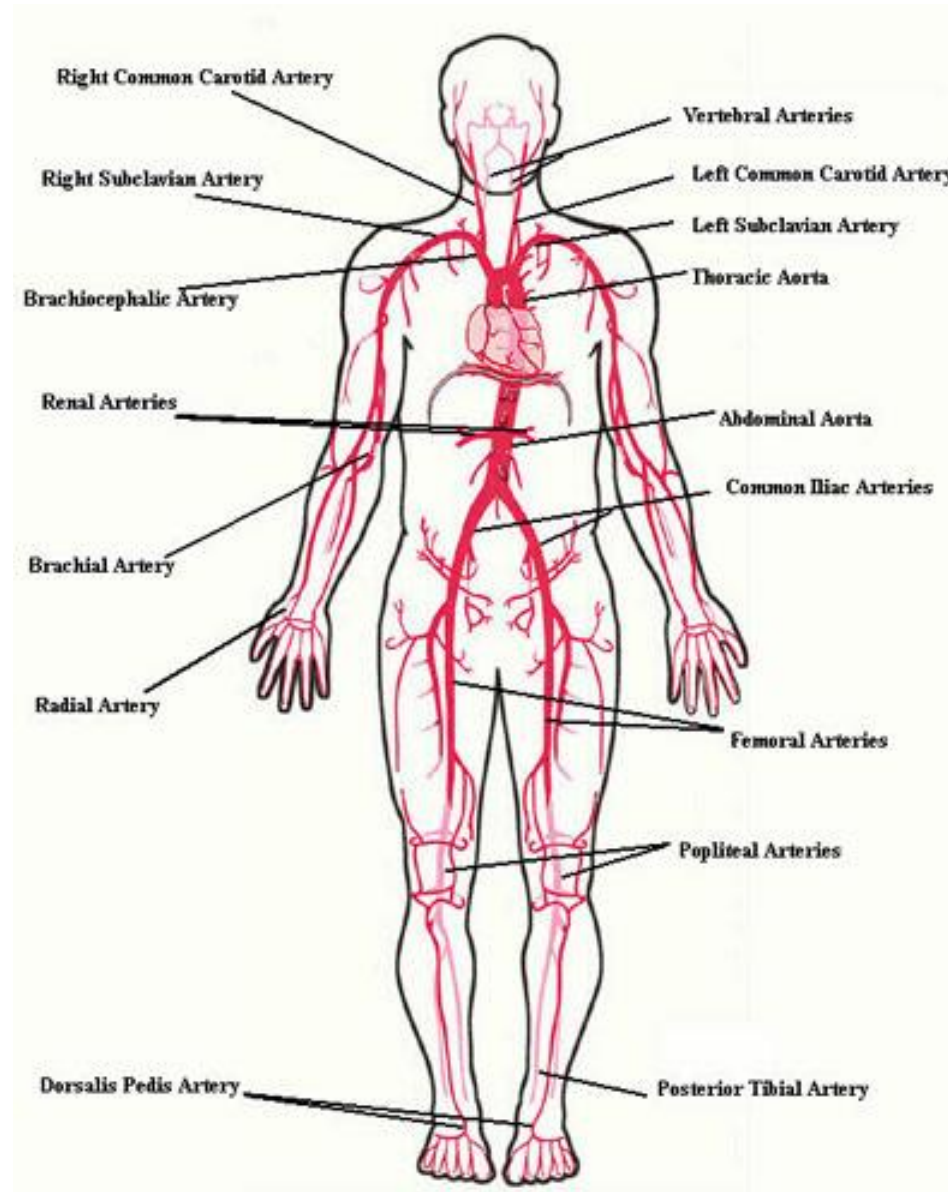
<http://www.skillstat.com/tools/ecg-simulator>

Variations In Rhythm and Volume

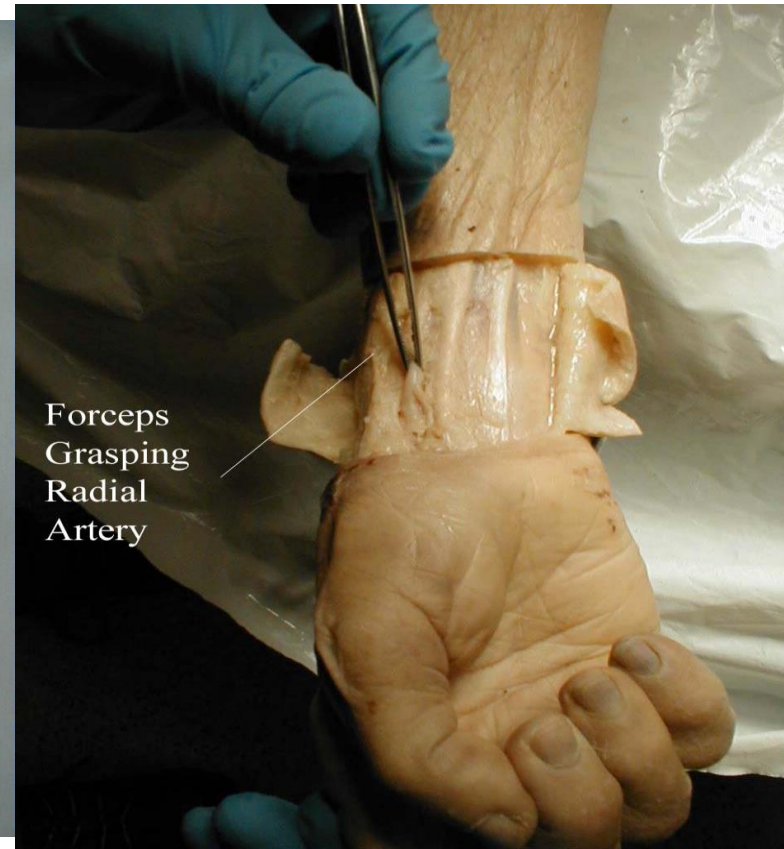


Measuring The Pulse - Anatomy

Can measure at any artery, or over heart –
Radial artery is most convenient



Radial Artery Anatomy



Measuring Pulse - Technique



- Find radial artery
- Place index & middle fingers (not thumb) oriented along artery length-wise
- Count number of impulses in 15 seconds – multiply x 4 =s beats/min
- Note also:
 - regularity
 - strength of impulse

Measuring Blood Pressure - Physiology

- Occlude artery (usually brachial) w/cuff that provides variable amount of pressure
- Release pressure slowly
 - First audible sign of blood flow =s systolic pressure
 - Referred to as Sounds of Korotkoff
- Value at point when sound of flow disappears =s diastolic pressure.
- Measure in both arms – should be w/in 10 mmHg

Clinical Implications

- Hypertension (HTN):
 - Very common – affects > 40% of adults in US
 - Contributes to:
 - Arterial vascular disease (coronary, peripheral, cerebral, retinal)
 - Renal dysfunction
 - Heart failure
- HTN rarely causes acute symptoms
- HTN typically causes damage over time, due to duration and height of BP
- Symptoms result when target organ damage becomes clinically apparent (e.g. heart attack, stroke, heart failure, etc.)
- HTN causes disease in an additive way along with: smoking, diabetes, hyperlipidemia, family history, other risk factors
- Assessing vascular risk (and intervening) requires holistic approach

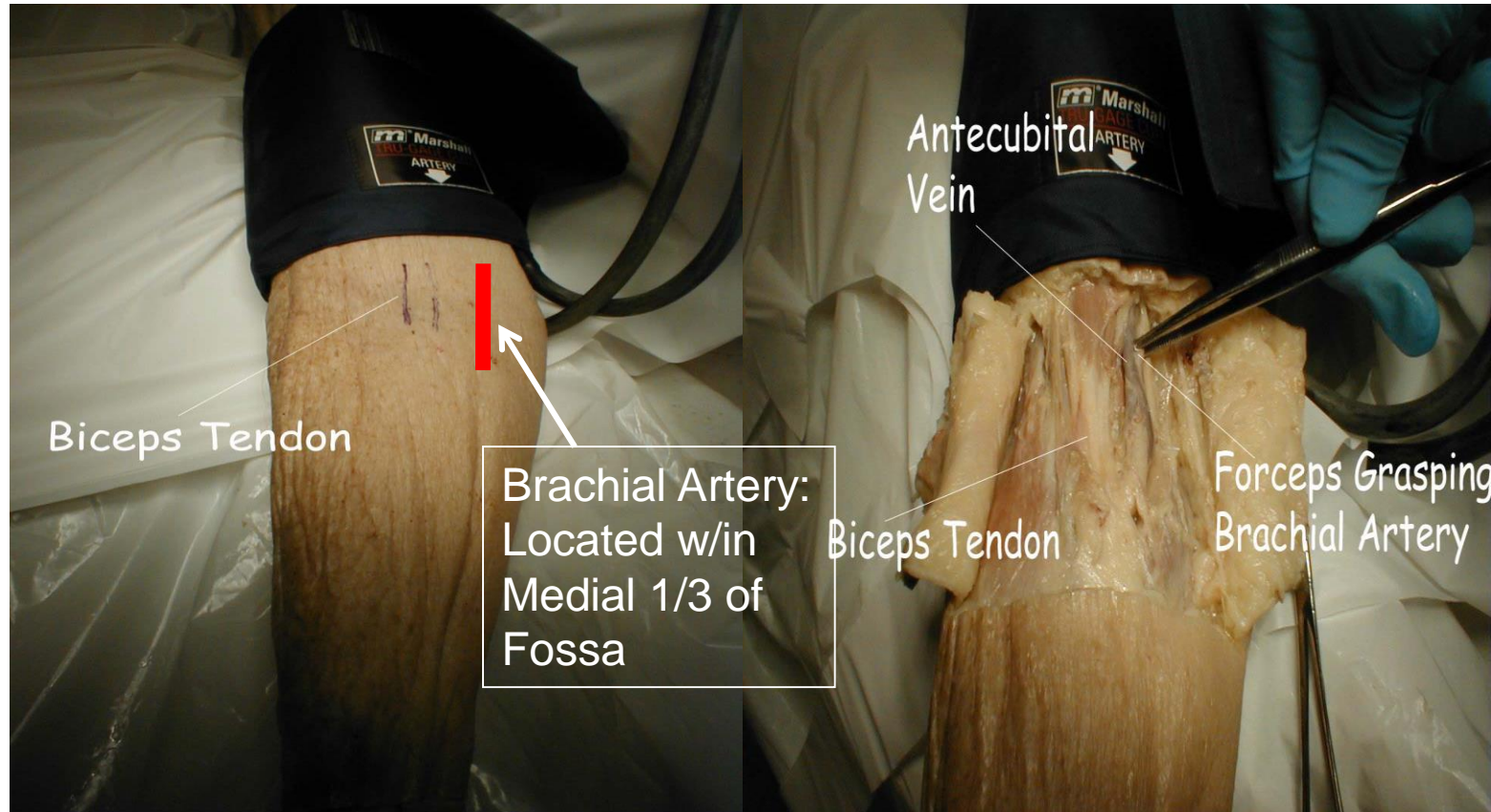
Treating The “Fire” That is Vascular Disease



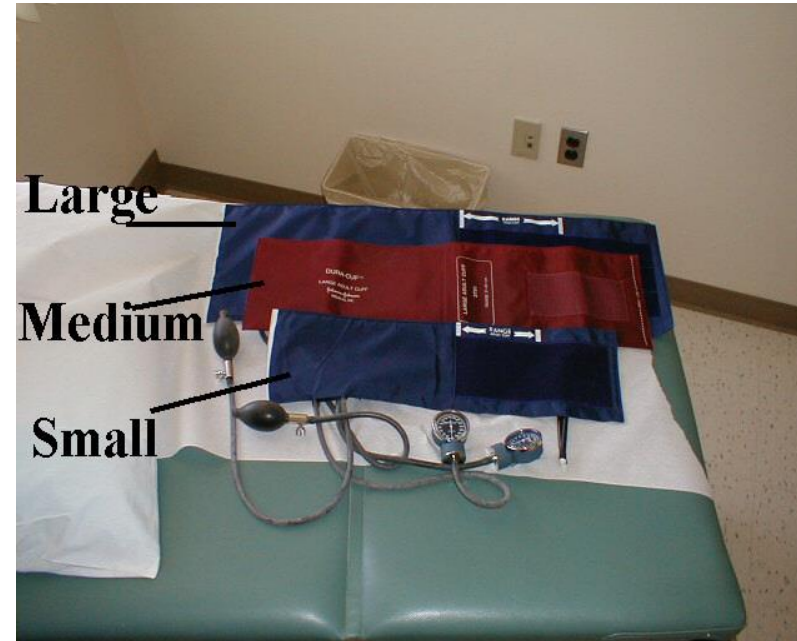
Clinical Implications (cont)

- Stages of Hypertension:
 - Normal < 120/80 mm Hg
 - Elevated: SBP 120-129 and DBP < 80 mm Hg
 - Stage I hypertension: SBP 130-139 or DBP 80-89 mm Hg
 - Stage II hypertension: SBP \geq 140 or DBP \geq 90 mm Hg
- Low end normal \sim 90/60 – No absolutes
 - First ? after obtaining a low reading \rightarrow “How do you feel?”
 - Also depends on degree of change from usual BP.
- Numerical definitions for HTN are somewhat fluid
 - Thresholds for treatment change over time (based on evolving data)
 - Current guidelines take into account
 - BP values
 - Whether atherosclerosis already established
 - Risk of atherosclerotic disease [Estimated by ACC Atherosclerotic Risk Calculator](#)
 - Functional status/what makes best sense given other co-morbid conditions, age

Anatomy of Antecubital Fossa and Brachial Artery



BP Cuff (Sphygmomanometer)

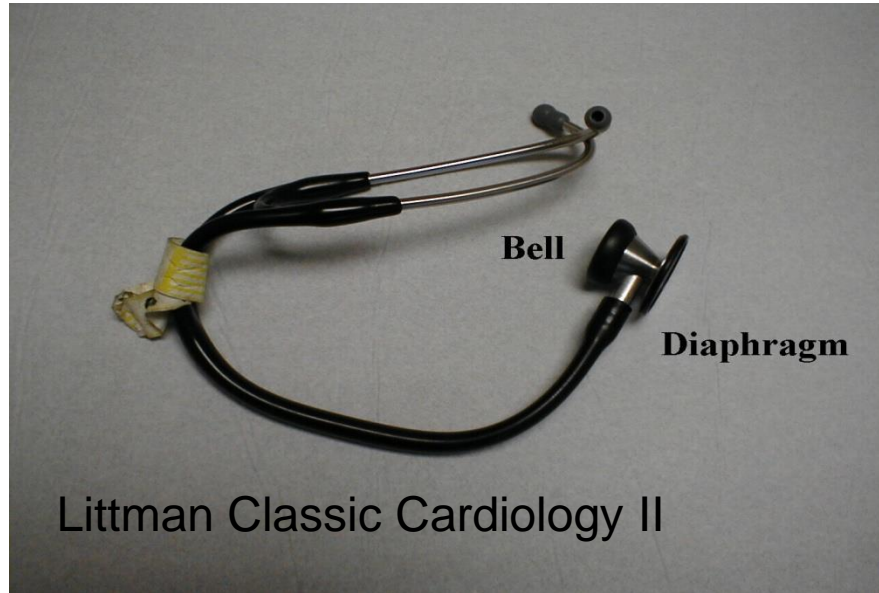


- One size doesn't fit all! If too small → BP artifactually high.
 - Length of **bladder** must reach 80% around circumference of upper arm
 - Width bladder should reach 40% around circumference upper arm

Confounding Environmental Factors

- Patient should rest, seated x 5 minutes (i.e. don't take after they've run into your office), feet flat on floor.
- No stimulants prior, if possible (e.g. coffee, cigarettes, sudafed, etc)
- Remove shirts, sweaters – except loose t- shirts - exam gown is ideal
- Errors in technique can be additive → resulting in inappropriately diagnosing pt w/HTN!

Stethoscopes



Various styles of stethoscopes – They all work – the most important part is what goes between ear pieces!

BP Measuring Technique



- Typically measure in 1 arm only
- Chose correct size cuff
- Place stethoscope in your ears, engage bell.
 - ** Review which side is bell & which the diaphragm for your stethoscope **
- Wrap cuff around arm
- Raise arm so brachial artery @ level of heart – arm should be relaxed (can also rest on table)

BP Measuring Technique (cont)



- Place bell over brachial artery area
- Inflate to ~ 160 mmHg
- First consistent sound → SBP; Loss of all sound → DBP
- Avoid moving arm, scope or cuff (makes extra noise) – also keep talking to a min!
- Mind the Gap (auscultatory gap)!
 - Sounds may fade & disappear briefly (giving false DBP) & then reappear
 - Can avoid pitfall by listening for ~ 10 mmHg to assure sound really gone.

Confirming SBP By Palpation



- Position BP cuff on arm
- Palpate radial pulse while inflating cuff w/your other hand
- Inflate to ~10 mmHg beyond point when pulse disappears
- Slowly deflate cuff while continuing to palpate – point @ which pulse reappears =s SBP
- This isn't typically done – but provides an opportunity for practice and confirmation
- Useful in noisy environments



Postural (Orthostatic) Vital Signs

- In setting where patients report postural dizziness
- In setting of significant hypovolemia (e.g. blood loss) → pulse increases & BP decreases
 - Exaggerated when change position from lying to standing (gravity → less venous return)
 - Measure BP & HR w/patient lying, sitting, then standing (after a few minutes of equilibration following each change in position)
- Postural changes present if:
 - Pulse increases by 20 and SBP decreases by 20 (not absolute)
 - Symptoms of lightheadedness/dizziness

Measuring Respiratory Rate

- Normal 12-20/min (adults)
- Observe rise & fall of chest while holding wrist & "measuring" pulse
- Measure x 30 seconds.. If slow or fast, measure x 1 minute

Temperature

- Temperature measured in setting of illness, concern re infection.
- Ear probe v Oral
- Rectal rarely used, though is most accurate

Examine Nails/Fingers: Sometimes Provides Clues to Systemic Or Local Problems



Cyanosis



Nicotine Staining



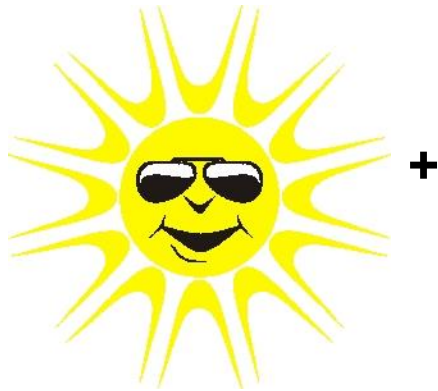
Clubbing

Assorted other hand and arm abnormalities: Shape, color, deformity



Screening Exam For Skin Cancer

- Skin =s largest organ
- Common asymptomatic disease =s cancer → epidemic in California



Sun

+



Multiple Exposures

+

Multiple
Sun Burns



Skin Cancer

Skin Screening Exam: Basic Principles

- Ask the patient if they have any areas of concern
- Full exposure → See all skin
- Particular attention → areas max exposure (face, ears, scalp)
- Look for areas that are:
 - Non-healing
 - Growing/changing shape
 - Irregular borders
 - Colored/bleeding
- Palpate for:
 - Size, firmness, depth, pain
- Boston University School of Medicine and American Academy of Dermatology: How to perform an integrated skin exam https://www.youtube.com/watch?v=3RGTsl_zi2E

Common Skin Cancers



Squamous Cell Cancer

Risk Factors; sun exposure, fair skin, immunocompromised, prior scc

Presentation: non-healing, ulcerated, firm, progressive, crusted



Basal Cell Carcinoma

Risk Factors: Fair skin, sun exposure
prior bcc

Presentation: progressive, sometimes telangiectasis, can be pearly, can be a non-healing/bleeding area, sometimes w/rolled edges



ABCDE assessment for Melanoma:
Asymmetry, irregular **B**orders, variation in **C**olor,
Diameter > 6mm, **E**volution

Additional Information From Visual DX – ABCDs of Melanoma Module:

<https://www.visualdx.com/educational-resources/melanoma-education-informed>

Additional Info About Melanoma: [Skinsight: Melanoma and skin cancer early detection](#)

Summary of Skills



- Wash hands
- General observation of patient
- Observation of hands, fingers
- Measure radial pulse → **rate, rhythm, volume**
- Measure respiratory rate
- Measure BP → both arms (for practice)
 - Can measure BP by palpation to confirm
- Assess for orthostatic changes in pulse & BP
- Screening skin exam
- Wash hands

 Time Target: < 10 min

* If Extra Time: Measure BP, P, RR after running in place