Physical Diagnosis Group # 2

We have: ortho, EM, anatomist, neuro, med/peds, MS1 &MS4 (+pseudo engineer), radiology, endo

Session 1: brainstorming (what needs to be taught?)

* Shoulder injury -> physical exam -> ultrasound for potential injury
* Hepatomegaly/spleenomegaly -> correlate percussion to edge (or scratch test) -> confirm with US for increasing confidence
* CVP (JVD et al); determining fluid status (signs of dehydration [tachy, dry mm, orthostatic, turgor] & testing US of SVC response to determine fluid responsiveness)
* Fundus, thyroid, ovaries (am I feeling what I’m supposed to be feeling?)
* Veins (finding patent veins, central)
* Concern for “if US use increases without context of PD; then PD skills decrease”
* Eye exam is so difficult; US & other easier tools (pan optic) may give some more confidence (relative to the fundoscopic exam via normal scope)
* Teach cost/effectiveness of health care delivery $ (PD vs US; pros/cons)
* Identifying unknown bumps (physical diagnosis, context of patient, sonographic signatures [fluid v fat]
* Lung exam (crackles correlate to b-lines on US)
* Heart sounds in correlation to ultrasound (regurg vs murmur); phonogram to visualize
* Rupture of Achilles; pd vs ultrasound
* Physical exam for placement of lines (femoral triangle); ultrasound to confirm palpation of artery (and expected pathways of vessel)
* Where in the note do we fit US findings into PD
* Common US signatures and how they correlate to physical diagnosis (palpation feeling as it equals visualized signatures)

Session #2: Develop Learning Objectives [what do you want the student to LEARN/KNOW/APPRECIATE/BE ABLE TO DO]

Topic: Central Venous Pressure // Venous Anatomy // Physiology of Blood Pressure Control // Pathology

Scope: first two years of medical school

Learning Objectives:

Basics/Physics:

1. Review the physics principles relevant for blood flow & ultrasound
   1. Compare contrast various modailities (m-mode, b-mode, Doppler)
2. Determine the proper probe characterstics (depth, frequency) for different anatomical locatinons and patient habitus
3. Identifying anatomical differences between artery & veins (size, shape, response to compression, flow rate/pattern)
4. Who will they scan (each other, actors, phantoms)
5. Applications to histology in context of macroscopic features (histo images & anatomy/layers)
6. Intro concepts (physics)
7. Basis physiology (response of veins/arteries to stimulus [eating, Valsalva, breathing]]
8. More physics; types of probes & their applicatons (frequency as correlates to depth/resolution)
9. Patient habitus to probe selection; pros/cons of freq choice (limited with obese patients; loss of signal throught fat)
10. How to measure JVD & correlate to US measurement
11. Explain flow/diameter effect of events (compression, body position, resp)
12. Explain effects of decreased intravascular volume (and other pathological processes; venous obstructin; right heart failure; tamponade; DVTs; Pes; on venous pressure/compressibility)
13. Describe Doppler and various modes of artery vs veins (correct color misconceptions)
    1. Basic teaching of physiology/physics (flow through tube); then transition of appearance on US & physiology; then step up to pathology
14. Cover relavent anatomy (neck; central SVC/IVC; liver/portal; femoral; peripheral)
15. Provide deliverable outcome (size and variability of vein in members of the group (say static portal); or heart beat variability of SVC (fluid responsiveness status) of each member [who is dehydrated, or at least fluid responsive?]
16. Be able to explain (to the patient); the indications for the procedure (diagnositic vs intervention US); what are you doing and why are you doing it (be able to explain it quickly); be empathic