Teaching, Assessing and Remediating Clinical Reasoning Skills
Workshop Handout
CGEA 2010

Part One: Assessing diagnostic reasoning skills using the IDEA rating form

Example #1

A/P: 82 yo ♀ c LE edema CHF exacerbation, LE hip joint pain.

1. CHF exacerbation
   - √ CMP daily
   - √ BNP
   - √ Lasix 40mg PO BID
   - Vasotec 20 mg PO BID
2. SOB – probably 2 to CHF but may be due to COPD
   - Med Neb Albuterol 2.5mg & ipratropium 500mcg
   - 2 L O2 nasal canula
   - cont Lasix to ↓ Pulm edema
   - √ ABG
3. LLE pain –
   - √ MRI to attain better image of L hip - Norco 10/325 1 tab 6 hr PRN
4. HTN
   - √ home meds
   - √ BP (vitals) Q shift
5. Asthma
   - Albuterol 2 INH Meter use Q 4 hr PRN
   - √ home meds
6. DM – controlled c diet
   - √ HbA1C
   - accu √
7. Ulcers –
   Protonix 40 mg QD
8. Prophylaxis -
   SCD
9. Disposition – pending clinical evaluation

Example #2

Assessment:
67 yo. Elderly ♀ w/ active (1 day) onset of fever, nausea/vomiting x 1 day which is severe (7 x/ in 6-7 hours) and increasing SOB and a past medical hx of cadaveric transplant (97) because of ESRD.
There are 3 classification schemas to examine-

1. Febrile, immunocompromised and increasing SOB. The best overall diagnosis for this is pneumonia in immunocompromised - viruses and fungi

Typical Hx: non-productive cough, fever, chills, pleuritic chest pain, scattered rhonchi, rales, or wheezes. + It represents acute illness w/ febrile in immunocompromised patient. The SOB and immunocompromised status probably indicates infection and respiratory syndromes would probably indicate type of pneumonia. The following are most common types for immunocompromised and I will give treatments as well:

Staphylococcus – test w/ sputum culture & lobar consolidation	Vancomycin
Gram neg. bacilli – test w/ sputum culture (s pneumo)	cephalosporin
Fungus – test with sputum culture (see below)	amphotericin B
Virus – influenza (MC) but sets stage for bacterial infect.	Acyclovir
PCP – diffuse interstitial pneumonia on CXR	trimethoprin-sulfa

Fungal infxns. are common in immunocompromised people:
Candida – nonspecific symptoms, fever, cough,
Blastomycosis – abrupt onset of fever, chills, arthralgia
Cryptococcus – symptomatic pulmonary dx, uncommon in normal host

I think these are the predominant organisms that would be responsible for pneumonia in an immunocompromised adult.
- One negative is that these symptoms may not explain the nausea/vomiting.
+ Previous history of smoking etiology makes it more likely to have infectious etiology because smoke paralyzes kinocilium. A number of studies on this.

2. Symptoms – Cough, SOB, + 20 year smoking hx (pack years). Here it is important to differentiate an acute from a more chronic COPD (because of smoking hx) differential. That differential would look like:
   - L ventricular failure – and symptoms would be orthopnea, paroxysmal nocturnal dyspnea, pan inspiratory crackles, normal or ↑ breath sounds, abnormal cardiac impulse w/ cardiomegaly and pulmonary vascular congestion on x-ray.
     i. +patient has bilateral crackles on lungs exam, is having trouble breathing tonight, and there is pulmonary vasomotor congestion.
     ii. -Probably not this b/c the course of the disease is more chronic and this is acute and fever.
   - Bronchiolitis obliterans – this is usually preceded by acute viral illness, toxic inhalation exposure and we would hear diffuse paninspiratory crackles w/ reticular of ground – glass infiltrates.
     + we hear pan- inspiratory crackles
     - ground glass infiltrates, we don't see, but maybe non-specific finding
     - for bronchiolitis obliterans is and exposure hx. But this may be precipitant of acute viral illness and need to watch.

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3. Symptoms – Fever, SOB, acute onset and worsening
   1 – Possible L heart failure – this has 2 major manifestations and these are:

A – Cardiac dyspnea
B – Acute pulmonary edema

+ both are seen in our patient, but the lab results indicate that valvular hear dz, pericarditis are not likely
+ there may be a dilated cardiomyopathy that explains these 2 symptoms
- Fever and vomiting can't necessarily be explained by the pathophysiology of the heart failure.
+ Need an EKG and possible troponins for looking at heart failure
+ ESRD, and the concentric uncontrolled HTN probably led to contractile dysfunction and may lead to dilated cardiomyopathy.

Summary: Probably an infectious etiology based on hx., acute onset and severity. Although patient is at risk for COPD type of look – alikes b/c of smoking hx., and need to rule out heart conditions, it is most likely infectious because of immunocompromised state. Also need to rule out pneumonia look alikes, but is most likely a pneumonia. See differentials w/ reasoning above.

Example #3

Assessment- 40 yo ♂ with PMH of chronic pancreatitis secondary to chronic alcohol use presenting with acute onset epigastric abdominal pain for 3 days.

1. Abdominal Pain – Sharp, intense (10/10) abdominal pain starts at epigastric area and radiates to the back. Pain is worsened with alcohol, certain foods. He is also nauseous and vomiting and has diarrhea. This presentation is most consistent with the diagnosis of acute on chronic pancreatitis. This is supported by his lab values (lipase 1991) and history. Another possible cause of his abdominal pain is mesenteric ischemia but he had no peritoneal signs, no GI bleed, no history of atherosclerotic disease. He could also have AAA dissection or leak because of his abdominal and back pain and the audible pulses. Evidence against AAA in this pt. is that he is relatively young, with no hx of atherosclerosis, Ø hypertension. Pt could also have an SBO, but he has been able to pass stools and he has normal BS. Ø tympani and Ø rebound tenderness.

Example #4

Assessment-This is a postmenopausal woman who presents with pleuritic chest pain. She is a smoker and sedentary. Her initial complaints of nausea, vomiting and diarrhea for three days appear to have been self-limited and consistent with a viral gastroenteritis. Her GI symptoms had resolved by this morning, when she experienced the acute onset of pleuritic chest pain, that is, pain that is continuous, sharp, severe and worsened by cough and movement. On physical examination she is obese, febrile, tachypneic and tachycardic. She has a soft systolic ejection murmur and a left carotid bruit. A key physical finding is her unilateral leg edema. She has a moderately elevated WBC count.

1) Chest Pain

DDx

My differential diagnosis in this case is DVT with pulmonary embolus, pericarditis, pneumonia and costochondritis. I feel the most likely diagnosis is a DVT with pulmonary embolus. This diagnosis is supported by the patient's obesity, the fact she is sedentary and a smoker, the fact that she was bedridden for two days and that the symptoms started suddenly after getting out of bed. These factors all support the development and embolization of a DVT. The pleuritic nature of the chest pain fits well with pulmonary embolus-in the PIOPED study 66% of patient with a pulmonary embolus presented with pleuritic chest pain. The patient's physical findings, including the fever, tachypnea, tachycardia, normal lung exam and unilateral leg edema all are typical of a deep venous thrombosis and pulmonary embolus. In fact, pulmonary embolus is the only diagnoses that accounts for this patient's unilateral leg edema.

Other potential diagnoses include pericarditis, pneumonia and costochondritis. While pericarditis could certainly follow a viral infection, pericarditis is most commonly caused by a coxsackie virus, which is unlikely as a cause of viral gastroenteritis. I would have expected the onset of pain to be more gradual and more positional, worsened with lying flat and relieved with leaning forward, which this patient did not report. On exam I would have expected to hear a rub, although this finding can be intermittent and may not be found on exam. She did have a heart sound that I interpreted as a murmur. It is possible that this sound is actually a rub. The fever, tachypnea and tachycardia could all be found in pericarditis, but this would not explain the patient's unilateral leg edema.

Pneumonia could also follow a viral illness, particularly influenza. The pleuritic chest pain would fit this diagnosis, but I would expect the onset of pain, again, to be more gradual. I would also expect the patient to have a cough, and to have some abnormality on physical exam such as crackles or e to a changes. It is possible that this is an atypical pneumonia without abnormal lung findings. Like pulmonary embolus and pericarditis, pneumonia can present with fever, tachypnea and tachycardia. Finally…

IDEA ASSESSMENT TOOL
Diagnostic Reasoning Skills Section

Assessment of primary problem/problem group:	No	Some	Many	Yes
I – Interpretive summary/problem statement-summarizes most important elements of HPI, PE and testing, uses semantic vocabulary to interpret and represent problem	0	1	2	3
D – Differential diagnosis – pertinent differential and commitment to most likely diagnosis listed.	0	1	2	3
E – Explains reasoning – the epidemiology and key features of most likely diagnosis is accurately defined, and compared to the patient's HPI, PE and test findings.	0	1	2	3
A – Alternative diagnoses – the epidemiology and key features of each alternative diagnosis is accurately defined and compared to the patient's HPI, PE and test findings.	0	1	2	3

Diagnostic reasoning skills (Assessment)

□ Early: does not explain reasoning OR errors in reasoning

□ Good: commits to at least one pertinent diagnosis, accurately defines epidemiology and key features of diagnosis and compares to the patient's HPI, PE and test findings

□ Excellent: includes complete, pertinent DDx, commits to most likely diagnosis, accurately defines epidemiology and key features of most likely diagnosis and alternative diagnoses, and compares to the patient's HPI, PE and test findings

Part Two: Remediation of Clinical Reasoning Skills Examples

Example #1
CC: vomiting

HPI: Patient is 35 yo man with vomiting x 3 days, no fever; abdominal pain, intermittent.
Exam:
HEENT: MMM
Lungs: normal
CV: normal
Abdomen: normal
A/P: Gastroenteritis- encourage fluids

On further questioning of resident, he reports patient has had no diarrhea, no ill contacts with gastroenteritis. He did not obtain further history except non-bilious, non-bloody character of emesis. He did not consider other diagnoses as patient was not ill appearing.

Example #2
CC: "I have blood in my urine"

HPI: Pt is a 82 yo AAM with a PMH of BPH and hemorrhoids who presents with 4-5 episodes of hematuria starting Tuesday at 2pm. Patient had one episode of hematuria at his home. Afterwards at a store, another customer noticed him being "wobbly" and "not walking right". Customer called Fire Department who brought patient to the ED. 3-4 episodes of hematuria occurred in the ED as well as on the floor after patient was admitted. Blood pressure has been elevated since arrival ranging from 190-238/90-112. Patient is a poor historian but claims that blood in urine has progressively decreased since the first episode in his home. He stills states there are some "clumps and clots of blood" in his urine. Unable to elicit from patient whether he has been diagnosed with hypertension in the past or has ever been on any medications. He was started on Ciprofloxacin hydrochloride in the ED for possible UTI and admitted to the floor.
PMH/PSH: colonoscopy (2009), constipation, hematuria in 2002, BPH; gallbladder surgery, hypertension, hemorrhoids
Medications: exlax, aspirin prn HA
SHx: lives alone in home in which he grew up
ROS: weight loss, difficulty swallowing, hesitancy, abdominal pain
(PE without VS, prostate exam, or neurological exam)
Impression/Problem List
82 yr old AAM with PMH of BPH and HTN presents with HTN urgency and hematuria.
1. HTN urgency- hydralazine 10mg IV
2. Hematuria- r/o bladder CA and BPH causes, urine cytology and PSA
3. UTI-continue empiric treatment with Cipro, renal US, cultures
4. EKG and telemetry
5. Possible altered mental status- contact brother

Example # 3

CC: chest pain and bradycardia

HPI: Mr. P is a 47 yo male with significant past medical history of Ehler Danlos syndrome type 1 and hypertension who presents to the ED after referral from his PCP. He was seen for back pain and was found to have a hr of 43 on EKG in the office today.

In the ED, patient complains of a chronic chest pain for the past 2 months. Patient states that the pain began about 2-3 months ago, it can last between 10 min to an hour. He rates the pain at 8/10 most times and describes the pain as a "heavy pressure" which starts in the left side and moves toward the right side and right lateral neck area. He denies any inciting event or exertion prior to the pain, but states that nitroglycerin and morphine relieve his pain to a 2/10. There are no other symptoms before or during his pain events.

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Mr. P is a 47 yo gentleman with Ehlers Danlos type 1 and hypertension who presents to the ED with sinus bradycardia, chronic chest pain and physical deconditioning.

1. Chest pain- differential includes cardiac pain ACS, aortic dissection, MI, MSK related costochondritis, GERD. With his previous visit 2 months ago, he had a normal CT aortic angiogram, troponins, and stress test. Further workup would include echocardiogram for wall motion abnormalities indicative of previous MI or valvular problems. Coronary angiography may illustrate areas of vascular spasm or sclerosis. If negative pt could be started on a trial of naproxyn to see any MSK involvement. Currently he will be given prn NTG and morphine.
2. Sinus Bradycardia-differential includes beta blocker, hypothyroidism, autonomic neuropathy, bundle branch block. Will hold beta blockers and consult cardiology.
3. Chronic deconditioning-patient unable to work as landscaper for the past 3 months. Will refer to PT.