Family Medicine Inpatient Service (FMIS) at Columbia-New York Presbyterian

The family medicine inpatient rotation takes place at the Allen Hospital which exists within an urban underserved environment that is comprised of individuals with several comorbidities that interplay with complex social determinants of health amidst several structural determinants as well. The hours are often long and sometimes the healing process is hard to see. Despite these realities, the experience also includes a system of continuous support as well as training that will garner the confidence to treat patients who are acutely ill. Every resident spends a total of 9 months over 3 years on the inpatient service (i.e., 25% of their residency training). Regardless of their chosen career paths post-residency, graduates leaving the program routinely cite FMIS as one of the top 3 highlights of the program. Our promise to residents is to ensure excellent evidence-based training and quality of education that they can utilize in whatever form of patient care they choose to pursue when they complete residency.

Year-Round Weekly Teaching Schedule on FMIS

Day of week	Monday	Tuesday	Wednesday	Thursday	Friday
Teaching activity	*8:30am* **Morning Report** Work Rounds* *Intern B Clinic*	*8:30am* **Clinical Question Rounds** Work Rounds* *Intern A Clinic*	*8:30am* **Morning Report** Work Rounds* *Senior Clinic*	Work Rounds* **Radiology Rounds** post-rounds	*8:00am* **Biopsychosocial rounds** Work Rounds* Attending lecture if time permits and not done earlier in week

*During work rounds, admitting intern reads all EKGs and radiologic films for new cases under attending supervision in standard systematic format. Rounds are a combination of bedside and table rounds - residents choose patients they would like to see as a team based on need or education (with attending input). **Every Thursday, Dr. Rosenthal (our behavioral PhD) shadows team rounds and gives attendings and residents feedback on their teaching and bedside manner. Every Tuesday and Thursday, Dr. Sussman (our pharmacy PhD) joins rounds to provide pharmacologic support and education.**

Structure of Service:
Number of attendings: 2 (1 rotating core FM faculty every 2 weeks, 1 full time FM hospitalist)
Number of day interns: 2 (admits 1 patient every other day)
Number of day seniors: 1 (admits 1 patient with intern daily while managing floor census)
Number of night seniors: 1 (admits 2 patients each night while managing floor census)
Number of residents per class: 6
Number of patients on average census: 15-20
Intern Cap: 10 patients
Census Cap: 20

MORNING REPORT (time length goal: 25 minutes):

- Morning report and the included teaching that is attending-led. Dr. Ekanadham leads on Mondays and the other rotating attending will lead on Wednesdays.
- The night senior resident who admitted the patient of interest provides a “one-liner” including age, sex, pertinent past medical history, and chief complaint. (<1 minute)
- The interns and day senior resident are then allotted time to ask additional HPI based on the one-liner. The night senior resident should only answer the questions asked without providing unsolicited information. (5 minutes)
- When the time allotted elapses, the night senior resident provides any remaining HPI information they elicited and additional past medical history. (1 minute)
- The day team collaboratively generates a broad differential based on the information available at present. (5 minutes)

- The day team then generates a hypothetical evidence-based list of medications that the patient should be on based on the past medical history diagnoses given. Afterwards, the night senior resident provides the actual list of what the patient is prescribed. (5 minutes)
- The night senior continues with their presentation until the end of their physical exam. The day team then generates a lists of labs, imaging, and consults they would like to order based on the information given to up to this point. When a test is asked for, the team must give a reason for why they want to order to it. The night senior resident then provides the data requested, if available. (5 minutes)
- The day team then narrows their original differential to the top 3 most likely diagnoses affecting the patient. (1-2 minutes)
- The night senior then presents their assessment and plan. (2-5 minutes)

Tips:

- ★ Choosing a case: More useful to have a chief complaint that lends itself to broad differential rather than prioritizing cases with a large amount of information available about the case.
- ★ It is useful to use a timer and assign one person to keep track of the time
- ★ Certain sections might take longer in the beginning of the academic year such as generating the entire HPI or creating an initial differential. If you find that you are running over time, it is often useful to consider forgoing other sections such as generating a hypothetical med list to keep on time. The exercise can be just as useful and prevent team frustration.
- ★ Be mindful of statements such as “i want routine labs.” Engage the learner further and ask what components of a panel they would like and why.

CLINICAL QUESTION ROUNDS:

- Each member of the team (including attendings) presents a clinical question that came up for them over the past week.
- The question must then be explored and answered in PICO format. (P= patient population of interest; I= intervention ; C= comparison; O= outcome of interest)
- The source for the answer to the question should be provided from peer-reviewed literature.
- The answer to the question can be stated in 1-2 sentences. (average time per person = 5 minutes)

RADIOLOGY ROUNDS

The team collectively selects a few patients from the list whose films will be educational to review with the radiologist. This can include rare findings, difficult to interpret films, etc. and is meant to supplement review of films during rounds

Tips:

- ★ Prioritize radiologists who have longstanding relationships with family medicine who enjoy teaching (e.g., Dr. Utukuri and Dr. Finkelstone)
- ★ During the week, team should keep track of patients with educational films on the board
- ★ Residents should have MRNs and one-liners ready to present to the radiologist

BIOPSYCHOSOCIAL ROUNDS - biweekly (alternates with Narrative Medicine Rounds)

- Led by Behavioral faculty (David Rosenthal)
- 45 minute session before rounds that covers topics such as implicit biases, challenging conversations, death and dying, self care and wellness
- Attendings, day senior, night senior, interns, medical students, behavioral medicine faculty all participate
- All participants are explicitly told at the beginning of sessions about the confidentiality of personal experience shared in this space and time
- Behavioral faculty remains for rounds afterward and provides real-time feedback to team or individuals regarding interactions with patients, families and other team members. Often includes tips for leadership growth and teaching

NARRATIVE MEDICINE ROUNDS - biweekly (alternates with Biopsychosocial Rounds)

- Led by Columbia’s Narrative Medicine Faculty (Joseph Eveld)
- 45 minute session before rounds
- Attendings, day senior, night senior, interns, medical students, behavioral medicine faculty all participate
- All participants are explicitly told at the beginning of sessions about the confidentiality of personal experience shared in this space and time
- General structure: read a piece of literature aloud, listen to a song, watch a video, look at a piece of art together. Team shares their reflections. Team individually writes about a provided prompt that is loosely related to the piece. Individuals are given the opportunity to share what they have written and others reflect aloud on what they have shared.

Attending Teaching Schedule by Quarter:

- During their 2-week blocks, each attending should spend about 20-30 minutes on teaching interns a minimum of one topic assigned in the corresponding quarter when they are on service (can occur when relevant during rounds or post-rounds). Attendings are encouraged to use teaching tools and presentations on the **FMIS website (himasmedlibrary.com); Password = CFCMSO**

QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
[] Chest Pain/ACS [] CHF [] HTN Crisis [] Sepsis	[] Hyponatremia [] Hyperglycemia [] Acid/Base [] AKI	[] C.difficile infection [] Decompensated Cirrhosis [] Selected Topics in Anticoagulation [] Advanced Pain management	[]Palliative Care [] ESRD Management [] Hematology Topics [] Comprehensive Quiz Revi

QUARTER 1 ATTENDING LECTURE OBJECTIVES:

1.Chest Pain/ACS

- Establish differential diagnoses for chest pain: cardiac and non-cardiac
- Define stable angina versus unstable angina both in terms of internal pathology as well as outward clinical manifestation
- Define NSTEMI versus STEMI (please show EKG examples of each; NSTEMI examples can be highly variable; helpful to start with an example containing regional TWI)
- Define the basic components of stress echocardiogram versus nuclear stress test versus catheterization
- Define ACS 1-4 and discuss the diagnosis and management guidelines for each

2. Heart Failure

- Define heart failure physiologically and highlight the difference between systolic and diastolic heart failure
- Define HFpEF (heart failure with preserved ejection fraction) and how one makes this diagnosis from the echo result (if have an echo result example, show the group the salient wording of "impaired relaxation" etc
- Go over NYHA classification of CHF
- Briefly go over major etiologies for heart failure (e.g., differentiate ischemic from non-ischemic cardiomyopathy and distill the latter into the major contributors e.g., htn, etoh, etc.)
- Spend the majority of the lecture on evidence-based goal directed medical therapy (GDMT) of heart failure in its various stages. Please at minimum discuss beta blockers, ACI/ARB/ARNI, spironolactone, SGLT2 inhibitors, role of diuretics, and indications for AICD.
- Acknowledge the paucity of studies on treatment for HFpEF and how this contributes to weaker recommendations for some of our standard treatments such as ARNI, spironolactone

3. Severe Asymptomatic HTN and HTN emergency

- Briefly review JNC-8 guidelines for treatment of HTN in CKD versus non-CKD patients
- Briefly review the first line recommendations for treatment of HTN as per JNC-8 in comparison to later revisions that came out of Sprint trial, ACC, etc
- Point out race-based recommendations of JNC-8 and the studies that support vs do not support these recommendations
- Offer a non race-based approach to prescribing HTN medications based on comorbidities rather than race
- Define the BP threshold for severe asymptomatic HTN and hypertensive emergency
- Identify the salient difference between severe asymptomatic HTN and HTN emergency being the existence of end organ damage in the latter
- Have the team list examples of end organ damage
- Go over the evidence-based recommendations for treatment of hypertensive crisis
- Specifically discuss the benefit of nitroglycerin in flash pulmonary edema
- Briefly highlight the caveats of unpredictable response to traditionally-used treatments of hydralazine and clonidine

4. Sepsis

- Define SIRS, sepsis, severe sepsis, and septic shock
- Define qSOFA
- Distinguish between what can be inferred from SIRS versus qSOFA (i.e., the former is still used in defining sepsis in the context of an identified infectious source while the latter is thought to be useful as a prognostic indicator and has limited prospective data given that it is a relatively new tool)
- Discuss the role of IVF in sepsis
- Discuss the role of antibiotics in sepsis (please go over CUMC empiric guidelines with team)
- Discuss the role of anticipatory measures that can be used by the team (e.g., ICU consult, second large-bore IV, ID consultation, checking of additional sources that may become infected such as blood cultures in setting of uti or pyelo, etc)
- Discuss the importance of narrowing treatment as soon as possible (e.g., risks of c-diff, individual and community resistance) and modalities to do so (e.g., urine antigens and respiratory cultures with pneumonia, following up on culture sensitivities, mrsa and vre swabs, etc)

QUARTER 2 ATTENDING LECTURE OBJECTIVES:

1. Hyponatremia

- Use CMAJ article algorithm to guide students through the talk: http://www.cmaj.ca/content/166/8/1056.full
- Acknowledge traditional approaches towards hyponatremia via assessment of volume status and that it may still play some role in dx, particularly in the hypervolemic state
- Emphasize crucial impact of collecting serum osm, urine osm, urine Na, serum uric acid to elicit etiology
- Discuss the approach of trialing fluids and assessing for improvement; this is a modified approach which can work and is definitely less labor intensive but can often make things worse
- Emphasize utility of a serum uric acid < 3 suggesting SIADH
- Illustrate above algorithm via real time cases (Krakow's presentation on the website contains helpful examples)

2. Inpatient Management of DM and Hyperglycemia

- Use following article to structure your talk: http://clinical.diabetesjournals.org/content/29/1/3
- Discuss mode of natural insulin release in the body which basal/meal bolus dosing mimic
- Discuss evidence for tighter glucose control in the inpatient setting (< 180) particularly in the setting of infection (< 140)
- Discuss the different types of insulins (regular vs NPH vs aspart vs lantus) the role of each (best to illustrate with cases)
- Discuss the role of sliding scale insulin and how it manifests in our hospital (low, medium, high)
- Discuss examples (best to do with cases) how to adjust and titrate an insulin regimen based on daily data from fingersticks, administered sliding scale insulin, and prescribed basal and meal-based insulin
- Discuss insulin administration in the context of the "NPO patient" particularly basal insulin administration

3. Acid Base Disturbances

· Teach via Scott Sherman's Acid/Base Tutorial from Cook County Hospital / Rush Medical College in Chicago, Illinois: https://www.slideshare.net/emomsb/acid-base-made-easy (also on FMIS website)

- Emphasize importance of being systemic in approach towards acid/base which will allow for complex understanding of acid/base processes
- Discuss step 1 & 2 of parameters for determining academia vs alkalemia and parameters for determining respiratory vs metabolic predominance
- Discuss step 3 which is the use of 4 equations to assess for compensation (see below)
- Discuss steps 4 and 5 pertaining to metabolic acidosis to determine gap presence and concomitant processes (see below)
- Reinforce concepts with cases within ppt present on the website

4.

Acid-Base Made Easy

Scott C Sherman, MD
Assistant Residency Director
Department of Emergency Medicine
Cook County Hospital (Stroger)
Assistant Professor of Emergency Medicine
Rush Medical College

Acid-base analysis strikes fear into the minds of both seasoned clinicians and their junior counterparts. Multiple formulas and rules exist to help guide us through the forest of diagnoses and complex problems. This lecture is set-up to provide a simple, systematic approach to interpreting arterial blood gas (ABG) samples. All that is needed is a little clinical information obtained from a history and physical examination, a few readily available laboratory tests, and the knowledge of five simple steps. Getting in the routine of performing these steps on each patient in which an ABG and electrolytes are performed will help decrease the rate of missed complex acid-base disturbances and hopefully improve patient care.

Five Steps of Acid-Base Analysis[1-5]

Step 1: Acidemia (pH <7.38) or alkalemia (pH >7.42)?

Step 2: Primary respiratory or metabolic disturbance?
(Look at PCO_2 on ABG or HCO_3 on metabolic panel.)

Step 3: Is there appropriate compensation for the primary disorder?
Metabolic acidosis: PCO_2 = [1.5 x (serum HCO_3)] + 8 (±2)
Metabolic alkalosis: ↑PCO_2 = 0.6 x ↑HCO3 (±2)
Respiratory acidosis: ↑PCO_2 10, ↑ HCO_3 by 1 (acute) or 4 (chronic)
Respiratory alkalosis: ↓PCO_2 10, ↓ HCO_3 by 2 (acute) or 5 (chronic)

Step 4: Is there an anion gap metabolic acidosis (AGMA)?
AG = Na - (HCO_3 + Cl). If > 12, an AGMA is present.

Step 5: If metabolic acidosis, is there another concomitant metabolic disturbance?
If **AGMA**, then calculate ΔGap = ΔAG – Δ HCO_3 = (AG -12) – (24 – HCO3)
If the ΔGap is > 6, there is a combined AGMA and metabolic alkalosis.
If the ΔGap is < -6, there is a combined AGMA and NAGMA.
If **NAGMA**, for every 1 mEq/L ↑Cl, there should be a 1 mEq/L ↓ HCO_3 (±5).
If HCO_3 decrease is less than predicted, then NAGMA and metabolic alkalosis

1

Acute Kidney Injury

- Define acute kidney injury (AKI) via amount of creatinine increase versus percentage of GFR decrease versus decrease in urine output
- Emphasize the importance of ascertaining the etiology for AKI as prerenal versus intrarenal versus postrenal since it impacts management
- Discuss why we are moving away from FENa or FEUrea calculations given how they are impacted by diuretics as well as fluids and how they represent cross-sectional data point in a fluid state of AKI that can be deceptive
- Discuss the utility of a renal ultrasound in this setting as only being useful to rule out (or rule in)

postrenal etiologies (e.g., obstructions that would result in hydronephrosis etc)
- Discuss common causes of prerenal, intrarenal, and postrenal AKI and the management of each
- Discuss the special case of IV contrast as having the potential to cause both prerenal (via localized hypoperfusion) as well as intrarenal AKI and that Cr may not peak until day 4-5 post-contrast administration
- Discuss slow resolution of ATN that may take up to 3 weeks to fully resolve
- Discuss the lack of evidence for IVF in treating ATN (just remove the offending agent and prevent other nephrotoxins from being added)

QUARTER 3 ATTENDING LECTURE OBJECTIVES:

1. Clostridiodes difficile (C.diff) infection
- Briefly discuss signs/symptoms of c.diff and risk factors
- Specifically highlight meta-analyses that denote level of risk for each antibiotic group
- Discuss hospital protocol for preventing spread (special contact, assurance of special soap present in bathroom)
- Discuss diagnosis (sensitivity/specificity of our testing); also discuss that if neg result our institution will not retest within window of 5 days from last test
- Discuss current evidence-based treatments for c.diff

2. Selected Topics in End Stage Liver Disease (ESLD)
- Briefly discuss definition of ESLD and cirrhosis how biopsy or fibroscan is definitive for diagnosis though imaging can often support diagnosis
- Discuss MELD and Child-Pugh scoring systems and how they should be used
- Discuss guidelines for screening for esophageal varices, and when prophylactic treatment should be started and what are the evidence-based recommendations for stopping impending or progression of bleed.
- Discuss how hepatic encephalopathy is diagnosed, evidence-based scoring systems to follow course (HESA; West Haven), and evidence-based treatment (lactulose + rifaximin > lactulose > rifaximin)
- Discuss often insidious presentation of SBP and when to be suspicious outside of typical symptoms of abdominal pain, fever, and /or leukocytosis (inclusive of new or worsened ascites, ascites + GIB, ascites + AMS, worsened renal function) ; discuss how to diagnose with tap results; discuss empiric treatment and secondary prevention after 1st episode of treatment
- Discuss management of chronic ascites with spironolactone and Lasix in 5:2 ratio (generally start 100:40, can go up as high as 400:160); discuss when serial taps should be considered
- Discuss definition of hepatorenal syndrome and characterize it as a diagnosis of exclusion (must ensure no nephrotoxins, no parenchymal disease, no volume loss causing AKI); discuss evidence-based treatment
- Discuss in above sections role of albumin infusions in large volume paracentesis >5L, SBP, hepatorenal syndrome

3. Selected Topics in Anticoagulation:
- Discuss role of anticoagulation with DVT and PE and various options
- Discuss duration of treatment for DVT/PE depending on risk stratification
- Discuss special cases for anticoagulation of superficial vein thrombosis
- Discuss criteria warranting anticoagulation for portal vein thrombosis
- Discuss role of antiplatelet therapy in secondary prevention of stroke
- Discuss role of anticoagulation versus antiplatelet therapy in afib/flutter via discussion of CHADSVASC and HASBLED (should be familiar to team by this point and only be briefly touched on)
- Discuss expert guidelines on indications and duration for anticoagulation in addition to mono or dual antiplatelet therapy

4. Advanced Pain Management
- Discuss ratios of IV to PO morphine and IV to PO dilaudid
- Discuss ratios of both forms of morphine and dilaudid to each other and to PO oxycodone
- Discuss medicines that are safer to use in the context of renal impairment
- Discuss how to come up with standing regimen for pain and percentage of regimen that should be PRN based
- Discuss rates of increase for pain regimens
- Discuss how to convert an IV or PO regimen to intermittent and long-acting

QUARTER 4 ATTENDING LECTURE OBJECTIVES

1. **Palliative Care 101**
   - Review concepts of assessing for 24hr opioid requirement
   - Review "opioids for dummies" handout which gives rough guidelines for % of total requirement to allocate for PRN, how much % to allocate for cross tolerance, and opioids that are safer in renal dysfunction
   - Briefly review the "rectangle" of conversions involving IV/PO morphine//dilaudid
   - Review how to start a morphine drip
   - Review assessing pain in severe dementia, see scale cited in AAFP 2009 article: https://www.aafp.org/afp/2009/0615/p1059.html
   - Review importance of early conversations with family/pt regarding defining comfort care on an individual basis (use NEJM Blinderman article: https://www.nejm.org/doi/full/10.1056/NEJMra1411746)
   - Discuss management of common symptoms at end of life using above Blinderman article and AAFP End of life sx management article as a guide: https://www.aafp.org/afp/2017/0315/p356.html

2. **Selected Topics in ESRD (End Stage Renal Disease)**

- Review evidence-based guidelines for treating HTN for ESRD patients on HD
- Highlight that beta blockers are the only class to show survival benefit
- Highlight newer evidence suggesting benefit>risk to continue ACEI/ARB through CKD4-5
- Highlight hemoglobin goals in ESRD of 9-10.5 and indications for iron vs erythropoietin vs both
- Highlight mortality benefit of bicarb range of 23-29 and role of supplementation
- Review basics of renal osteodystrophy and mechanism of action of various combatting agents (e.g. phos binders vs vit D analogues vs Ca mimickers)

3. Selected Topics in Hematology:

- Review causes and workup of anemia
- Review interpretation of iron studies
- Discuss main causes of thrombocytopenia
- Discuss diagnostic criteria for HIT using 4T score
- Review diagnosis and differential for hemolysis
- Review diagnosis and management of TTP

4. Comprehensive Review

- Administer quiz below and review answers

COMPREHENSIVE EVALUATION:

1. Which of the following is a TRUE statement?
    a. T-wave inversions are never indicative of acute ischemia
    b. If reported chest pain gets worse with palpation, ACS is essentially ruled out.
    c. Management of unstable angina should be the same as management of NSTEMI
    d. A positive troponin in the absence of chest pain suggests “demand ischemia”

2. Which of the following does NOT represent a key component of systolic heart failure management?
    a. Amlodipine
    b. Metoprolol
    c. Lisinopril
    d. Spironolactone

3. Which of the following represents an appropriate agent for management of hypertensive crisis?
    a. Labetalol
    b. Clonidine
    c. Captopril
    d. Hydralazine
    e. A or B
    f. A or C
    g. A or D

4. Which of the following is definitive evidence of hypertensive emergency?
    a. Pulmonary edema
    b. Headache
    c. Acute kidney injury (AKI)
    d. A or B
    e. B or C
    f. A or C
    g. A, B, or C

5. Which one of the following is sufficient for assigning the diagnosis of sepsis?
    a. SIRS (systemic inflammatory response syndrome)
    b. SIRS with a source
    c. qSOFA score ≥ 2
    d. SOFA score ≥ 2

6. Which one of the following sets of results suggests true iron deficiency?
    a. Low iron and low %sat (percent saturation) and high ferritin
    b. Low iron and high %sat (percent saturation) and low ferritin

c. Low iron and high total iron binding capacity (TIBC) and high ferritin
d. Low iron and high total iron binding capacity (TIBC) and low ferritin

7. Which one of the following represents voltage criteria for diagnosing LVH (left ventricular hypertrophy)?
   a. S in V_1 + R in V_5 or V_6 (whichever is larger) ≥ 35 mm (≥ 7 large squares)
   b. R in aVL ≥ 11 mm
   c. In men, S in V_3 + R in aVL > 28 mm
   d. In women, S in V_3 + R in aVL > 20 mm
   e. All of the above

8. What is the threshold above which someone is said to have elevated JVP (jugular venous pressure)?
   a. 3-4 centimeters above the sternal angle
   b. ≥ 8 mmHg
   c. Both A and B
   d. Neither A nor B

9. Which one of the following represents an appropriate bowel regimen for treating constipation?
   a. Miralax
   b. Senna
   c. Senna and Colace
   d. Colace
   e. A and/or C

10. Which one of the following pain medicines should be avoided in someone with concerns for renal dysfunction?
    a. Morphine
    b. Dilaudid
    c. NSAIDS
    d. Fentanyl
    e. C and D
    f. A and C
    g. B and C

11. Which one of the following represents the most appropriate management for a patient with known IDDM (insulin-dependent diabetes mellitus) who has just been admitted?
    a. Put them on sliding scale insulin during the first 24 hours to assess their basal insulin need
    b. Start them on all or some portion of their basal insulin along with set meal-time insulin and sliding scale insulin as needed
    c. Start them on all or some portion of their basal insulin along with sliding scale insulin

12. Which one of the following criteria are sufficient for prescribing antibiotics for an acute COPD exacerbation in the inpatient setting?
    a. increased dyspnea
    b. increased dyspnea and increased sputum volume
    c. increased dyspnea and increased sputum purulence
    d. increased sputum volume and increased sputum purulence
    e. B or C
    f. B, C, or D
    g. A, B, or C

13. Which of the following is a TRUE statement about DTs (delirium tremens)?
    a. It can be life-threatening
    b. It is most important to monitor for symptoms during the first 24 hours post-last drink
    c. It is most important to monitor for symptoms during 2-4 days post-last drink
    d. A and B
    e. A and C

14. A patient presents with Serum Na of 123 on an admitting BMP. You appropriately order studies inclusive of the following: Serum osmolality 250 ; Urine osmolality 350 ; Urine sodium 30 ; Serum uric acid 2. Which of the following is the most likely diagnosis associated with the correct management?
    a. Hypervolemic hyponatremia ->fluid restrict the patient
    b. SIADH -> give hypotonic fluids, e.g. ½ NS or free water

c. Hypovolemic hyponatremia ->hydrate the patient with 1/2NS
d. SIADH -> fluid restrict the patient
e. Hypovolemic hyponatremia -> hydrate the patient with NS

15. A patient presents with a serum creatinine of 2.2; his baseline is 1.7 and he has a history of HfpEF. Which of the following is the next best management approach with this patient?
    a. Assess for potential meds or med changes that could be contributing to pt's AKI
    b. Hold nephrotoxic agents and use caution with meds that are renally cleared
    c. Order urine lytes to more accurately assess for the etiology of the AKI
    d. Hydrate the patient with 2L NS in hopes that the creatinine will improve
    e. Just monitor. This patient's values do not meet criteria for true AKI.
    f. A, B, and C
    g. A, B, and D

16. A patient presents with an early AM serum Na of 156. Which of the following is correct?
    a. Next step should include getting an accurate weight on the patient
    b. The patient is severely dehydrated; he should be given fast liter boluses of NS
    c. We should bring the patient's sodium to a goal of 140 over the next 24 hours
    d. Administer ½ NS at maintenance and check another BMP tonight before change of shift

17. A patient presents with suboptimally controlled DM and cirrhosis presents the following ABG and selected BMP values: pH 7.46, pCO2 17, Serum Na 133, Serum Cl 84, HCO3 15. Which of the following bests represents the processes happening in this patient?
    a. NAGMA (non anion gap metabolic acidosis), concomitant respiratory alkalosis, and metabolic alkalosis
    b. AGMA (anion gap metabolic acidosis)
    c. AGMA and concomitant respiratory alkalosis
    d. AGAMA, concomitant respiratory alkalosis, and metabolic alkalosis
    e. NAGMA
    f. NAGMA and concomitant respiratory alkalosis

18. A patient with IDDM presents with a foot infection consistent with osteomyelitis; she is on IV vancomycin. Over the past few days her creatinine has been rising and she has CKD3 at baseline. She is currently receiving her home dose of qhs lantus at 30u. This morning's fingerstick is 33 which came up to 194 after an amp of D5. Her 24-hour range has been 33-348. Which of the following represents the best next course of management?
    a. Stop insulin completely because of the deleterious risks of hypoglycemia.
    b. Infection control with glucose values <140 is essential; continue the same lantus dose
    c. Split the lantus into bid dosing to avoid stacking of a large dose of lantus given at once
    d. Switch to NPH which has a shorter half life and will hence prevent some insulin stacking
    e. C & D are both reasonable
    f. None of the above

19. A patient on the floor currently has an SBO and is NPO. He is on maintenance fluids with NS. His morning BMP shows a bicarb of 22 and a Cl of 118. Which of the following is correct:
    a. These mild electrolyte imbalances are to be expected in the absence of regular diet, just monitor
    b. The patient is starting to develop a hyperchloremic acidosis-> switch from NS to LR
    c. The patient is starting to develop a hyperchloremic acidosis-> switch from NS to ½ NS
    d. The patient is starting to develop a hyperchloremic acidosis-> switch from NS to D5W

20. An elderly patient presents with AMS. Which one of the following is not necessary to consider in the workup?
    a. Utox
    b. CT head
    c. EKG
    d. Fingerstick glucose
    e. TSH
    f. Med regimen at home
    g. Psychiatric history
    h. BMP
    i. CBC
    j. UA and CXR

k. O2 sat and ABG
l. All of the following are appropriate to consider

21. A patient with atrial fibrillation is on your service. He is finally rate controlled on metoprolol. You consider if he needs anticoagulation. Which of the following is the best management?
    a. Calculate the $CHADS_2$ score and decide between aspirin and coumadin
    b. Calculate a CHADSVASC score and decide between coumadin versus a NOAC (new oral anticoagulant, e.g. rivaroxiban)
    c. Calculate a CHADSVASC score and a HASBLED score and decide first if it is safe to consider putting the patient on anticoagulation; if so decide between aspirin versus coumadin versus NOAC
    d. Calculate a CHADSVASC score and a HASBLED score and decide first if it is safe to consider putting the patient on anticoagulation; if so decide between aspirin versus aspirin plus plavix

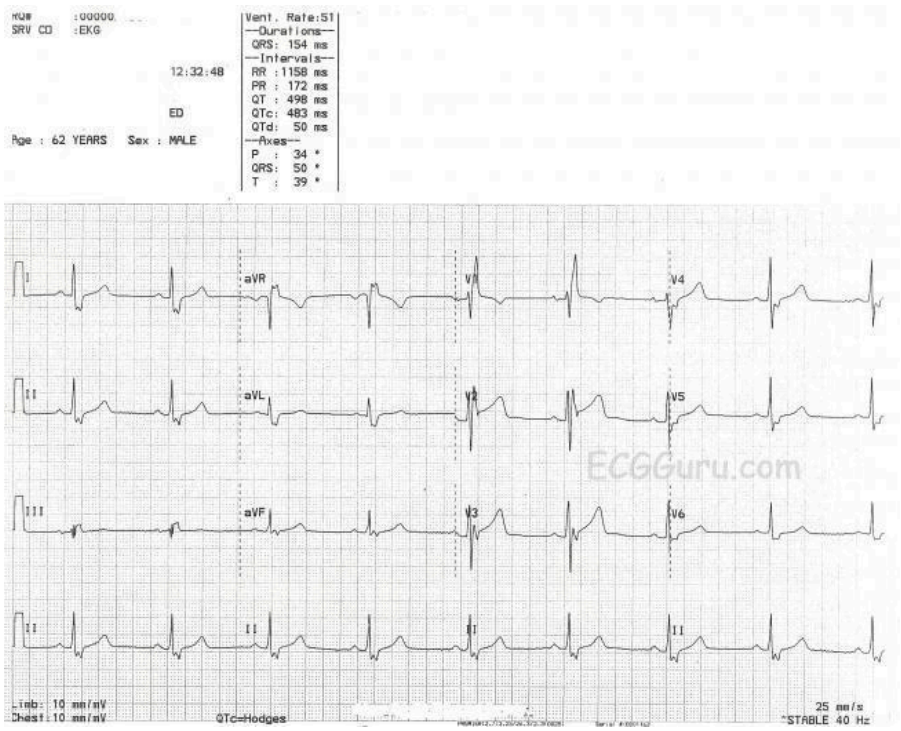
22. A patient with history of CAD (recent MI 2 months ago s/p PCI), CHF (ef 50->40 post-MI) presents with symptomatic Afib with RVR to 120s. Which of the following is the next best course of management?
    a. Diltiazem with goal HR < 80 since this has been shown to be superior to rate control to <100
    b. Metoprolol with goal HR < 80 since this has been shown to be superior to rate control to <100
    c. Diltiazem with goal HR <100 since study shows no superiority compared to control to <100
    d. Metoprolol with goal HR <100 since study shows no superiority compared to control to <100

23. Which of the following scenarios demonstrates that a patient has capacity?
    a. The patient speaks with you in a coherent and logical manner and answers questions appropriately.
    b. The patient is AAOx3
    c. The patient is highly educated and has a PhD
    d. You think that capacity is decision-specific. You ask the patient his choice regarding the particular decision to be made and he gives you a clear answer that is consistent on 2 separate occasions.
    e. You think that capacity is decision-specific. You explain the risks and benefits regarding the particular decision to be made. The patient is able to relay back in their own words the risks and benefits at hand and give you a clear consistent answer regarding his choice.

24. Which one of the following represents the best **immediate** next step for a patient that presents with a K of 6.5 (non-hemolyzed)?
    a. Give Kay-exalate
    b. Give Ca gluconate and check an EKG
    c. Give albuterol
    d. Give insulin/glucose

25. A patient with DKA is transferred to you. They are still on the insulin drip during transfer to stepdown. Their gap has closed and last fingerstick was 195 but they still seem pretty tired and haven't eaten in several hours. The RN is anxious to stop the drip since floor nurses don't manage insulin drips and has paged you 6 times to d/c it. What do you do next?
    a. D/c the drip
    b. D/c the drip but continue IV fluids as D51/2NS with 20Meq KCl
    c. D/c the drip. At the same time order the patient for lantus to start tonight
    d. Ensure that the patient eats something first. Give a dose of lantus now. Then d/c the drip.
    e. Ensure that the patient eats something first. Then d/c the drip.

26. Which of the following is present in this EKG?



a. Left bundle branch block
b. Right bundle branch block
c. Left atrial enlargement
d. A & C
e. B & C

27. 65yo F comes in for cough/SOB. Her workup suggests pneumonia. She has a remote history of seizures for which she is on keppra. Which of the following is an appropriate course of action?

a. Order a keppra level
b. Be mindful of antibiotics such as Cipro and penicillins that may reduce seizure threshold
c. Order Ativan on call so that nursing may administer in case of a seizure event
d. Call neuro to advise on increasing keppra prophylactically in anticipation of using an antibiotic that lowers the seizure threshold

28.A 75yo M is on your service. The nurse pages you to say that the patient is having new-onset SOB. Please list the next 10 things you would do:

29. A 66yo F is on your service. When the team goes to round on her, she complains of left sided chest pain that started a few minutes ago. Please list the next 10 things you would do:

30. An 81yo F is on your service. The nurse pages you to say that the patient appears somnolent and is difficult to arouse. Please list the next 10 things you would do:

31. A 56yo M is on your service. You, the intern, are doing your morning pre-rounds. When you visit him, he yells at you using foul and derogatory language and threatens to punch you in the face if you try to examine him. Please list the next 10 things you would do:

32. Which of the following statements is not true about c.difficile infection?

a. solid stool can be sent in the appropriate cup to test for c.difficile
b. oral vancomycin is an appropriate first line treatment for c.difficile
c. it is reasonable to start c.difficile treatment empirically before stool studies result if there is high clinical suspicion
d. IV flagyl is an appropriate first line treatment for c.difficile
e. oral fidaxomicin is an appropriate first line treatment for c.difficile

33. A 69yo M with known cirrhosis presents with altered mental status. An abdominal sono shows moderate to large volume ascites (prior sono shows trace ascites). Which of the following is the appropriate next step?

a. Consider treatment of hepatic encephalopathy with lactulose/rifaximin
b. Check ammonia level and treat for hepatic encephalopathy with lactulose
c. Do a diagnostic tap to rule out SBP
d. Do a large volume paracentesis
e. B and C
f. A and D
g. A and C
h. B and D

34. Which of the following constitutes appropriate therapy for secondary prevention of stroke?

a. Asa 81 mg po daily
b. Plavix daily
c. Asa and Plavix daily
d. Aggrenox daily
e. Aggrenox and Plavix daily
f. A, B, or C
g. A, B, or D
h. B, C, or D

35. A patient of yours take 30mg Oxycontin bid at home and 15mg IR about 3x/day. Which of the following is the appropriate equianalgesic dose of IV morphine (not accounting for cross tolerance) that he will require over 24hr?

a. 35.2mg
b. 52.5mg
c. 70.9mg
d. 91.3mg

Senior Teaching Schedule Teaching Schedule by Quarter:

- During their 2 week blocks, seniors should spend about 10-20 minutes on teaching each topic assigned in the corresponding quarter to the interns on service (can occur when relevant post-rounds, e.g. during admission teaching or during down-time in the afternoon). Seniors are encouraged to use teaching tools and presentations on the **FMIS website (himasmedlibrary.com); Password = CFCMSO**

QUARTER 1	QUARTER 2	QUARTER 3 &4
[] CBC interprétation [] EKG 101 [] DM 101 [] COPD 101 [] Pain 101 [] Constipation [] Heart Failure Exam [] Etoh Withdrawal	[] IV Fluids 101 [] AMS/Delirium workup [] Afib AC Decisions [] Afib Rate Control [] Capacity/MS Assessment [] Hypernatremia mgmt. [] Hyperkalemia mgmt. [] DKA vs HHS [] Handoff completion	[] Review of LBBB/RBBB [] Seizures [] Acute CP mgmt. [] Acute SOB mgmt [] Acute AMS mgmt [] Aggressive pt mgmt [] Assurance of ability to do med reconciliat admission and discharge [] fluency in completing discharge summari

QUARTER 2 SENIOR TEACHING: OBJECTIVES BY TOPIC

1. IV Fluids

- ___Name and group the different types of fluids based on tonicity: hypertonic saline (used mainly in the ICU not on floor), isotonic fluids such as normal saline (NS) and lactated ringers (LR), and hypotonic fluids such as 1/2NS, D51/2NS, D5W
- ___Discuss proper fluid choices for the purpose of rehydration and volume replacement: isotonic fluids such as NS and LR
- ___Discuss the sometimes superior choice of LR over NS, particularly in the context of abdominal insults, to prevent development of hyperchloremic acidosis
- ___Discuss the discrete uses of hypertonic saline: critical hyponatremia (ie < 115-120), often used as a drip, should not be started on floor without an ICU consult/recommendation
- ___Discuss the discrete uses of ½ NS: hypernatremia, sickle cell crises, DKA/HHS when Na > 135-140
- ___Discuss the discrete uses of free water (D5W): hypernatremia, mimicking of drinking water via placement in peg for select patients.
- ___Discuss maintenance versus bolus IVF and the uses of each
- ___Discuss risks of continuous fluids (e.g., forgetting they are on, fluid overload)

2. Altered Mental Status / Delirium Differentials & Workup

- Discuss the conceptualization of "5 buckets" of etiologies: neuro, cardiac, pscyh, metabolic, and infectious
- Neuro: structural and functional deficits both possible; consider CT head, MMSE, EEG if relevant
- Cardiac: structural and functional deficits both possible; consider baseline ekg/trop, continuous tele, echo
- Psych: consider prior history and triggers and motivations
- Metabolic: include electrolyte imbalances, thyroid dysfunction, hypo and hyperglycemia, toxic substance ingestion, rx'd med overdoses; consider BMP, fingerstick glucose, tsh, utox, thorough med rec
- Infectious: consider if meets sepsis criteria; infections not localized to brain can still (and often) cause AMS/delirium

3. Anticoagulation for Atrial Fibrillation/Flutter

- Discuss the point of anticoagulation (ie, prevents embolic stroke)
- Discuss the CHADSVASC scoring calculator (demonstrate online)
- Discuss the risk of stroke for low scores (ie < 2 = 1-5% annual risk of stroke) vs higher scores (this is a google-able graph)
- Discuss the HASBLED scoring calculator (demonstrate online)
- Discuss the decision for AC as a risk/benefit decision based on these 2 scores
- Discuss how Atrial flutter is an interplay with atrial fibrillation and the two should be managed identically in this context

4. Rate Control for Atrial Fibrillation/Flutter

- Discuss how Atrial flutter is an interplay with atrial fibrillation and the two should be managed identically in this context
- Discuss role of beta blockers and calcium channel blockers as first line therapies for rate control
- Give examples of the specific meds recommended (ie metoprolol, diltiazem)
- Discuss second line options (amiodarone which has some small amt rate control; digoxin) and risks of each
- Discuss acute management of rapid ventricular rate (RVR) with iv metoprolol or iv diltiazem (e.g., 5mg iv metoprolol q 5 minutes prn vs 10-15mg iv diltiazem q 15 minutes prn)
- Discuss risks of diltiazem (and CCB in general) in the context of recent or current cardiac ischemic disease
- Discuss goal heart rates in inpatient setting (<80 vs <100 studies showed no significant difference in terms of patient outcome so < 100 adequate)

5. Capacity & Mental Status Assessment:

- Discuss how "AAOx3" is not an adequate assessment of either mental status or capacity
- Discuss mental status as a complex phenomenon that involves obtaining collateral from family/friends/PMD as to baseline cognitive function and physical functioning, MMSE or at least a clock draw, and a PT/OT eval
- Discuss establishment of capacity being decision-specific, i.e, a person can have capacity to make one decision regarding medications but not another regarding placement
- Determination of capacity involves eliciting an unprompted relaying from the patient of the risks and benefits around a specific decision
- Discuss how if, at the start of the conversation the patient is not aware of the risks and benefits of a decision, one should clearly explain them to the patient and then have the patient explain them back to him/her in their own words. Ideally after your initial explanation, you should give some amount of time for the patient to reflect on what you told them and then have them relay the risks/benefits back to you .
- Discuss how capacity can be fluid; a person can display capacity today and not tomorrow
- Discuss how family medicine can make capacity judgments; they do not necessitate a psych consult

6. Hypernatremia Management:

- Discuss the management of hyperNa as calculated and cautious given the irreversible risks of rapid overcorrection
- Discuss how to calculate one's total body water (TBW) and free water deficit (FWD) as the first steps of hyperNa management
- Discuss a conservative expectations of decreasing the Na by 10 meq over 24 hours being safe
- Discuss how to calculate the number of meq you want to go down by as (Acutal Na – 140); e.g., if patient's sodium is 160, you want to go down by 20 meq
- Discuss how to get the time amout you want to decrease sodium in as a ratio and proportion: e.g., 10 meq/24hr = 20 meq / x hr; solve for x
- To get a "rate" that you would put in as an order of D5W, discuss how you would get the number of "cc" by multiplying your FWD x 1000 and then dividing that "cc amount" by the number of hours you calculated above
- Discuss the possibility of using 1/2NS instead of free water but that your volume into the patient would double; this can be useful if you need volume in addition to hyperNa correction; it can be harmful if there is a risk of fluid overload
- Discuss that if using free water which comes as "D5W" and the patient is diabetic, you may want to anticipate spikes in blood sugar and cover accordingly

7. Hyperkalemia Management:

- Discuss assessment of true hyperkalemia versus hemolyzed sample
- Discuss options for treatment: mnemonic = BIGCK: beta agonist, insulin, glucose, calcium gluconate, kay-exalate
- Discuss role of calcium gluoconate to stabilize heart and not for lowering potassium and that benefit>risk to give
- Discuss when ekg changes occur and what changes those are based on K level: e.g., 5.5-6.5 peaked t waves; 6.5-7.5 PR depression and prolongation; 7.5-8.5 disintegration of rhythm into sine wave (emergency, call a rapid response if you see this)

8. Inpatient Hyperglycemia (including DKA vs HHS):

- Discuss how to create a weight-based insulin regimen with basal and pre-meal insulin
- Discuss the role of SSI and how that it is distinct from pre-prandial insulin, and the importance of the latter in the literature
- Discuss the definitions of DKA and HHS and the salient differences between the two with regard to usual clinical appearance, acid/base status, presence of ketones, and presence of anion gap, and typical glucose ranges (nice table on uptodate on this)
- Discuss triggers for DKA and HHS and importance of trying to elicit this when cases come into the inpatient setting
- Importance of calculating the anion gap with the NON-corrected sodium (i.e., do not correct for glucose amount when using the Na to calculate the gap)
- Show CUMC protocol for DKA and HHS management and go over in detail with regard to the following: administration of regular insulin bolus, calculation of a insulin drip rate based on weight, administered fluids (NS vs ½ NS, inclusion of D5 or not, inclusion of KCl or not,

inclusion of bicarb or not), administration of basal insulin prior to turning off drip, ensuring patient is eating prior to administering basal dose

QUARTER 3 &4 SENIOR TEACHING OBJECTIVES BY TOPIC:

1. LBBB/RBBB:

- Discuss 3 criteria for diagnosis inclusive of prolonged QRS, findings in V1 and findings in V6
- Can use WILLIAM MORROW mnemonic if helpful
- Highlight significance of both LBBB and RBBB
- Specifically highlight concern for MI if new LBBB if clinically correlated and associated with elevated troponins

2. Seizures:

- Discuss signs/sx of seizure
- Discuss specific things which can lower seizure threshold (eg selected abx)
- Discuss role of checking AED levels on the inpatient service
- Discuss acute management of active tonic clonic seizure
- Discuss role of neuro consult and EEG

3. Selected EKG review:

- Review diagnosis of left and right atrial enlargement
- Discuss left anterior fascicular blocks and right anterior blocks
- Review 1st, second, and third degree AV block

4. Acute CP Mgmt

- Discuss what you do as senior to manage complaint of new CP
- Discuss differential for acute CP
- Stress importance of physically seeing the patient and examining their heart/lungs
- Stress importance of fresh cycling of vital signs
- Discuss important labs/imaging: may include ekg, trop, abg, cxr, bmp, cbc
- Discuss role of asa, nitro, beta blocker, NC O2, etc
- Discuss role of calling cardiology

5. Acute AMS Mgmt:

- Discuss what you do as senior to manage complaint of acute AMS
- Discuss differential of AMS (must include hypoglycemia, hypercapnia, CVA in addition to others)
- Discuss role of checking fingerstick glucose in conjunction with fresh set of VS
- Discuss importance of physically seeing the patient and examining them
- Assess med list for causes of AMS (eg sedating meds including opioids)
- Discuss role of labs/imaging: may include head ct, bmp, cbc, abg
- Discuss options: e.g. amp of D5, narcan, etc
- Discuss role of calling neurology

6. Aggressive Patient Mgmt:

- Discuss what you do as senior to manage an actively aggressive patient on floor
- Stress priority of individual safety
- Discuss use of resources: BERT response team, nursing techs, RN, UA, security, 911, pt relations
- Discuss going with someone to see patient to protect yourself
- Discuss tactics of how to de-escalate pt's level of agitation/aggression
- Discuss role/ethics of sedation and restraints
- Discuss role of psychiatry and when to call

7. Acute SOB Mgmt:

- Discuss what you do as senior to manage complaint of acute SOB
- Discuss differential for acute SOB (COPD, PNA, PE, aspiration, etc)
- Discuss importance of physically seeing the patient and examining them
- Discuss importance of fresh set of VS inclusive of O2 sat
- Discuss role of labs/imaging (e.g. bmp, cbc, abg, ekg, trop, cxr, cta)
- Discuss how to titrate up from O2 NC->face mask->NRB->bipap->intubation
- Discuss when to involve ICU and/or call rapid

8. Senior Tips/Tools for Census Mgmt:

- Discuss your system of how to keep up with ongoing issues and list of tasks
- Discuss your system of checking orders
- Discuss your system of following up on vitals, labs, test results, consult notes, and attending notes
- Discuss your system of following up and/or conversing with attending
- Discuss how you ensure updated handoff
- Discuss your tactics for effective verbal sign-out
- Discuss your tactics of monitoring intern task completion and education
- Discuss strategies for med reconciliation on admission and discharge
- Discuss efficient strategies for prepping discharge summaries