anything that makes you feel uncomfortable, and always adhere to any guidelines that your residents and attendings create.

**A Helpful Hint**

One of the more challenging components of this rotation is the emotional burden of taking care of patients who struggle with helplessness, hopelessness or psychosis. Make sure to keep tabs on your own emotions and reactions during the rotation and do not hesitate to talk about this with your resident or attending.

**Mental Status Exam**

The psych H&P is similar to the general H&P, but it is important to pay extra attention to the past psych history, family psych history, drug and alcohol history, and social history. In lieu of a physical exam, be sure to include the MSE. Note that this is different from the “mini-mental status exam,” which is a tool to assess one’s cognition and only comprises one part of the MSE.

Mnemonic for the MSE is **ABC STAMP LICK**
- **A** = appearance
- **B** = behavior
- **C** = cooperation
- **S** = speech
- **T** = thought processes/thought content
- **A** = affect
- **M** = mood
- **P** = perception
- **L** = language
- **I** = insight/judgment
- **C** = cognition (mini-mental status exam)
- **K** = knowledge

**Appearance**: Include gender/race, actual/apparent age, general appearance, attire, grooming/hygiene, body habitus, physical abnormalities/assistive devices, jewelry, tattoos/body piercings, scars, unusual patterns of hair loss, etc.

**Behavior**: Include gestures, abnormal or idiosyncratic movements (akathisia, automatisms, catatonia, choreoathetoid movements, compulsions, dystonias, tardive dyskinesia, tics, tremors, etc.), facial expressions, eye contact or lack thereof, impulse control, and psychomotor agitation or retardation.

**Cooperation/reliability**: Pay attention to patients’ cooperation/attentiveness to the interview and their attitude/demeanor.
Speech: Note rate, quantity, quality (volume, rhythm), and form, as well as any difficulty speaking (i.e. dysarthria, etc.).

Language: Note any language disorders such as aphasia or anomia.

Thought Process: This is the form or structure of the patient’s thinking as opposed to the actual content. Normative is logical and goal directed. Impaired thought processes include looseness of associations, flight of ideas, word salad, thought blocking (sudden interruption of thought and speech), racing, etc.

Thought Content: This refers to the actual things the patient is thinking about. Includes delusions, suicidal/homicidal ideation, paranoia, somatic or religious pre-occupation, other obsessions, grandiosity, helplessness, ideas of reference, ideas of thought control or thought broadcasting, thought insertion, beliefs of unusual powers, phobias, fears, feelings of worthlessness or guilt, and feelings of being punished.

Affect: This is the externally visible emotional state that YOU observe: such as depressed, anxious, flat, constricted, blunt, hostile, angry, suspicious, guarded, euphoric, labile, irritable, appropriate, and inappropriate. Think in terms of range (number of emotions—narrow/restricted vs. wide/expanded), intensity, stability, reactivity (how much external factors influence emotional expression), appropriateness, and mood congruence.

Mood: Usually given in the patient’s own words. This is the internal emotional state that you believe to be present—may not match the patient’s affect.

Perception: How patient processes environment and perceives the world. Describe any auditory, visual, olfactory, or tactile hallucinations or illusions.

Insight/judgment: Is the patient aware that he/she has a problem? Will he/she accept treatment? Can he/she appropriately weigh consequences of doing or not doing something?

Cognitive functioning/sensorium/knowledge: Orientated to time, place, person? Examine faculties of abstraction, calculation, recall. Use Mini-Mental Status Exam, if indicated.

Mini-Mental Status Exam

<table>
<thead>
<tr>
<th>Task</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time? (Year, season, month, day, date)</td>
<td>5 pts</td>
</tr>
<tr>
<td>Location? (State, county, town, hospital, floor)</td>
<td>5 pts</td>
</tr>
<tr>
<td>As the patient to repeat 3 objects and to remember them</td>
<td>3 pts</td>
</tr>
<tr>
<td>Serial 7’s or spell WORLD backwards</td>
<td>5 pts</td>
</tr>
<tr>
<td>Ask for the 3 objects named above</td>
<td>3 pts</td>
</tr>
<tr>
<td>Point to 2 objects and have the patient name them</td>
<td>2 pts</td>
</tr>
<tr>
<td>Repeat “No ifs, ands, or buts”</td>
<td>1 pt</td>
</tr>
<tr>
<td>Follow command: “Take the paper in your right hand, fold it in”</td>
<td>3 pts</td>
</tr>
</tbody>
</table>
half and put it on the floor.”
Read and obey the following written words: “CLOSE YOUR EYES” 1 pt
Write a sentence 1 pt
Copy a design 1 pt

{ Emergency Medicine }

What students remembered...

“...When my patient came in with chief complaint of “asthma exacerbation”, but his lungs were clear and something just seemed off. On probing further, it turned out that he was severely depressed and had recently had a number of traumatic events, and the only way he could think of to get help was to come in with a medical problem. It was 3am and the ED was quiet, so I was able to spend a lot of time with him... and then helping him get comfortable with the idea of accepting psychiatric help before getting him over to the PEEC (psych ED).”

“...When I got to laugh for hours with my patient who spent the evening telling me story after story about her crazy night out that left her with a painless but bloody laceration on her knee.”

“...When I sat on the floor of the ED for hours in the middle of the night playing games with two young children whose mom was unconscious from a drug OD in the other room, while we waited for child protective services to come get them.”

“...When I got to translate for a frightened Spanish-speaking patient with hypertensive emergency and see the relief spread over his face when he finally understood what was going on.”

“...When I got to tell a young couple who had been trying for years to have a child - had finally gotten pregnant, but were now in the ED with concern for a miscarriage - that their baby was alive and well.”

Emergency Medicine: Your first shift survival guide.

Before your first shift

If you haven’t done so recently, bone up on EKGs. Not a shift goes by that you aren’t asked to interpret an EKG. Also, remember to look at the old EKG and assess for any changes. Other than EKGs, just be prepared to be proactive, get involved, do anything, and see anything.

During the rotation
Work on expanding your differential diagnosis for certain signs and symptoms.

**High yield differentials to read up on:** headache, fainting/loss of consciousness, shortness of breath, chest pain, chronic/acute cough, abdominal pain, altered mental status, knee and joint pain, and complaints of early pregnancy.

Remember that the **most frequent question** asked of you in the ED is “What do you think is going on here?” Even if you have no idea, having a large fund of knowledge on the differential diagnosis will allow you to talk your way through the problem. That being said, your differential needn’t be entirely inclusive. You should have 1 or 2 potential diagnoses, ideally from different systems, to show your superiors you’re thinking. To quote the course director: “Ideally, for each chief complaint, you should have in your mind the top 5 life threats before you walk in the room. They may not be applicable to your patient, but should be able to verbalize that you thought of one or two and either ruled them in/or out through your H&P.”

Your presentations to the attendings and the residents as well as your participation within the entire team are probably where you will be graded the most. Presentations should incorporate relevant past medical history and be focused on the presenting complaint. However, at this stage in the game, it is important to be more comprehensive erring on the side of completeness. While you may be comprehensive in your H&P, keep your presentation focused on the chief complaint. Then, if the attending or resident asks for more info, you can give it, but you haven’t overloaded them initially with irrelevant information. If the patient gives you a complaint/symptom and you aren’t sure if this could be related to the chief complaint, either ask or verbalize why you think it is related.

The presentations can be difficult early on, but a couple of tips are to look in Medview for previous visits and diagnoses as well as old EKGs. While an attending is interested in your detailed physical exam findings, in the back of his/her mind he/she is thinking about what needs to be done for the patient and is focused on things that could be life-threatening. The ED is primarily about identifying acute, life-threatening illness – give the scariest diagnosis first, and then move onto the more likely diagnosis. For example, your summary statement might go something like this, “In summary, this is a 45-year-old female with no known cardiac problems, negative family history, and normal EKG 3 months ago, who presents with 3 hours of “chest discomfort” and who admits to increasing her coffee and cigarette intake over the holidays. We should be most concerned about ACS, Thoracic Aneurysm or even a Pulmonary Embolus, but given her symptoms, this is most likely GI related and not cardiac (GERD, etc..).”

This is also a great rotation to practice procedural skills. Students should try to put in IVs and do blood draws on their patients. Additionally students often get to suture or do LPs. A word of advice: be proactive about procedures. It is possible to go through this rotation without doing many procedures if you don’t ask.
Schedule

Students can go to HUP, Pennsy, Presby, the VA, and Reading Hospital. Depending on your site, your shifts will vary but students generally work approximately 116-120 hours, including some nights and weekend hours, over the course of the rotation in addition to didactics. The course administration works hard to make sure that student hours are equitable between sites.

Didactics

Didactics are held Friday morning from 8 AM – 12 PM. There have been some changes to the course in recent years – including a new course director – who is instituting a ‘flipped classroom’ model. This means that the lectures are being eliminated and students will learn the material ahead of time as ‘homework.’ The material will be provided as recorded lectures, videos and podcasts. The weekly didactics will feature case conferences: small group opportunities to apply knowledge. The first case conferences will be during Orientation – so you will have materials to review before your first day! Dr. Tsao, the course director, really wants to emphasize the important of coming prepared to the case conferences!

Test

Spend some time going over the assigned readings for EM. It is a separate, multiple-choice departmental (shelf-like) exam. Per the course director, the ‘homework material’ – lectures, podcasts and readings – will be key to doing well on the exam. You’ll be asked to apply knowledge like you’ll do in the didactic case conferences. This is a big change for the course, so please be prepared to be flexible and defer to anything you hear from the course faculty!

Grading

The course is graded Honors/High Pass/Pass/Fail. The final grade is based on the test (20%) and clinical evaluations (80%). To qualify for honors students need to receive at least an 85% on the test and have a clinical grade of Honors on their Oasis evaluations. If you get less than 70% on the shelf, the highest grade you can get is Pass, regardless of clinical evaluations. You’ll also have to re-take the exam.
These 12 weeks will focus on the perioperative and operative care of surgical patients. You will have the opportunity to rotate on a wide range of general surgery and subspecialty services, which provide routine and complex care. Even if you’re not interested in surgery, most students enjoy this unique experience. In addition to honing your history and physical examination skills, you will also learn to generate comprehensive differential diagnoses, interpret relevant lab and radiographic data, and sharpen decision-making skills. These skills will be useful no matter which specialty you ultimately choose for your career.

What students remembered...

“...When I was the only one around to do the little things for my patients when everyone else was either in surgery or taking care of urgent business. While medical students sometimes feel like we are not able to contribute as much during this rotation in the operating room, this is the time when making a patient comfortable by getting an extra blanket, finding them edible food in the pantry when they arrive to the floor past dinner time, taking an extra moment to see how they are feeling, really pays off. Your patients will let you know how much you mean to them.”

“...When I would stay in the room with my patients in the busy outpatient clinic after the surgeon had left the room, and would go back over everything that had just happened with them multiple times until they felt comfortable and had all their questions answered.”

“...When a scrub nurse, who I initially found to be very intimidating, came out to find me at the end of my first week to say bye and give me sutures for practicing at home.”

“...When an elderly man who came in after a fall was waiting in the trauma bay, he began “seeing birds flying” and generally becoming disoriented, and I had the time to sit with him and talk, and reorient and calm him...”

“...When I stuck myself with a needle during surgery, my attending was very supportive and caring. He took me straight to the ER. The next morning, when I rounded on the patient from that surgery, the patient exclaimed “Oh my goodness, I heard you got hurt - are you ok?!” She was so concerned about me, even though SHE was post-operative day #1.”

Overview

The Surgery Block is an 8-week period broken into 4 weeks of general surgery and two 2-week blocks of surgical subspecialty rotations (cardiac, thoracic, vascular, plastics, urology, etc.).
4-week block of general surgery is graded Honors/High Pass/Pass/Fail. The two 2-week blocks of surgical subspecialty are also graded Honors/High Pass/Pass/Fail.

Please refer to the following website for up-to-date information about schedules, grading, and course logistics: http://www.uphs.upenn.edu/surgery/Education/medical_students/medical_students_home.html

The Team

- **200 Medical Students**: There are typically one to two medical students per team. Don’t worry if you are on a team with more than one other student, however. Some services utilize several operating rooms at the same time, and there will be enough patients to go around.
- **Sub-I**: This is a 3rd/4th year medical student doing an advanced elective in surgery. As such, he or she will be a great resource and mentor for clerkship students. Sub-Is are often given more responsibilities for patient care as they are aspiring surgeons and are preparing for internship, so do not be concerned if this is the case. Operative case should be divided equally amongst Sub-Is and clerkships students by the site coordinator for the rotation. You will quickly get a feel for their role on the team if you work with a sub-I.
- **Intern**: This is a first-year resident that is responsible for the patients on the service. You will have some interaction with the intern at the beginning and end of the day, but you will spend most days in the OR. If you have some downtime, it is wise to offer to help the intern, as they can typically use it. Most surgery services have now switched to a night float system, which alleviates some of the intern’s burdens, but they will still be very busy and very grateful for your help.
- **Chief Resident**: Chief Residents are surgical residents who are in their final year of training. The chief resident is responsible for the day-to-day activities of the service. He or she rounds in the morning with the team and again in the evening when the day’s cases are finished. He or she will be responsible for much of the didactic teaching throughout the rotation, and as such, is somebody you should befriend. Not every service will have a chief resident, and some may instead have senior residents in charge of managing the team and caring for patients.
- **Fellows**: Certain services (cardiac, thoracic, vascular, pediatric, transplant, trauma) will have fellows who have already completed a general surgery residency program. There may not be a chief or senior resident on these services and in those cases the fellow is responsible for the service. He or she will round with the team in the morning and again in the evening, as would a chief resident.
- **Attendings**: These are faculty who oversee the care of all the patients on the service. Some attendings are more approachable than others, but on the whole, the attending surgeons are interested in teaching enthusiastic medical students. You will have opportunities to interact with attending surgeons on the floor, in the OR, and in clinic.
Your Responsibilities

The responsibilities of the medical student very service-specific. Accordingly, it is wise to sit down with your chief resident or fellow at the beginning of the rotation and sort out what the goals, objectives, and the expectations are for your time on service. Generally speaking you will have the following responsibilities:

→ Pre-Rounds
Prior to morning rounds, you may be responsible for pre-rounding on a number of patients on the service. Typically, pre-rounding involves gathering the numbers (vitals, I&O’s, labs) on the patients on your service. It is wise to find out what information they would like you to gather before you meet. Some chiefs/fellows would like you to wake up the patient to talk and examine them while others may just want you to collect the patients’ data. If there is an outlier in any of these values, write down what time the abnormal vital was recorded and what the previous trends have been. Your sub-I will be a wonderful resource when it comes to navigating the EMR in an efficient manner. It will be very early in the morning and you will have a number of patients to see, so becoming facile at collecting data is extremely important.

Depending on the service, you may also be asked to “print the list,” on which you write the vitals/I&O’s/labs. Once you are done, you will make copies and give them to the team when you meet up for rounds. Ask your intern if this is something that they want you to do, and if so, how to do it in the EMR system.

Typically while you (and the sub-I) are pre-rounding on the floor patients, the intern is seeing the ICU patients and getting signout from the person on call overnight.

→ Rounds
Your senior resident (+/- the fellows, the attending) will walk around with you and the junior resident/intern to all of the patients’ rooms. Before you walk in to the room, either you or the junior resident/intern will present the overnight numbers. It’s best to observe this drill first and then ask if you can present the numbers. Surgeons appreciate students who want to assume responsibility. Try to keep presentations concise, yet inclusive. An example of such a presentation is as follows:

“Mr. Y is our 43yo male post-op day 3 status post right upper lobectomy. His Tmax overnight was 99.7 with a Tcurrent of 98.6. BP was stable in the 130’s-140’s/90’s with a pulse in the 90’s, “sat-ting” 98% on 2L oxygen by nasal cannula. He took in 2.3L and put out 2.0L with 1.7 of urine and 300cc from the chest tube.”

→ Progress Notes
Typically the intern on the service is responsible for writing morning notes. He or she may do this task while rounding. By the middle of the rotation you will likely be writing notes on the patients on whom you are pre-rounding. Surgical progress notes are typically brief and focused with an emphasis on the plan! Remember that surgeons want quick and concise
documentation. Ask your intern to see his or her notes early on in the rotation as an example to follow for your own notes. You will also frequently write post-op check notes and/or pre-op notes for some patients (see Maxwell’s or pages 20-21 of this packet for more details). Please discuss with the team how they would like you to document in the EMR.

**The “Scut Bucket”**

The “scut bucket” is a pail full of supplies that some teams use while on rounds. If used by your service, you will likely be responsible for stocking the bucket before rounds as well as carrying the bucket around with you. Every evening make sure to stock the bucket and put it in a place (typically a call room) for safekeeping.

**Some words of wisdom regarding the bucket:**

- Don’t forget it in a patient’s room.
- Don’t bring it into patients’ rooms that are on Contact Precautions (the rooms where you have to put on a yellow gown and gloves before you go in).
- Stock it every night.
- Each service has different “bucket needs”, but some good things to have in it:
  - 4x4s (lots)
  - ABD pads (stands for Army Battle Dressing, not Abdominal)
  - Sterile q-tips
  - Rolls of tape (silk and paper)
  - Medipore tape
  - Kerlex gauze
  - Safety pins
  - Suture removal kit
  - Staple removal kit
  - Sterile water/gauze

An important part of being a great surgery student is doing your best to assist the team. Scut bucket management is no exception. Your ability to anticipate needs will enhance or limit the team’s ability to get through rounds. For example, if you change a patient’s dressing every morning on rounds, try to have the appropriate materials ready when you enter the patient’s room. If you want to be even more of a help to the team, go in ahead of time and take the dressing down before the team enters the patient’s room. You may not know much, but if you are always eager to scrub on cases, regardless of how late they go, you will be well-regarded by your team. Thinking ahead does not go unnoticed on surgical services!

**Operating Room Etiquette**

*(Note: you will learn how to scrub during orientation, so rest easy!)*
• Whenever you walk into an operating room, introduce yourself to the staff. This includes the circulator, the OR nurse that deals with issues during a case, and the scrub nurse, the OR nurse assisting the surgeon. Tell them that you are a medical student, and offer to help them with anything they need. Always treat them with respect and ask for their advice, and they will help you in innumerable ways.

• If you are going to scrub into a case, you will need to give the scrub nurse your gloves beforehand. First of all, ask them if you may give them your gloves. They may ask for information, like the size and type of glove, so they know which ones are yours. Once it’s clear for you to give the gloves to the scrub nurse, you must do so in a way that doesn’t contaminate the sterile table. The safest way to do this is to open the package without touching the gloves and allow the sterile scrub tech to reach in and remove them for you. Some scrub nurses prefer clerkship students to always provide their gloves this way. Eventually, you may be trusted to drop your gloves on the table in a sterile fashion.

• It is a good idea to write your name on the white board. You may also fill out the names of the other members of the team in that OR if they aren’t written already.

• Before scrubbing, make sure to assist your resident with positioning and prepping the patient, draping, dressings and takedown, and note writing. Easy jobs include having tape ready to pick up stray hairs from the patient’s body after your resident shaves them, cleaning the belly button with alcohol swabs prior to prepping, and pulling the pertinent CT or MRI scans up on the computer on the wall (not the computer that the nurses work on in the corner), if your sub-I has not already done so.

• During a procedure, placing your hands gently on the draped part of the patient immediately in front of you can help you avoid contamination. Do not let your hands hang down once you are gowned. Anything beneath the level of the patient or the level of your abdomen is not considered sterile.

• Everyone will contaminate himself or herself at some point. It is not a big deal. Step back from the field and do not touch anything. Discreetly let the circulator know and he or she will give you a new glove/sleeve/gown.

• It’s okay to peek over someone's shoulders, as it is sometimes very difficult to see what’s going on. Remember, however, that the back and shoulders are not sterile.

• It’s okay to very politely ask the circulator for a step stool.

• Be observant and mindful. Learn when to stand back and get out of the way.

• Don’t ask for instruments, except possibly for suture scissors when someone ties a knot and you have been directed by your resident to cut the sutures. Ask where (with respect to the knot) and how to cut suture the first couple of times you’re told to do this job. It is not intuitive and the surgeons are rightly very particular about it being done properly.

• Don’t lean on or take instruments off of the scrub nurse’s table, or mayo. Do not try to pass instruments between the doctors and the scrub tech. There is a particular way to do it and you will usually just slow down the process or possibly get stuck for your trouble.

• You can ask questions, but try to ask them at appropriate times. For example, if a patient is bleeding briskly and the team appears concerned, it is best to hold your question until the bleeding has been managed.
- Pay attention. You can learn quite a bit of functional anatomy in the OR. The surgeons will notice if you are completely checked out.
- Avoid asking questions you should know the answers to.
- Offer to write the Op Note when the case is done. Maxwell’s has a great, complete example and you can also find an example on page 21 of this packet.

Call

All students will be required to take one night of overnight call with a consult resident. The date of call will be pre-determined and assigned at the beginning of the rotation. In general, students are not expected to round during the weekends, but all schedules are team specific, so be sure to check with your chief resident.

Schedule

The schedule varies greatly from the various services and sites. The clerkship director has worked hard to ensure your surgical experiences are varied and will have assigned you to OR & clinic days, as well as providers you should follow on specific days. This information is detailed on the surgery student website as well as the schedule you are given at Orientation.

In general, 200 medical students on the Surgery Clerkship are expected to work 12-hour days, from 6am – 6pm. Although the Attendings, residents, and interns are aware of this, they will usually not be watching the clock. If there are adjustments due to conferences, grand rounds, etc. make sure to discuss what time you are expected to arrive and leave that day with either the attending or the residents.

Rounds typically last from 6:00am-7:00am, depending on the team and number of patients. Most OR cases will end by about 5-6pm. Upon the completion of the day’s OR cases, the team often sits down to discuss the patients on the service. These evening rounds are usually brief, but can be prime time for teaching.

There will typically be 1-2 days per week during which you will be in clinic with the attending. This is a great opportunity to interact with attending surgeons and to ask questions regarding disease management (i.e. the stuff on the shelf exam). Attendings are often a bit less tense during office hours as compared to the OR, so clinic is a great time to chat with them about their lives as surgeons. Most surgeons are nice people. Don’t be afraid to talk with and learn from them.

Most of your Fridays will be reserved for didactics and Problem-Based Learning sessions, or PBLs. Some Fridays will be split between clinical duties and teaching sessions. Please refer to the Surgery Clerkship website for more information. The Friday schedule for the block will be posted there and you should check it every week to make sure you know which days have scheduled didactics and PBLs. Most teams do not expect you to round on Fridays before a full day of didactics. Just check in with your resident on Thursday to remind them.
What to Wear and Hygiene

On operative days, you can wear scrubs, but you should still look washed and awake. Make sure to wear comfortable shoes, as you will be doing a lot of walking and standing. On clinic days you should wear professional (read: business) attire. Don’t wear scrubs to clinic, as many attendings will not allow you to see patients. You should wear your white coat and ID every day. Your white coat should not be excessively stained or noticeably dirty. Your fingernails should be clipped short. Certain scrub techs will not let you scrub if you have your fingernails painted.

What to Put in Your White Coat

- Stethoscope. You may be the only member of the team with one on rounds. Your resident may occasional ask to borrow it while assessing the patient.
- 4X4’s (at least five or six), Medipore, and disposable scissors.
- Penlight.
- Surgical Recall. This can be kind of bulky, so it is reasonable to store it somewhere accessible.
- Maxwell cards for Op notes/Post-op checks.
- Pens.
- Alcohol swabs.
- Snacks (i.e. granola bars, snack mixes, etc.) – Cases are often long and time is limited, so having something to eat in between cases should you not have the opportunity to go to the cafeteria is a good idea.

Additional Requirements

- Each week, students will have PBL sessions taught by general surgery residents. You will have to facilitate one session during the rotation.
- You will also need to turn in 4 write-ups during the course of the block. Two of the four write-ups are done with PBL leaders. These can be in any format, but need to be legible. Examples of different write-up types include acute consults, new patient visits, and post-op visits. They will be assessed for completion only and will not be assigned individual grades.
- You may be asked to do one or two topic presentations during each month, depending on the team. See the “Sample Documents” packet for an example of a surgery presentation.

Grading

The rotation is graded honors/high pass/pass/fail. The course exam is the Surgery shelf exam. Your final grade will be a combination of your general surgery scores, subspecialty grades, your PBL grade (given by your resident), and the shelf score. A minimum of 75 on the shelf is needed to qualify for Honors. With respect to the surgical subspecialty rotations: if you show up on
time, exhibit enthusiasm, and do what you are supposed to be doing, you will be more than fine. The attendings and residents just want you to be professional and have a good attitude. A great way to start out each rotation is to ask the chief resident what his or her expectations are for you during your time on his or her team. This will set you up to be successful and put you on the right track with your primary grader from the outset.

**Tips for Studying for the Shelf**

Part of the reason the 200 medical student is slated to only work from 6am-6pm on weekdays is to allow you time to study for the surgery shelf. The surgery shelf examination is challenging and requires preparation, especially since there isn’t always continuity between what you are doing on service and what is tested on the shelf. Even budgeting 30 minutes per night for reading can be a huge help. Preparing for the PBL sessions is a great way to study for the exam, as the topics selected for the PBL sessions are high yield. Reading prior to the sessions and participating in the group discussion will reinforce many of the important general surgery topics often tested on the shelf. See below for commonly used study materials.

**Tips for Success**

- Visit the Mod 4 surgery clerkship website and read the syllabus.
- Always be friendly and have enthusiasm, even for the little jobs.
- Be punctual.
- At the end of each day, ask your senior if there is anything you can help with.
- Find out what cases are scheduled for the next day and what anatomy you should read up on. You can look up the OR schedule on the UPHS Intranet. Ask your sub-I or resident to show you.
- Ask your resident for silk ties to practice tying knots at home or during down time.
- Try not to drink a lot of fluids during the day. Hydrate well when you return home in evening. There is nothing worse than being scrubbed in with a full bladder.
- Always eat breakfast before an OR day.
- Know about the patients and the procedure being done. Residents like when you’re interested in what’s going on. It will also prepare you for the questions you are most likely to be asked.
- Be safe. Protect yourself. Go slowly so that you do not stick yourself with a needle. If you do, SCRUB OUT follow needlestick protocol. Your attendings and residents will almost always alert you if the patient has known viral hepatitis or HIV and will take extra measures to protect everyone on the team. However, you can never be certain about which patients have blood borne illnesses and must always follow up a needlestick with the appropriate post exposure precautions.
- If you’re feeling stressed or having a hard time, talk about it to your friends and family. Letting off a little steam and laughing at yourself always helps. If you are have a serious issue or concern, make sure to bring it to the attention of the clerkship staff. They are there to help you and ensure you have a good learning experience.
Enthusiasm and work ethic are key. Residents pride themselves on working hard and expect the same from students. They want to teach students who want to learn. 

Go in with an open mind. Lots of students never think they will enter surgical fields and end up choosing surgical residencies. Whether you love or hate it, it is a formative experience. Try to enjoy it!

**What NOT to do**

- Pimp the residents and fellows.
- Jump in during other teammates’ presentations.
- Seem bored, uninterested, or insincere.
- Be the last to arrive and the first to leave (without consulting with your resident or fellow).
- Ask questions at inappropriate times (i.e. patient bleeding out).
- Interfere with the efficiency of the service. Try to learn about your team and know when to step up as well as when to take a step back.

**First day suggestions**

- Ask your resident or attending when they have a moment to go over what is expected of you for this rotation.
- Find out what time you are expected to arrive and how to best help in the morning. You should first ask your chief or fellow, but he or she will likely refer you to the intern.
- Find out how to get the week’s OR schedule so you can read up on the cases.
- Find out where to put your personal things. For example, there is an on call room on Rhoads 4 immediately across from the visitor elevators. Ask your resident for the code.
- Start to practice knot tying. Residents can often provide helpful tips, and as you use kits or extra silk to rehearse, you’ll become more useful in the OR. Show your team that you mean business, and they’ll get you more involved and trust you more.

**Halfway through your rotation on a service**

There is a mandatory feedback session with the clerkship directors halfway through the block. Also, ask your residents and fellows for feedback and incorporate any suggestions for improvement. This will show that you can appropriately respond to constructive criticism and gives you the opportunity to work on anything that might have been identified as a weak point in your performance. Specific questions are always better.

**TRY TO HAVE FUN!! Be enthusiastic, read, ask questions, and help out in any way you can!! If you are relatively alert, friendly, and ask for guidance, you will do great!!**
The weeklong pass/fail clinical rotation in anesthesiology is a great experience for 200 level students. Over the course of the week, you will help with all aspects of pre-operative, intra-operative and post-operative patient management. You will spend two days in the main HUP operating rooms, working with a resident and an attending, and two days completing electives in subspecialties of anesthesiology, including cardiac anesthesia, pediatric anesthesia, obstetrical anesthesia, regional anesthesia, and pain medicine. Your experience will depend greatly on the residents you work with, the types of cases involved, and your interest level and motivation. In general, all of the residents are very excited about teaching medical students and clearly love their field. You can expect to learn a good deal about the induction of anesthesia, general anesthesia, local anesthesia, and the monitoring of physiologic functioning and how to respond to changes in those functions. You’ll also have great opportunities to practice IV insertion, mask ventilation, and endotracheal intubation. Clinical experience is supplemented by a highly regarded lecture series covering important topics including general and local anesthetics, pain management, critical care, hypotension, and obstetric anesthesia. Relevant readings will be provided and no textbook is necessary.

What students remembered...

“...When my O’s medical student cohort had all the time in the world to cook dinner together, play together and get some good sleep on the weekends.”

“...When I met multiple patients with horrible head and neck cancers that were overjoyed to share their stories of how the ENT team had taken amazing care of them.”

“...When I met a girl my age who was a cancer survivor getting experimental treatment for her hip osteonecrosis. Pain-free for the first time in years, she was all smiles and excited to go back to college.”

“...When I could watch surgeries purely for fun without the pressure of grades.”

The Ophthalmology week begins with an introductory session on the eye exam, use of the slit lamp, and looking at each other’s fundi. Be prepared to have your eye dilated and remember your ophthalmoscope, if you have one or can borrow one (but don’t worry if you don’t have one—you can share with other students). The week consists of a mix of lectures and clinic time, and you also usually have the option of spending time in the OR. You will rotate through Scheie, HUP, VA, and CHOP, and your experience is up to how much you put into it. You will be loaned a book for the week that has a lot of pretty cool pictures. Be sure to look at these photographs.
as a good portion of the exam at the end of the week consists of slides from the book. The exam is relatively stress-free and is pass/fail.

{ Otorhinolaryngology }

ENT is a well-organized week consisting of a variety of clinical activities and lectures. You may be provided with a short textbook/pamphlet, which contains a review of basic ENT topics. The test is pass/fail and is given on your last day—it is not intended to be stressful. You will have the opportunity to practice a complete head and neck exam on each other and see a laryngoscopy. Throughout the week you will have sessions on audiology, pediatric ENT, smell and taste, speech pathology, and head and neck cancers. You can spend time both in the OR and in the clinics.

{ Orthopedics }

This week-long course is composed of clinical sessions in the morning (roughly 8am to 12:30pm), a didactic session in the afternoon (roughly 1 to 3pm), and self-directed learning in the evening. There are no on-call duties. The course attempts to offer balanced assignments between the operating room and outpatient clinics, and between adult and pediatric conditions. Students who would like to be assigned to a particular service, or who would like to see orthopedic oncology or foot surgery (both based at Pennsylvania hospital, where students are not routinely assigned) are encouraged to contact the course director at least a week in advance, before the assignments are made. The self-study component of the course is directed to mastery of a set of questions and answers covering basic topics in musculoskeletal medicine.

The questions are posted at

http://www.orthopaedia.com/display/Clerkship/Penn+Med+Self+Study+Questions

An open-response examination is administered on the last day of the course, comprising 5 questions chosen from this set. The course is graded pass/no credit. To pass, students must attend all clinical and didactic sessions (or be excused) and pass a minimum threshold on the examination.
Learning Materials for the Clinics

There are many materials available for each clerkship. Below is a relatively exhaustive list of common choices, with a focus on what worked best for us. All of us learn differently, so you will see quite a bit of variation among recommendations. In general, choose your study materials early in a given rotation and stick with them! Don’t let other students make you doubt your choices. In our opinion, it is better to dive deeply into 1 or 2 learning materials than skim through 4. Perhaps most importantly, while you will want to spend a good deal of time reading and reviewing, we feel that practice questions are the best way to succeed on the clerkship exams.

Going from the classroom to the clerkships is a difficult transition for many. There is a lot of information to get through and less time to do it. It is natural to require some time to figure out which study methods will work best for you. A good approach early on is to use the same methods that you did for the pre-clerkship years, just adapted slightly for the increased volume of information. For example, if you were successful making flashcards before, stick with that plan when you start Mod 4. It will get easier as you get further into the year.

First, a general overview of the major series of review books/resources:

- **USMLE World**
  - This online question bank has become the central study tool for essentially every student on the clerkships.
  - We recommend doing as many questions as possible; however, you should be sure to use the questions you get wrong (and the incorrect answer choices in the ones you get right) as a jumping off point for your reading.
  - The question bank is expensive, but worth it to many people. Some people choose to buy yearlong subscriptions (you’ll want to get a subscription for the Step 2 CK bank). Some pairs or groups of people have shared subscriptions. You can reset all the questions ONCE during a one-year subscription.
  - The question bank can be downloaded and used on your smartphone or iPad. Good for efficient studying when you have down time.

- **OnlineMedEd.org**
  - Free 5-20 minute videos covering many topics relevant to all clerkships.

- **Emma Holliday Ramahi**
  - Per one of the most successful students in the school: “Emma Holliday Ramahi is a bomb-ass lady who created a series of high yield review lectures for the various shelf exams. They run about 2 hours and are accompanied by lecture slides. Her videos can be found at [http://som.uthscsa.edu/StudentAffairs/thirdyear.asp](http://som.uthscsa.edu/StudentAffairs/thirdyear.asp). Many consider this resource to be a good overview to watch before the shelf exam.”

- **First Aid**
  - This series generally provides a good overview, covering the basics of the important topics related to the clerkship.
  - Usually, however, these books are NOT detailed enough to be a sole study source.
• **Blueprints**
  - The books are fairly portable and can be read relatively quickly. For many of the clerkships, they are not complete enough (e.g. Surgery); however, in many cases they are useful as an overview early in the clerkship (OB, Neuro, Psych).
  - The practice tests are generally useful.
  - Blueprints makes a series of Q&A books as well as review books. These are a good source of practice questions if you run out.

• **NMS**
  - This series is written entirely in outline format. The books are dense and full of detailed information. They are generally much more complete than Blueprints.
  - If you like the outline format, these books are very complete and may be all you need to read.
  - Questions at the end of chapters are generally useful.

• **BRS (Board Review Series)**
  - This series is also written in outline format, but the books are usually less dense than NMS.
  - For some rotations, these books can act as your main review source (supplemented with questions, etc.), but some books in the series are not detailed enough to serve this purpose.

• **Case Files**
  - This book has cases and questions covering many of the important topics that you are expected to know. The cases are presented with explanations and answers following. Each case ends with a couple of review questions. The cases are comprehensive, but the questions are sometimes a bit easier than shelf questions. Usually relatively fun to read!

• **PreTest**
  - These are question books that many of us found useful but don’t necessarily correspond in format with shelf questions. Questions are arranged via topic and explanations to questions are generally fairly complete, so doing the questions and analyzing the answers can help you learn the material.
  - Available as an app for your smartphone or iPad.

• **Kaplan Step 2 CK QBook**
  - This is a large question book geared towards the Step 2 CK exam, which happens to have questions that are nearly identical in format and difficulty to shelf exams. The book contains a couple of 50 question tests for each discipline and more for core rotations like medicine and surgery.

• **Appleton and Lange**
  - These are also question books. Each book has several complete practice tests, which are useful. Questions tend to be difficult, and several people noted that they could be damaging to confidence if done too close to the shelf.
  - This is a good book to read and helps you brush up on topics that you might not be comfortable with.
BY CLERKSHIP

First Aid for the Wards offers an overview of each clerkship, as well as a summary of each book and resource. Probably unnecessary, but if you’re nervous before starting clerkship year this might be a good thing to flip through at Barnes and Noble.

Medicine

One of the difficult parts of preparing for this exam is finding time to do it. Try to use your patients and the write-ups that you have to hand in to learn about large topic areas. Keep in mind that it is nearly impossible to read the entirety of any of the three general medicine books because they are very long and you simply won’t have enough time. Instead, we recommend that you prioritize UWorld questions and use the questions to direct your reading. Based on a 2017 MedEd Club survey, 100% of students recommended UWorld, 61% recommended Emma Holliday Ramahi, and 47% recommended Step Up to Medicine. Other resources were recommended by less than 15% of students.

- We highly recommend the online question bank UWorld for Step 2 CK when studying for the medicine shelf. The questions are very similar to the shelf style, you can time yourself, and the explanations are very thorough. Worth the money!! Especially if you do your medicine shelf early in the year, doing your best to get through as many of these as possible will really pay off. Each question has fantastic explanations that will teach you a lot of high-yield information.
  - Many successful students use this Qbank as their only resource when studying for the shelf. This is to say that it has all of the information you will need to do well on the shelf. However, realize that students who choose this route tend to take their time with the questions, reading each explanation thoroughly and usually taking notes on the high yield topics.

- A review book is very helpful for shelf exam review and almost everyone refers to one of the ones listed below. One of these will serve well as a supplement to the Qbank.
  - **Step up to Medicine:** By far the most popular review book for the medicine clerkship. All the detail you need, and makes a great review for Step 2 as well. Most Penn students use Step Up and a question bank as their main study guides.
  - **NMS:** Dense, but detailed. Questions are good for practice.
  - **Blueprints:** This book is a good overview, but is not at all detailed enough for the shelf exam.
  - **First Aid for the Medicine Clerkship:** This covers most topics that you will need to do well on the shelf.

- If you need more questions than the 1000+ offered in UWorld (most do not!), these question books have been used by students in the past:
  - **MKSAP** for Students: There are several editions of these books, all with questions that are similar to those on the shelf in terms of length and content, although they are often more detailed and specific than many shelf questions.
- **Kaplan QBook**: This book has multiple sample exams with questions that reflect the shelf exam very well.
- **PreTest**: A great supplement to MKSAP.
- **Other resources:**
  - *Pocket Medicine* is commonly carried in the white coat. You can skim topics for the main points just before you know you’re going to be asked a question, and there is space for your own notes. However, many students forsake this resource and do well, preferring instead to use UpToDate on their phone as a reference, so no need to keep it around if it doesn’t mesh with your style.
  - **Pharmacopia or EPocrates (PDA)** for drug names, dosing, side effects.

### Surgery

As is true for the medicine shelf, time is an important factor here. Additionally, many of the questions on the Surgery shelf exam bear striking similarity to medicine questions. Focus on medical problems requiring surgical intervention, anatomy, post-operative management, and complications in your reading. Worry less about surgical techniques. This clerkship is a bit of a free-for-all as far as which references are most commonly used, and there aren’t enough questions in UWorld to use it as your sole source of information. Based on a 2017 MedEd Club survey, 93% of students recommended UWorld (focusing on surgery questions in addition to medicine questions in the areas of GI, endo, renal, cardio, pulm, and ophtho), 92% recommended Pestana, 59% recommended Emma Holliday Ramahi, 20% recommended ExamGuru, and 16% recommended Case Based Review. Other resources were recommended by less than 15% of students.

- **Question sources:**
  - **USMLE World**: Most widely used question source.
  - **ExamGuru**: This is a newer question bank that closely mimics the UWorld question bank format. A very good way to supplement the limited number of surgery questions on UWorld.
  - **Kaplan QBook**: Consider doing the medicine questions as well as the surgery questions as the content overlap between the two exams is quite high (60-80%).
  - **PreTest**: A few of the answers in the book are incorrect, so if you find a different answer elsewhere, don’t get stressed about it.
- **Pestana**: This short book quickly runs through many relevant diagnoses, with the goal of improving speedy recognition of common test problems. These questions are quite useful for the shelf but are in no way comprehensive. There is also an audio version of this book that you can find floating around Penn Dropbox.
- **Review books**:
  - **First Aid for the Surgery Clerkship**: Very helpful and manageable for mid-week reading.
- **NMS**: As usual, dense and detailed. Questions were noted to be useful. **Blueprints**: Not enough detail. Questions may be useful as they are similar in length to the questions on the shelf (i.e. LONG).

- **Surgical Recall**: this source should not be used as a comprehensive shelf exam study material, but may be very helpful for answering questions in the OR and understanding the treatment of the patients on certain services.

- **General surgery textbooks**:
  - Lawrence *Essentials of General Surgery*
  - Kreisel, Krupnick, Kaiser *The Surgical Review*

- **Subspecialty Specific**:
  - Trauma: A&L for questions (there is a lot of Trauma on the shelf). Pestana is also good for Trauma.
  - Transplant: Review immunology and immunosuppressing drugs before starting (graft vs host, immunosuppression).

### Pediatrics

This shelf exam is sometimes underestimated but it is a hard test. You also have only 6 weeks to study for it, as opposed to the 12 you have for medicine and surgery. Again, focus on UWorld and supplement with additional resources. Based on a 2017 MedEd Club survey, 97% of students recommended UWorld, 53% recommended BRS, 51% recommended Emma Holliday Ramahi, and 18% recommended PreTest. Other resources were recommended by less than 15% of students.

- **Board Review Series (BRS)** is the book that has been traditionally used for this course. It is a very complete review book, however, the 2004 version is out of date. More recently, “Step Up to Pediatrics”, edited by Dr. Ronan (one of the course directors) has been recommended.

- **Other Review Books**:
  - **First Aid for the Pediatrics Clerkship**: This is an excellent outline of everything you need to know for the shelf, but it is not complete enough to be a sole study source. If you decide to use First Aid, make sure to supplement with more comprehensive sources.
  - **Blueprints**: Although some people found this book to be all that they needed for the shelf exam, most felt that it was too basic. It may be useful in addition to another book, but in general, BRS is a much more helpful book.

- **Question Sources** (you can definitely get away with just UWorld, but one additional book may also be helpful):
  - **USMLEWorld**: Most popular.
  - **PreTest**: Highly recommended (most people use).
  - **Case Files**: Highly recommended (most people use).
  - **ExamGuru**: Some found this helpful.
Ob-Gyn

Based on a 2017 MedEd Club survey, 95% of students recommended UWorld, 67% recommended UWise, and 39% recommended Blueprints. Other resources were recommended by less than 15% of students.

- Most of us recommended using one book for an overview in this course. Consider choosing one of the following:
  - **Blueprints**: The Ob/Gyn part of this series is more detailed than most of the other Blueprints books are. The majority of people felt that this was sufficient for the shelf exam, with the addition of a question source.
  - **First Aid for the OB/GYN Clerkship**: Once again, an excellent outline of all the topics you need to know for the shelf, but not comprehensive enough as a sole study source.
  - **Beckmann**: This book is produced by ACoG. It corresponds to the UWise questions directly. It has fewer errors than Blueprints, but it is longer.

- Question sources:
  - **UWISE**: This resource is extremely high-yield for the shelf. You will get access info and password on the first day of the clerkship. Reportedly written by the same people who write the shelf. Relevance varies from test to test, but the questions are generally reflective of the exam and often extremely helpful. Do as many as you can. Do the questions you got incorrect again.
  - **USMLE World**: Again, widely used.
  - **Case Files**: Useful for doing well on this shelf, as most of the cases are identical to those you will see on the shelf.
  - **PreTest**: A good number of the questions in this book are not pertinent or are incorrect, but some people use this book.
  - **Blueprints Q&A/Blueprints Cases**: Both of these give more practice with solving clinical cases as you have to do on the shelf.

Psychiatry

Based on a 2017 MedEd Club survey, 90% of students recommended UWorld, 46% recommended First Aid, 34% recommended Emma Holliday Ramahi, and 18% recommended Appleton & Lange. Other resources were recommended by less than 15% of students.

- **Andreasen's Introduction to Psychiatry** is recommended by the course director. Although it is very informative, it is quite long and detailed; the majority of us did not use it.
- Most people recommend using at least one of the following review books instead:
  - **First Aid for the Psychiatry Clerkship**: Great outline; all the topics you need to know for the shelf, highly recommended and very popular with Penn students.
- **Blueprints**: Somewhat incomplete, but a very fast read. Some found the med lists useful. May be helpful to read with BRS or NMS to help you get the bigger picture. Notably light on the pediatric syndromes that are prominent on the shelf.
- **BRS**: Readable and concise, but still detailed enough for the shelf if you supplement with PreTest. This or NMS would be an appropriate main review book (just choose whichever series you prefer).

**Question sources:**
- **USMLEWorld**: Likely the most widely-used question resource.
- **A&L**: The best in the A&L series, highly recommended. Tough questions but important review.
- **Kaplan QBook**: Recommended by some.

In addition, the medications are one of the most difficult topics to master. A pocket book devoted to them may be helpful. The Blue Pocket Medicine book on Psychiatric Drugs was recommended by some. More useful will be the crash course on psychopharm handout you receive in didactics.

**Neurology**

Based on a 2017 MedEd Club survey, 92% of students recommended UWorld, 87% recommended the resources provided by Dr. Pruitt, and 30% recommended Blueprints. Other resources were recommended by less than 15% of students. Many found that UWorld + provided course materials were sufficient, so we recommend prioritizing these resources and supplementing with a review book only if you have enough time and energy.

- Perhaps most importantly, spend time going over Dr. Pruitt’s review questions (“yellow pages”) that she hands out in the beginning of the course, as well as her review session on high-yield topics. *Memorize these questions.*
- **Blueprints**: this book is very readable. It is especially helpful for the shelf exam, since you only have four weeks to study, and it covers many of the basic topics that will be on the exam.
- **Other books that may be useful:**
  - **PreTest**
  - **High Yield Neurology**
  - **Clinical Neurology Made Ridiculously Simple**
  - **Neurology Recall**
  - **Neuroanatomy Made Ridiculously Simple**: If you need some anatomy review this is a great resource. Includes a CD with localization cases for practice.
Emergency Medicine

Again, this is not a shelf exam. It is written by the course director and other members of the department. Therefore, the questions will draw heavily from materials used in didactics and group sessions. Make sure to study the materials provided to you in packets, powerpoints, and websites, and you’ll do well. Past years have emphasized ultrasound and EKGS!

Family Medicine

There is no longer a textbook for Family Medicine. You are expected to do the online FMCases as practice for the exam, and review your notes from the lectures. This is both necessary and sufficient!

♦ Exposure to Blood and Bodily Fluids ♦

You are probably aware of the proper procedures for Universal Precautions. Nonetheless, a few extra words of caution are warranted. It cannot be stated too strongly that you are in the clinics to learn! This means that you will be performing procedures for the first time. You may be nervous and feel inexperienced. Know that you are not required to put yourself at risk. If you feel uncomfortable about the circumstances surrounding a procedure (i.e. the patient is thrashing around on the bed as you try to draw blood), don’t do it! Additionally, you will sometimes encounter situations where residents or attendings are not following universal precautions (e.g. wearing one pair of gloves in the OR) and you will be tempted to follow their example so as not to draw attention to yourself. Don’t do it! You have an entire career ahead of you. This is no time to be taking undue risks. The below policy on potential blood and body fluid exposures can be found in every single syllabus.

Penn Med Policy Regarding Potential Exposures

Any medical student who sustains a needlestick or other wound resulting in exposure to blood or body fluids should follow the following protocol. Please keep in mind that drug prophylaxis following a high-risk exposure is time sensitive, therefore you must immediately seek help from the appropriate hospital department.

Immediately wash the affected area with soap and water and cover the area with a dressing if possible. For an ocular exposure, flush thoroughly with water. Inform the supervising resident and immediately report to the following areas:

At HUP and the VA

• Go directly to HUP’s Occupational Medicine Division.

• If they are closed, report to the HUP Emergency Department.
• Identify yourself as a medical student who has just sustained an exposure.

• You will see a health care provider who is trained in assessing the risk of the exposure. If you are seen in the Emergency Room, an occupational medicine doctor is on-call 24 hours a day to provide immediate consultation on post-exposure drug treatment and counseling. Do not hesitate to ask the physician treating you to page the Occupational Medicine doctor carrying the needlestick pager.

• You will be counseled and advised about postexposure prophylaxis, if necessary.

• If indicated, you will be given a starter pack of the prophylactic drugs which are recommended in accordance with the current guidelines of the Center for Disease Control.

• Baseline blood tests will be done on you.

• The physician at Occupational Health will contact the attending physician of the source patient to expedite the process of getting consent to test the source patient.

• Request a copy of your treatment plan including baseline lab work and medications ordered and source patient results.

• Call Student Health Service (SHS) at 215-746-3535 to schedule a non-urgent evaluation at SHS within 1 week from exposure if possible.

• Bring your treatment plan, baseline lab results, list of medications ordered and source patient results with you to SHS.

• You will be given a schedule as to when to return to Student Health for follow-up testing.

If you are at the following hospitals, please go to the place listed. You will be treated in accordance with the hospital’s needlestick policy for healthcare workers. All affiliated hospitals’ needlestick policies have been reviewed by the Director of Infection Control for HUP and meet established standards. **All follow-up testing for the students is done at Student Health Service. Students should bring their records to Student Health Service so that appropriate follow-up testing can be scheduled.**

**Children’s Hospital of Philadelphia** - Report to Occupational Health Service during weekdays or to the Nursing Supervisor on weekends and evenings.
Presbyterian Hospital – Report to Occupational Medicine or to the Emergency Room if they are closed.

Pennsylvania Hospital – Report to Employee Health or to the Emergency Room if they are closed.

Chestnut Hill Hospital – Report to the Emergency Department.

Chester County Hospital – Report to the Emergency Department.

Lancaster General Hospital – Report to the Emergency Department.

Reading Hospital – Report to the Emergency Department.

Outpatient Ambulatory Sites - Report to HUP Occupational Medicine or to its satellite at Radnor, whichever is a closer distance to your site.

Billing Procedures
The School of Medicine will pay for any charges not covered by the student’s insurance so the student does not incur any expense associated with the exposure. At the time of service, please provide your insurance information to the hospital. If you receive any invoice(s) for balance payments due, please bring these immediately to the Office of Student Affairs so the School of Medicine can pay these charges.

Additional Assistance
If you have difficulty getting the consent of the source patient, or any other problems associated with your needlestick, please contact Dr. Jon Morris, Associate Dean for Student Affairs, at 215-898-7190, 215-662-2131 or cell 215-313-6990.

•♦ Attendance Policy ♦•

• Attendance during clinical rotations is mandatory.
• Attendance will be tracked by the assigned clinical team.
• Students must ask permission to be absent 8 weeks in advance with the exception of acute illness for the student or family member or death in the family.
• Examples of possible accepted reasons to miss clinical or didactic time are: presentation of original work at national meetings, family wedding or participation in a wedding party, death in the family, and personal or immediate family illness.
• Examples of unacceptable absences include traveling to spend time with significant other or attending to elective doctor’s appointments.
• Students must obtain permission from the appropriate clinical director prior to making travel plans.
• Students must include Anna Delaney in any communications to the clinical director regarding absence requests.
• Students should minimize any absence request to as few days as possible; it is not acceptable to book travel one or two days in advance of an event, thus missing more time from clinic.
• The clerkship director may require the student to make up missed time during the rotation.
• Any absences during the one-week rotations must be approved in advance by and made up according to terms in agreement with the course director(s) prior to the start of Module 5.

Repeated or habitual absences will be brought to the attention of Drs. Goldfarb and Morris, and may result in a meeting before Student Standards.

***In case of illness: please don’t come in and infect your co-workers/patients if you are unwell (fever or vomiting mean stay home); HOWEVER, if it is a mild illness (such as a mild URI) you are expected to come in. In the past, absences perceived to be due to mild symptoms have been noted and unfavorably commented on by evaluators.

•◆ Transportation ◆•

School of Medicine Transportation System

The Office of Student Affairs has worked with the University Parking and Transportation Office to develop a safe, affordable way for students to get to various hospitals between the hours of 3:00 am and 7:00 am and home from the hospitals between 8:00 p.m. and 12:30 am. The system that has been established utilizes escort vans only available for medical students.

Boundaries

The shuttle service operates within the following boundaries:

North
- Spring Garden Street (Powelton Village)
- Market Street (West Philadelphia)
- Ben Franklin Parkway (Center City)

South
- Christian Street (Center City)
- Woodland Avenue (West Philadelphia)

East
- 8th Street

West
- 50th Street
**EARLY MORNING SHUTTLE SERVICE**

From 3:00 a.m. to 7:00 a.m., Penn Transit Services (PTS) will schedule special white 15 passenger vans marked "Univ. of Penn. Parking & Transportation", to transport medical students to and from HUP, CHOP, Presbyterian Hospital, Veterans Administration Hospital, Pennsylvania Hospital and their residences, seven (7) days a week. This service is now free and does not require vouchers.

**Scheduling a Pick-Up**

These trips should be booked the evening before but no later than midnight (12:00 am) of the same morning of the trip. PTS will maintain a fifteen (15) minute window from the actual scheduled pickup time. This may vary depending on weather and road conditions. Therefore you need to schedule the ride for 15 minutes earlier than you would ordinarily need to leave to allow for this 15 minute window. To schedule a pick-up time, please follow the instructions below.

1. Call **215-898-Ride**. You will get voice mail which will give you two options
2. Option #1 is for recorded information. Option #2 is to speak to a live operator.
3. After Option #2 is announced you must **push 4 on your telephone**. (*This will **not** be announced.*) This will take you to a private mailbox where at the prompt, please leave your name, request day and date, pick-up time, pick-up address, destination and your telephone number on the Voice Mailbox.
4. Be ready to leave at your scheduled time (vans are only required to wait for three minutes after they arrive at your location).
5. Have your voucher ready to give to the Shuttle driver when you enter the van.
6. Should you experience any delays in pickup over thirty (30) minutes, please call 898RIDE (*Please do not call this number unless it is an emergency*).

**Procedure for Canceling a Pick-Up**

1. Pre-scheduled Cancellation between 7:00 am - 2:30 am, Monday through Sunday:
   a. Call 898-RIDE
   b. Press #4 after introductory message to reach the reservation line.
   c. Leave your message with name, address, date and time of pick-up.
   d. Your pick-up will be automatically canceled.
2. Emergency Cancellation between 12:00 am - 7:00 am, Monday through Sunday call 215-898-RIDE.

You must call to cancel a scheduled pickup or it will be considered a "no show". Two "no shows" in a 30-day period will result in a suspension of service for a 7-day period.
EVENING SHUTTLE SERVICE

To get home from campus or the hospitals between the hours of 8:00 pm and 12:30 am, Penn Transit Services has a special shuttle service just for medical students. This service will pick up students at the following stops: the Gates Pavilion, the Johnson Pavilion, Presbyterian Hospital and the VA Hospital and take them to their residences within the boundaries. To access this service please follow the instructions below.


2. Identify yourself as a Penn Medical Student.

3. Let the operator know at which stop you are located (Gates Pavilion, Johnson Pavilion, Presbyterian Hospital or the VA.)

4. The van will pick you up within 15 minutes from the time that you call.

5. Have your voucher ready to give to the driver when you enter the van.

PENN TRANSIT SERVICES (PTS)

You may call the PTS Idea Line (898-IDEA) at any time for any compliments, complaints, or new ideas on improving this service. Shuttle Service operates 7 days a week, year-round, with the exception of all holidays observed by the University of Pennsylvania.

PARKING

HUP/CHOP: In Garage 44, on Curie Boulevard next to BRB II/III, there are a limited number of spaces that can be rented on a monthly basis. The current rate for parking in this lot is $182.75 payable by check made payable to the Trustees of the University of Pennsylvania. If you are interested in getting a spot for a given rotation, please contact the Office of Student Affairs for additional information regarding parking cards for this lot.

PENNSYLVANIA: There is no parking available for students at the hospital. There are two garages that are $55 per month that are relatively close to the hospital. They both have shuttles. If you are interested, please contact Marialaina Scafidi at Marialaina.Scafidi@uphs.upenn.edu. Otherwise, please plan to use public transportation during your rotations here.

PRESBYTERIAN: There is no parking available for students at the hospital. Please check the website below for parking options. http://www.pennmedicine.org/penn-presbyterian-medical-center/visitor-information/parkinglodging-transportation/parking.html
VA: There is no hospital parking available during the week, but spots may be available on the streets near by (Baltimore Avenue, Woodland Avenue or Pine Street.) Please check for parking restrictions to avoid a ticket. On the weekends, you may park for free in the hospital parking lot if you show your ID to the guard. Another option is Garage 44, described above (HUP/CHOP).

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# HUP Directory

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Sample Patient Write-Ups

Disclaimer: These write-ups are VERY detailed! You will write more detailed write-ups on Medicine and Peds, while far less involved ones on Surgery and Ob/Gyn. These are the sort of long, formal H&P’s that may be expected when turning your write-ups in for a grade or at the beginning of clerkship year. However, as the year progresses, on a day-to-day basis, your H&P’s should include only pertinent information to your patient. As time passes, many attendings will expect that you will become more efficient with your words: you should strive to be both thorough and concise in your write-ups and your presentations over the course of the year. But, be sure to check in with your residents and attendings for feedback because everyone is different.

MEDICINE

Source: Patient, reliable historian

CC: Severe abdominal pain, nausea, and vomiting.

HPI
The patient is a 34-year-old male with a past medical history of hypertension and porphyria (both dx 2005) and recent hospitalization for pneumonia complicated by empyema, s/p chest tube and subsequent removal on 10/5 presenting on 10/9 with intractable abdominal pain, nausea and vomiting.

The patient was initially diagnosed with porphyria in 2005, when he presented to an outside hospital (OSH) with abdominal pain and was found to have elevated urine and serum porphyrins (no records of specific lab values). Since then, he has had “typical” porphyria attacks occurring 1x/year, with symptoms lasting about 1 week. During attacks, he feels full body weakness (non-focal), is febrile, diaphoretic, constipated, with nausea, vomiting, and some shortness of breath (SOB). Urine is usually red/brown colored during attacks. Attacks do not involve focal neurologic signs, changes in sensation, seizures (pt has no lifetime history of seizures), GU issues (other than change in urine color), or pain other than abdominal pain. Patient does not know of any triggers. He is not being treated, nor is he being followed by a hematologist or a PCP. He usually manages his attacks at home with warm baths, colace and Tylenol ES.

During this course of illness, the patient initially presented to an OSH on 9/30 with R back and flank pain (per sister in law, he was writhing in pain), SOB, and a mild, non-productive cough. He was afebrile. Pain was not typical of a porphyria attack per the patient. A chest CT showed a R pleural effusion, and the patient was started on ceftriaxone and azithromycin for presumed pneumonia/parapneumonic effusion, which was later switched to Zosyn and Levofloxacin. RUQ US was normal and V/Q scan showed low
For the current admission, the patient presented to the ED on 10/9 with 3 days of severe abdominal pain (worst in the epigastric region, but all over abdomen) and 1 day of nausea and vomiting (non-bloody). The patient tried home pain meds (Tylenol, ibuprofin) with no relief of symptoms. He describes pain as typical of his porphyria attacks. He also denies fevers/chills, but endorsed several months of night sweats. He denied cough, chest pain, SOB, change in GU habits (no red/brown urine with this attack), bloody stools, or pain other than abdominal pain. He was not feeling weak at home, but since arriving at the hospital has begun feeling generalized weakness/fatigue.

The patient was initially admitted to the Transition Unit, and was transferred to the Martin service on 10/10 in the setting of lack of improvement in symptoms.

**PMH:**
Hypertension dx 2005
Porphyria dx 2005 (specifics unknown)

**PSH:**
Appendectomy 2005

**Social history:**
- EtOH: 1 drink/week
- Tobacco: 1ppd since teenage years, quit six months ago
- Marijuana use daily
- Denies other illicit drug use
- History of incarceration for 6 months in 2006
- Employment: Works as a prep cook. No known toxic exposures. - Lives with wife and 5 kids

**Family history:**
Mother (deceased) with possible history of leukemia vs other blood disorder (patient unsure). Otherwise non-contributory.

**Medications:**
Levofloxacin 750mg PO daily x 2 weeks (start date 10/6) for pulmonary infection
Amlodipine 10mg daily for HTN (started at d/c from OSH 10/7)
Metoprolol 25mg BID for HTN, hx of LVH on TTE in 2004 (started at d/c from OSH 10/7)
**Allergies:**
NKDA

**ROS:**
General: No recent weight loss, otherwise as per HPI
HEENT: No headaches, changes in vision, changes in hearing, sore throat, loss of consciousness
Pulmonary: As per HPI
Cardiac: No chest pain, palpitations, orthopnea, PND, edema, cyanosis, claudication
GI: Constipation with porphyria attacks, no bloody stools, pain as per HPI
GU: No dysuria, frequency, hesitation, incontinence. Otherwise as per HPI
Derm: No rashes, blistering, or ulcers.
MSK: Diffuse weakness as per HPI. Otherwise normal ROM, no arthralgias or focal joint issues.
Heme: No easy bruising or bleeding, no history of clots. Porphyria as per HPI.
Neuro: No hx of seizures, no hx head trauma. Otherwise as per HPI.

**Physical Exam:**
Vitals (On arrival to Founders 14)
T 98.3 P 86 BP 190/91 RR 18 SaO2 98% on RA

General: Drowsy, weak, significant pain with any movement
Eyes: No scleral icterus, PERRLA, pinpoint pupils
E/N/M/T: nl hearing, nl teeth/lips/gums, clear oropharynx
Neck: nl appearance and movements, JVP flat, trachea midline, no thyroid masses, no LAD
Respiratory: No increased work of breathing, no accessory muscle use. No dullness to percussion. Decreased breath sounds on the right lower half, normal breath sounds on left. (Possible decreased respiratory effort 2/2 pain). No crackles, rhonchi, or wheezes.
Cardio: Regular rhythm, no M/G/R. No JVD.
Lymphatic: No LAD (cervical, supraclavicular, axillary)
MSK: Strength 5/5 in all extremities.
Extremities: No peripheral edema, no cyanosis.
Skin: No rashes, ulcerations or blisters.
Neuro: nl CNs. No decreased sensation.
Psych: AAOx3. Intact memory, though imperfect historian. nl affect, judgment, insight.
Lines: PIV x 1

--HUP Labs--
Panel: 131/4.6//101/23//17/1.43//104
AG = 7
CBC: 12.6/11.0/359
--OSH labs--
10/2/12 pleural fluid studies: 200cc of dark yellow fluid removed. WBC 4061 (94% PMNs) LDH 695, protein 5.1, glucose 7, pH 7.09, AFB negative, culture NGTD at 7 days, Gram stain negative. (Serum LDH and protein not available in OSH records).
9/30 @ OSH: Cr 1.9 (baseline 1.4)
3/2011- corproporphyrin 608, uroporphyrin 2979, protoporphyrin 3761, proporphyrin 37614

--HUP Imaging--
10/9 CT chest: There is a moderate loculated right pleural effusion with associated pleural thickening and a loculated effusion with fluid trapped in the major fissure. Mild platelike atelectasis R lung. The pleural fluid is high attenuation indicating either blood or protein within the fluid. All of these findings indicate that this is an exudative effusion. Etiology is not clear. Given the history of "walking pneumonia" there is a moderate likelihood that this could represent a viral pleuritis however, other causes for exudative effusion should be considered.

10/9 CXR (PA + lateral): Similar appearance of the chest with masslike opacities in the right lung, incompletely characterized. Recommend CT for further characterization

--OSH Imaging--
10/7 CXR: loculated R effusion in the R major fissure and the R lower lung field
10/1 LE US: negative
10/1 V/Q: indeterminate to low prob for PE findings more consistent with pneumonitis, mass or infiltrate in the R mid and lower hemithorax
10/1 CT chest: Partially loculated R pleural effusion significantly increased in size since 2 days earlier. Minimal bullous disease on the left and a focal area of fibrosis at the medial aspect of the LLL. Very small pericardial effusion.
9/30 RUQ US: Normal gallbladder/spleen/pancreas/kidney/liver
9/29 CT a/p: small R effusion w/ opacity in the RML which may represent PNA vs atl. No hydronephrosis/stones.  2004 TTE: LVH

Assessment/Plan
Summary: The patient is a 34-year-old male with a PMH of hypertension and porphyria and recent hospitalization for pneumonia complicated by empyema, presenting with intractable abdominal pain, nausea and vomiting of similar character to his typical 1x/year porphyria attacks. Physical exam is remarkable only for diffuse tenderness and guarding of the abdomen and decreased breath sounds over the right lung base c/w the location of his empyema. EKG was normal, UA was negative, OSH records show a hx of elevated serum and urine porphyrins, and CT c/a/p showed a right loculated effusion but no other abnormalities.

#Abdominal pain/nausea/vomiting. Given history of porphyria and similar presentation to previous attacks, likely porphyria, however also possible gastritis/peptic ulcer vs pain from R pleural effusion.
Differential:
1) Porphyria: Hx of porphyria, with elevated porphyrin levels, similarity of attack to previous
2) Gastritis/peptic ulcer disease: in support - epigastric pain, n/v, possible chronic NSAID use
   for pain, former smoker, recent stressor. Against -not documented previous H pylori test.
   No upper GI bleeding. Abdomen painful but not peritonitic.
3) Referred pain from pleural effusion

Less likely:
4) Pancreatitis: Normal lipase, WBC only moderately high, not peritonitic. No hx of gallstones,
   no EtOH abuse.
5) PE: V/Q scan @ OSH – low probability PE, LE US no DVTs. Not tachycardic/tachypnic
6) Gall
   bladder dz: RUQ US normal @ OSH on 9/30. No jaundice, afebrile. No shock/AMS
   (cholangitis). Normal LFTs.
7) Cardiac/inferior MI: No evidence on EKG, no SOB. In favor: n/v, weakness, fatigue.
8) Kidney stone/obstruction: Pain is constant, not colicky, epigastric region. UA negative
   (no hematuria, BUN/Cr at his baseline, 9/29 US @ OSH no hydronephrosis, no
   nephrolithiasis.) 9) SBO: passing stools, no high pitched bowel sounds.
10) Mesenteric ischemia/vasculitis: No hematochezia.
11) Appendicitis: Appendectomy 2005

Workup/Management:
- Porphyria: Repeat urine and serum porphyrins
- Pain mgmt: dilaudid working well, zofran, prochlorperazine, PPI
- Cardiac: EKG
- Gastritis/PUD: Ask about NSAID use, hx gastritis. H. pylori serology testing. t/c endoscopy with
  biopsy.
- Ppx: PPI, H2 blocker, pain control, anti-emetics.
- Renal: t/c renal ultrasound, KUB (also r/o SBO), t/c repeat abd CT

#Pleural effusion - CT chest w/ continued presence of loculated R effusion in fissure and under
RLL. Currently does not seem to be source of symptoms.

Pleural fluid glucose <60 narrows ddx: Rheumatoid pleurisy/Complicated parapneumonic/Malignant effusion/Tuberculosis pleurisy/Lupus pleuritis. Lowest glucose concentrations found in rheumatoid pleurisy (sometimes undetectable). In
TB/Lupus/malignancy = 30-50. WBC< 5000 – more likely in rheum, TB, malignancy

Differential:
1) Parapneumonic: history and studies c/w complicated parapneumonic, however no bacteria
   isolated, (although 3 days into abx therapy) and only 4K WBCs,. No persistent opacities ->
   should last 4-6 weeks.
2) Rheumatoid pleurisy: Pleural fluid analysis typically reveals a white cell count <5, very low
   glucose, a pH less than 7.3, and usual presentation is with high pleural fluid LDH level (ie,
   greater than 700, our patient 695). Possible cholesterol empyema (normal presentation is
   sterile with elevated chol >65.)
3) TB (although not lymph predom, PPD neg at OSH, AFB neg prior to Levofloxacin). TB almost always with pleural fluid protein >4, +incarceration hx
4) SLE: usually WBC >10, our patient only 4.
5) Malignancy: inconsistent with pleural studies (usually lymph predom)

Workup: f/u ANA, RF, CCP, QIFG
- t/c repeat thoracentesis, though previously only 200cc removed, not large fluid collection on CT
- On Levofloxacin
- t/c pulm consult for further mgmt

# Acute on chronic kidney injury - Cr. 1.9 on OSH admit, 1.59 here-->1.43, improved w/ IVF, likely pre-renal
- Baseline Cr 1.43 per OSH reports, likely 2/2 hypertensive kidney dx, no h/o DM. GFR 69-73 = Stage 2
- t/c CKD w/u: HIV, Hepatitis serologies, Rheum w/u as above, check if small kidneys on renal US.
- Prevention: t/c adding ACE-I (Renal protection and BP control), low protein, low salt diet

# Hyponatremia - DDx includes volume depletion from decreased PO intake vs SIADH from pain/pulmonary process/Porphyria - hypoNa worsened w/ IVFs
- f/u serum osm, urine lytes, FENA

#Hypertension – Likely 2/2 to pain and increased catecholamine release (seen in acute porphyria attacks). Per wife, typical systolic BPs not during attacks are in the 130s. However, TTE in 2004 showed LVH, so possible more chronic.
- Started on amlodipine, metoprolol at OSH, restart here. Check if meds porphyrinogenic. - Explore reason for TTE in 2004

#FEN
- Can get electrolyte abnormalities in porphyria (hypoNa, hypoMg, hyerpCa)
- monitor and replete as needed

#PPx
- SQH, PPI, BB

#Dispo
- Needs Heme, PCP f/u
Informant: Mother

Chief Complaint: "Fever, cough, and spitting up blood"

History of the Present Illness: This four-year-old female with no significant past medical history was in her usual state of good health until ten days prior to presentation to the hematology floor at CHOP, when she began having fevers of 101-102°F and a non-productive cough, according to her mother. She was given Motrin and Vicks 44 at this time, with some defervescence, but little amelioration of her cough. Her mother denies that the patient had a runny nose, sore throat, red eyes, earache, vomiting, diarrhea, changes in appetite, changes in urination, or a notable decrease in energy during the first three days of illness. The patient reached a maximal temperature of 105.8°F on the third day of illness, at which point she was taken to the Emergency Department at Fitzgerald-Mercy Hospital. At the ED, pneumonia, otitis, and postnasal drip were ruled out, and the patient was sent home with Motrin, a diagnosis of a viral upper respiratory infection, and advice to visit a doctor if the fever did not remit in three days, according to her mother. Throughout the fourth and fifth days of illness, the patient’s fever remained persistently above 101°F, reaching a maximum of 103.8°F, and the patient had one episode of vomiting each day, each occurring immediately after administration of Vicks 44. On the sixth day, the patient woke up in the early morning with a cough and vomited again after administration of a new dose of Vicks 44. However, during this episode of vomiting, the patient developed a mild nosebleed that did not remit over the course of the next day.

One day after onset of the nasal bleeding (day seven of illness), the patient presented to her pediatrician at Jefferson Pediatrics with a continued nosebleed, cough, and fever, and a new complaint of abdominal pain. While in the office, the patient had an episode of hematemesis that included noticeable clotted blood. She was then sent to the Jefferson ED, where she was found to have pancytopenia on CBC. At Jefferson, she was noted to have abdominal tenderness in the right upper quadrant, and she received three transfusions of packed red blood cells and platelets in addition to a dose of cefepime. She was then transferred to CHOP and admitted to the oncology service, where she was also noted to have abdominal tenderness, although the tenderness had expanded to include both upper quadrants. At this point, she was also started on intravenous fluids with bicarbonate, at 1.5 times maintenance in case of tumor lysis in the future. She remained on the oncology floor for three days (until day ten of illness), during which she was noted to have right knee pain and one black, tarry, heme-positive stool. The knee pain resolved with a very low dose of morphine and was not accompanied by any physical exam abnormalities or evidence of bleeding. A bone marrow biopsy was completed while on the oncology floor (day ten of illness), and the marrow was noted to be hypocellular with islands of normocellular marrow and a left shift, but no apparent malignant cells. She was transferred to the hematology service after marrow analysis and a diagnosis of aplastic anemia.

The patient’s mother denies frequent illnesses in the past, as well as any other bleeding or bruising before or since onset of the illness, including blood in the urine. She had not noted any rashes or skin changes before presenting to the Jefferson ED, but after being shown some petechiae in the hospital, she noted that petechiae were present on the day or two before presentation at Jefferson (days six/seven). Her mother reports that she has been afibrile since admission to CHOP and that she has been eating well but drinking less than normal.

Past Medical History:
1) Eczema, currently.
2) Hospitalized for skin boil, last year.
3) Acid reflux, as an infant. Resolved during infancy.

**Medications:**
Triamcinolone for eczema. Dosing details not known.

**Allergies:**
Packed red blood cells—caused itching at Jefferson when administered on the day of presentation at CHOP. No known allergies to medications, foods, latex, or contrast.

**Birth History:**
The patient was born via induced vaginal delivery at 42 weeks. According to her mother, she was noted to have jaundice for the first day or two, which resolved spontaneously. She remained at the hospital for six days after birth due to severe reflux.

**Immunizations:**
According to her mother, she is currently up to date on her immunizations.

**Growth and Development:**
The patient’s mother has no growth or developmental concerns, noting that the patient walked earlier than most other children, was easily potty-trained, and has been doing well in pre-K classes.

**Exposures:**
There is one cat in the patient’s home and no known sick contacts in the home, although the patient does attend daycare, where it is likely she came into contact with sick peers.

**Nutrition:**
Specific details about the patient’s diet were not obtained.

**Primary Medical Doctor:** Dr. McNett at Jefferson Pediatrics.

**Family History:** The patient’s parents have no known medical problems. One of the patient’s maternal great-grandmothers had diabetes, cervical cancer, and a myocardial infarction, another maternal great-grandmother had breast cancer, and one paternal great-grandfather had prostate cancer. Patient’s mother denies hypertension, diabetes, excessive bleeding, and aplastic anemia in the family.

**Social History:** The patient lives with her mother and her maternal grandfather, and she attends pre-K five days a week.

**Review of Systems:**
*General* – As per HPI. Did not ask about weight changes or dizziness.
*Skin* – As per HPI. Did not ask about itching or scaling.
*Head* – Did not ask about headaches, loss of consciousness, seizures, or head injury.
*Eyes* – As per HPI. Did not ask about icterus.
*Ears* – As per HPI. Did not ask about difficulties hearing or ear discharge.
*Nose* – As per HPI.
*Mouth/Throat* – As per HPI. Did not ask about oral lesions, tongue pain, cavities, or hoarseness.
*Neck* – Did not ask about lumps in neck or stiff neck.
Cardiovascular – Did not ask about edema, chest pain, cyanosis, or history of a heart murmur.
Lungs – As per HPI. Did not ask about wheezing or dyspnea.
Gastrointestinal – As per HPI. Did not ask about dysphagia, odynophagia, or jaundice.
Genitourinary – As per HPI. Did not ask about vaginal or urethral bleeding and discharge.
Hematology – As per HPI.
Allergy/immunology – As per HPI/PMH. Did not ask about lymph node swelling.
Endocrine – Mother denies polydipsia, polyphagia, and polyuria. Did not ask about goiters or abnormal weight changes.
Musculoskeletal – Did not ask about fractures, trauma, joint swelling, or joint stiffness.
Neurological – Did not ask about muscle atrophy, paralysis, weakness, spasticity, tremors, involuntary movements, changes in sensation, or lack of coordination.
Psychological – Mother denies difficulty sleeping. Did not ask about anxiety or phobias.

Physical Examination:
VS: Temp 37.4°C (axillary), BP 102/52, P 73, RR 20, SpO2 100%, RA
Growth parameters: Weight 16.3 kg (50th percentile), Height 75th percentile (Did not record actual value in centimeters.)
Skin: Scattered hyperpigmented areas. A few scattered small petechiae on anterior neck and upper chest.
Neck: No palpable lymph nodes and no masses. Neck supple.
Chest: Normal breathing rate and rhythm with minimal effort. Normal chest shape and no accessory muscle use or retractions; no pectus carinatum or excavatum. Spine is midline with no scoliosis or kyphosis. Respiratory excursion not assessed. Percussion not completed. Lungs clear to auscultation bilaterally. No rales, rhonchi, or wheezes.
COR: Regular rate and rhythm, with normal S1 and S2 and no audible S3 or S4. 1-2/6 systolic ejection murmur. No heaves, thrills, or rubs. Peripheral pulses, jugular venous pulse, and carotids not examined. PMI not palpated.
Abdomen: Bowel sounds present, with no bruits. Abdomen soft, non-tender, non-distended, with no guarding or rebound. No masses or hepatosplenomegaly.
Extremities: Extremities warm and well-perfused. No peripheral edema. No visible thumb or radial abnormalities. Moves all extremities equally, with full range of motion of all extremities. No knee tenderness to palpation or passive movement. Did not examine femoral or axillary lymph nodes.
Genital/Anal: Deferred.

Laboratory/Imaging Studies:
Hematology:
From Jefferson ED, before transfusion (day 7 of illness): WBC=1.8, Hgb= 4.5, Platelets=8
From day of transfer to hematology floor (day 10 of illness): WBC=3.4, Hgb=9.7, Platelets=43
**Virology:**
Influenza A = positive
EBV = past infection
Parvovirus B19 = negative

**Pathology:**
Bone marrow biopsy = Hypocellular with islands of relatively normal cells with a left shift.

**Summary:**
In summary, this 4 year-old female with no significant past medical history was transferred to the hematology service for further evaluation and management after a ten-day course of illness that culminated with diagnoses of influenza A infection, otitis media, and aplastic anemia. The course of illness included seven days of fever and cough (days 1-7, Tmax=105.8°C), three episodes of non-bloody, non-bilious emesis (days 4-6), a mild nosebleed with a duration of 1.5 days (days 6-7), one episode of hematemesis (day 7), three transfusions of packed red blood cells and platelets (day 7), one episode of melena (day 10), and one episode of right knee pain with a duration of less than one day (day 10). The physical exam is notable for pale oral mucosa, dull and bulging TM’s, a 1-2/6 systolic ejection murmur, and a few scattered petechiae on the palate, anterior neck, and upper chest.

**Impression:** The patient presents to the hematology floor with recent diagnoses of influenza A infection, otitis media, and aplastic anemia. Aplastic anemia can result from a variety of causes, both acquired and inherited. Because of this patient’s young age, both inherited and acquired etiologies must be considered, but the lack of other known abnormalities or malformations decreases the likelihood of an inherited disorder. The most common inherited form of aplastic anemia is Fanconi Anemia (FA), with a heterozygote frequency of 1 in 300 in the United States and Europe. FA results from an autosomal recessive or X-linked mutation in a DNA repair gene, FANCD1, which is identical to BRCA2, a breast cancer susceptibility gene. FA is generally diagnosed between ages 6 and 9, but it has been identified in children above and below this age range. This patient, at age 4, is still within the reasonable age range for diagnosis of FA, but her young age does lower the likelihood of FA being the cause of her anemia.

Furthermore, 60-70 percent of FA patients have associated congenital malformations, including hypopigmented and café-au-lait discolorations of the skin, thumb abnormalities, microcephaly, and hypogonadism, and an even larger percentage of patients exhibit short stature. This patient’s average height and lack of known malformations further decreases the likelihood of FA being the cause of her pancytopenia, but certainly does not rule out the diagnosis. It is important to screen for FA in this case because almost 25% of patients with FA later develop malignancies and many patients have underlying involvement of other organ systems, so appropriate intermittent cancer screenings and treatment for other organ manifestations should be initiated as early as possible.

The next three most common inherited causes of aplastic anemia are Dyskeratosis congenita (DC), a syndrome of ectodermal dysplasia that is thought to result from a mutation in genes important for the function of telomerase, Shwachman-Diamond syndrome (SDS), a syndrome resulting from an unknown mutation that includes exocrine pancreatic insufficiency, short stature, skeletal anomalies, and progressive marrow failure, and congenital amegakaryocytic thrombocytopenia (CAMT), a disorder that results from mutations in the thrombopoietin receptor gene. All three of these disorders, however, are quite unlikely to be the cause of this patient’s marrow failure. Both DC and SDS would exhibit marrow failure in conjunction with other significant abnormalities, and both CAMT and SDS would be expected to present much earlier than age four, generally appearing in infancy. Full marrow failure can also occur in other inherited disorders that usually present with only a cytopenia in a single cell line (such as Diamond-Blackfan anemia), but such cases are very rare, and thus these causes are very unlikely in this patient.
Seventy to eighty percent of non-hereditary cases of marrow failure do not have a clearly identified cause, but known etiologies of aplastic anemia include radiation exposure (causing dose-dependent marrow failure), medications (including phenylbutazone, chloramphenicol, gold, sulfonamides, anti-epileptics, nifedipine, and cytotoxic drugs), industrial chemicals (especially benzenes), infection (especially viruses), and pregnancy. Most known cases of acquired marrow failure in children are post-viral (especially post-hepatitis) or resulting from drug or toxin exposure. This patient’s lack of known exposure to radiation, chemicals, and drugs implicated in causing marrow failure reduce the likelihood of these etiologies, although toxic exposures should be investigated if no other cause can be determined.

Give this patient’s clinical course and history, infection is the most likely cause of her marrow failure. A variety of bacterial and viral infections (including Influenza A) can result in transient pancytopenia by unknown mechanisms, and specific viruses such as non-typeable hepatitis viruses (i.e. not A, B, C, or G), HIV, and Parvovirus B19 can cause marrow failure by direct damage to marrow stem cells by the virus itself or by resultant cytokine release from T cells. This patient could have marrow failure from her influenza A infection or from another concurrent or previous viral or bacterial infection that has not yet been identified.

**Plan:**
1) **Pancytopenia:** - Monitor with serial CBCs, ANC, and reticulocyte counts
   - Search for an etiology via diepoxybutane (DEB) testing (for FA), HIV testing, Parvovirus testing, and hepatitis A/B/C testing
   a) **Anemia:** - Monitor hemoglobin level and vital signs
      - transfuse pRBCs again if necessary
   b) **Thrombocytopenia:** - Monitor for bleeds
      - Prevent injuries by limiting activity
      - Transfuse platelets if bleeding occurs or if platelets drop below 10,000
   c) **Afebrile neutropenia:** - Monitor for fever or other signs of infection (especially pneumonia due to Influenza A status)
      - Begin G-CSF injections
      - Monitor ANC after G-CSF administration
      - Arrange for home delivery of G-CSF, parental teaching about home G-CSF administration, and home nursing visits to help with initial home doses of G-CSF
2) **Otitis media:** - Continue cefazidime (50 mcg/kg, every 8 hours, IV)
3) **Influenza A:** - Seems to be resolved or resolving—monitor for fevers and bacterial superinfections
4) **Melena:** - Heme test stools to monitor for further GI bleeding
5) **Right knee pain:** - Seems to be resolved—monitor for further pain, swelling, or decreased range of motion
6) **Fluids and nutrition:** - Continue house diet, encourage PO fluids, and consider discontinuation of IV fluids if PO intake is adequate
SURGERY

CC: RLL nodule

HPI: Patient is status-post nephrectomy on 3/29/08 for renal malignancy. Nodule was identified in pre-op chest CT scan. Patient has no respiratory complaints, although he complains of mild pain over his incision. He has been active since his nephrectomy and takes no medications for pain.

PMH:
• Type II Diabetes Mellitus
• Hyperlipidemia
• Hypertension
• Atrial fibrillation – single episode which occurred 12 years prior to this visit

PSH:
• Tonsillectomy & Adenoidectomy
• Right nephrectomy

Medications:
• Actos – 45mg PO qd
• Altace – 5mg PO qd
• Aspirin – 81mg PO qd
• Januvia – 100mg PO qd
• Nadolol – 20mg PO qd
• Zocor – 20mg PO qd

Allergies: NKDA

Family History: Patient describes a history of diabetes in his brother and cardiac disease with a history of MI in his father.

Social History: Patient is not a current smoker but has a 20 pack-year history and quit 10 years ago. Patient drinks approximately 2 alcoholic beverages per week, and does not use illicit drugs.

ROS:
GEN: No fevers, chills, weight loss, malaise, fatigue, or weakness
HEENT: No headaches, hearing loss, tinnitus, ear pain, or ear discharge; No nosebleeds, congestion, stridor, or sore throat; No trouble with vision, eye pain, or photophobia
CVS: No chest pain, palpitations, orthopnea, claudication, leg swelling, or PND
Chest: No cough, hemoptysis, sputum production, SOB, or wheezing
GI: No heartburn, nausea, abdominal pain, vomiting, diarrhea, constipation, or blood in stool  
GU: Hematuria – presenting complaint for RCC in 2/08, No dysuria, frequency, urgency, or flank pain  
Musculoskel: No myalgias, neck or back pain, joint pains, or falls  
Endo/Heme: No easy bruising or bleeding  
Neuro: No history of seizures, focal weakness, or dizziness  
Psych: No history of psychiatric disease, insomnia, or substance abuse  
Skin: No rash or itching

PE:
BP 128/71, Pulse 73, Temp 97.5F, Resp 20, BMI 31  
Gen: Oriented x 3, well-nourished, no distress  
HEENT: Normocephalic, atraumatic  
Eye: Conjunctiva normal, EOMI, PERRL  
Neck: ROM normal, neck supple, no thyromegaly, JVD, tracheal deviation, or stridor; no lymphadenopathy  
CVS: RRR S1 S2 noted, no m/r/g, no clubbing, cyanosis, or edema, intact distal pulses  
Chest: Effort normal, breath sounds normal; no respiratory distress, chest tenderness, wheezing, or rales  
Abd: S/NT/ND, NABS, no guarding, no rebound  
Musculoskel: Normal ROM, No edema, No tenderness  
Neuro: Alert and oriented x 3  
Skin: No rashes or change in pigmentation

Labs: None

Imaging: Indeterminate 7mm nodule in RLL on CT with contrast

Impression: Indeterminate lung nodule found incidentally on preop screening CT of the chest. Patient asymptomatic and recovering well from recent surgery.

Plan: Recommend that patient have serial CT scans to follow the lung nodule. He will have the next scan in one month and follow-up in the office after that time.
OB/GYN

CC: Post-menopausal vaginal bleeding

HPI

BSC is a 59 yo G2P2 who presents with heavy vaginal bleeding. The bleeding has been going on for as long as she can remember, and she does not recall ever going through menopause. It occurs at irregular intervals for varying amount of time, with the duration of bleeding becoming longer over the past year. In the past year the bleeding has become especially heavy, and she reports large clots and must use diapers and pads to contain the bleeding. She is afraid to leave the house since she often bleeds through her clothing. The heavy blood loss has led to recurrent anemia, and she was admitted on 7/1/12 for 4U pRBC transfusion (Hg 8.2 -> 9.7).

She was started on megace (mestrol acetate) by her primary gynecologist, which helped her bleeding somewhat for one week, after which it returned to its previous level despite reported medication adherence. On 6/20, her primary gynecologist attempted a hysteroscopy and D&C, but the procedure was complicated by heavy bleeding. The resulting curettage tissue showed only decidualized tissue, but the biopsy and hysteroscopy was suboptimal given the bleeding.

She denies dysmenorrhea and pelvic pain, but complains of back pain. She feels “weak”, but denies syncope and pre-syncope. She denies urinary and bowel symptoms.

PMH:
1. Morbid obesity (BMI 37.7)
2. HTN
3. OSA

PSH:
1. D&C (6/20/12)
2. Hernia repair
3. Cholecystectomy

OGBYN Hx
- G2P2, 2 uncomplicated spontaneous vaginal deliveries
- Menstrual history not ascertained in detail, but patient asserts that her periods have been regular and normal flow throughout most of adulthood

Allergies
None

Medications
Megestrol acetate, 80 mg bid
Lisinopril (unknown dosage)
Family History
Cancer in mother and sister (unknown type)

Social History
- Married, 2 adult children, not currently sexually active
- Denies current or past tobacco use, alcohol use, drug use

ROS
Constitutional: denies fever/chills. feels weak
Skin: denies rashes
HEENT: denies eye problems
Cardiovascular: denies chest pain
Respiratory: SOB when walking
Gastrointestinal: denies heartburn, N/V, abdominal pain, constipation
Genitourinary: denies dysuria, urinary retention, changes in frequency
Musculoskeletal: denies myalgias
Neuro: denies HA, dizziness
Psychiatric: denies depression

PE: BP 134/73, HR 95, SpO2 99% RA, height 5’2”, weight 370 lb (BMI 37.7)
Constitutional: Morbidly obese white woman
Head: Normocephalic and atraumatic.
Eyes: PERRLA, no scleral icterus
Cardiovascular: Normal rate and regular rhythm. + S1/S2. No gallop and no friction rub. No murmur.
Pulmonary/chest: Effort and breath sounds normal. no wheezes, no rales.
Abdominal: Large pannus. 5-6 cm umbilical hernia. Soft. No tenderness, rebound, or guarding. No HSM.
Lymph nodes: No cervical or inguinal lymphadenopathy
Extremities: bilateral LE edema L>R
Skin: Warm and dry, red under pannus.
Psychiatric: Normal affect, mood and judgment.
Neurologic: AAOx3. CN II-XII intact, strength and sensation grossly intact.

Labs & Studies:
CT: Enlarged uterus with contour suggesting multiple fibroids. Fluid in the endometrial canal probably does contain some blood products but there is no evidence of extravasation of contrast pooling on arterial or delayed phase imaging. Note that image quality through the pelvis is somewhat suboptimal in this very large patient, and a small area of hemorrhage could conceivably be missed.
Uterus: 16.9 x 8.32 x 10 cm
EMS: 1.34 cm, 1.64 cm on TVUS
Problem list
1. Heavy vaginal bleeding
2. Abdominal hernia
3. HTN
4. OSA
5. Morbid obesity

Assessment
59 yo obese white female presents with chronic heavy vaginal bleeding requiring transfusion, with CT findings suggesting fibroids and a TVUS concerning for a 16.4 mm endometrial stripe.

Primary Problem: Heavy vaginal bleeding
Given CT and D&C findings, fibroids vs endometrial hyperplasia/cancer are at the top of the differential.
- Fibroids: CT consistent with fibroids, and they may explain the bleeding. However, lack of pelvic pain/dysmenorrhea goes against this diagnosis, and fibroids are rarer in a patient in her late 50s.
- Endometrial hyperplasia vs cancer: A consideration due to the patient’s age, risk factors (obesity, hypertension) and large endometrial stripe on imaging. D&C was negative, however the procedure was complicated by heavy bleeding and thus was sub-optimal. The history of cancer in her mother and sister is suspicious for possible genetic factors, although their specific type of cancer must be determined.
- Endometrial polyp
- Adenomyosis: Unlikely given the lack of pelvic pain/dysmenorrhea, but patient may be at risk from increased estrogen due to abdominal obesity. Consistent with enlarged uterine size.
- Vaginal atrophy: Unlikely given lack of atrophy on exam, quantity of bleeding, and abnormal CT findings.
- Dysfunctional uterine bleeding: diagnosis of exclusion
- Hypothyroidism

Plan
1. Heavy menstrual bleeding
   - Labs: TSH, trend CBC
     - Ferrous sulfate supplementation. Monitor for signs of anemia and transfuse if Hg < 7.
     - Options for diagnosis/management
• Continue medical management with megace, or switch to another progesterone derivative such as the Mirena IUD. Could also try a GNRH agonist like Lupron. Since megace did not work, however, it seems unlikely that medical treatment will suffice for this patient.
• Given that she has failed medical therapy and her blood loss is both dangerous to her health and detrimental to her QOL, the benefits of surgery outweigh the risks. Options include:
  • Myomectomy: need further characterization of fibroid prior to surgery. May be unsuccessful if fibroid is not the primary cause of bleeding.
  • D&C: Can attempt a more extensive D&C to fully remove all abnormal tissue and possibly generate a pathological diagnosis. Likely to be complicated by further bleeding however, and is not a definitive solution.
  • Hysterectomy: Given the patient’s habitus, TAH would be safest, and would allow for staging if frozen endometrial specimen is positive for cancer (vs a laparoscopic or vaginal approach)
  • BSO can be performed simultaneously with TAH to reduce the patient’s risk for subsequent ovarian cancer or cyst formation, given that a subsequent surgery would be dangerous given her risk factors.

2. Abdominal hernia
   o Consult GI surgery. Pelvic surgery will be difficult due to the patient’s habitus, so a panniculectomy simultaneously may be preferred. GI surgery could perform a hernia repair at the same time, saving the patient from multiple separate operations.

3. HTN
   o Continue lisinopril for now
     o Stop lisinopril 24 hours pre-op and restart when needed for high BP post-op

4. OSA
   o Continue CPAP’
FAMILY MEDICINE-SOAP Note

Patient: CJ

S: CJ is a 35 y/o female with PMH obesity, HTN, and hyperfunctioning thyroid nodule (s/p thyroidectomy 2006) who presents with chief complaint of fatigue. She states that she is “always tired” and has felt this way for the last year. She has been working the night shift at her job for the past six months and thinks this may contribute to her fatigue, but also states she felt tired before her switch at work. She gets around 6 hours of sleep during the day and often does not feel well rested upon waking. She sleeps alone and does not know if she snores; she does not recall waking up gasping for air at night. She denies morning headaches and falling asleep while at work. The fatigue has not gotten any particularly worse, but she decided it was time to “get it checked out.”

Past Medical History:
Medical
-HTN: diagnosed at age 32; well-controlled on HCTZ 12.5mg
- Thyroid nodule: hyperactive; s/p thyroidectomy 2006
- Obesity: BMI 44; currently researching gastric bypass surgery

Surgical
-s/p thyroidectomy 2006; patient thinks it was only partial; not on thyroid replacement

Medication
Hydrochlorothiazide 12.5mg once daily

Allergies: NKDA

Social
Smokes 7-10 cigarettes a day; is trying to quit
Denies EtOH, illicit drugs
Not currently sexually active

Review of Systems:
Constitutional: denies weight loss/gain, night sweats, chills, fevers
Cardiovascular: denies chest pain, palpitations, dyspnea at rest or with exertion.
Gastrointestinal: denies nausea, vomiting, diarrhea, constipation, melena, hematochezia, jaundice, abdominal pain.
Genitourinary: Admits to menorrhagia for 10+ years; uses 8 super tampons on the heaviest 1-2 days of her period. Her periods come every 28-30 days and last 5 days. Denies bleeding between periods, dysuria, dyspareunia.
Endocrine: denies polyuria, polydipsia, heat/cold intolerance, change in skin, hair or nails, change in bowel habits.
Psych: Admits to a depressed mood, difficulty concentrating at work over the last 6 months, decreased interest in activities that she used to enjoy. Denies change in appetite, excessive guilt, or suicidality.

O:
T: (not done) BP: 120/82 HR 68 RR 12 Weight: 275 Height: 5’6” (BMI: 44)
General: pleasant, overweight woman sitting in chair and reading
Neck: 5cm scar over thyroid, normal movements, trachea midline; no palpable masses
Cardiovascular: normal sounds; no murmurs, rubs or gallops; normal pulses, no edema, no clubbing or cyanosis
Respiratory: symmetric chest expansion and respiratory effort, clear to auscultation
Abdomen: no masses or tenderness, normal bowel sounds, no hepatosplenomegaly
Genitourinary: deferred; patient had just seen her gynecologist in AM

A:
1. Fatigue-the patient has several possible reasons for her fatigue. First, she is working the night shift at work, which she is still having difficulty adjusting to and may be affecting the quality of her sleep. Given her obesity, she is at risk for OSA, which may explain the reason why she does not feel well rested even after sleep. She also had thyroid surgery in 2006; this may have caused hypothyroidism resulting in her fatigue and symptoms of depression. The patient also complains of menorrhagia; her heavy periods may be causing anemia that is resulting in the patient’s fatigue, although she is not complaining of chest pain or shortness of breath. Finally, the patient has noticed a depressed mood and difficulty concentrating lately; her fatigue may be a symptom of depression.
2. Hypertension-currently well-controlled on HCTZ.
3. Obesity-the patient has made several attempts to lose weight using diet and exercise; given her young age and motivation, she may benefit from gastric bypass surgery.
4. Depressed Mood- the patient currently has 3/9 criteria (depressed mood, fatigue, and difficulty concentrating) for MDD.
5. Menorrhagia-patient followed by gynecologist. She was told that she may have fibroids, but she has not followed up on this.

P:
1. Fatigue
   a. CBC-r/o anemia
   b. TSH-r/o hypothyroid
   c. Sleep study-r/o OSA; patient needs test for gastric bypass eval as well
   d. Discussed possibility of switching back to day shift at work
   e. Follow patient’s mood and monitor for other symptoms of depression-consider trial of anti-depressant; patient was not ready to try one today; Wellbutrin may be a good option for mood improvement + smoking cessation.
2. **HTN**
   a. Continue HCTZ 12.5mg once daily with goal BPs <140/90
   b. Continue in office BP monitoring; encourage patient to check BP at home
3. **Obesity**
   a. Patient being evaluated for gastric bypass
   b. Sleep study
   c. Discussed importance of diet and exercise
4. **Depressed Mood**
   a. Patient wary of taking antidepressant at moment-counseled to call office if symptoms worsen or if she begins to feel hopeless/suicidal. Also discussed option of psychiatrist/psychologist involvement
5. **Menorrhagia**
   a. Consider pelvic US to r/o fibroids if not already done by gynecologist
   b. Patient refusing birth control; informed that birth control may help bleeding. She will consider and discuss with gynecologist
6. **Health Maintenance**-up to date with screening tests, immunizations
   a. Flu Shot in 10/2008
   b. Lipid Panel, SMA 7 in 6/2008
   c. Pap Smear 12/2008
   d. Smoking Cessation-discussed at this visit, patient said she would like to come back to discuss medication options for smoking cessation
   e. f/u in 1-2 weeks to go over CBC, TSH results, discuss smoking cessation and treatment for depression
Sample Topic Presentations

Again, please do not think that you always need to make presentations that look exactly like this. They can be far less detailed (and do not have to have pictures) depending on how long you have to research the topic and the length of time you are given to present. DO always put your name on your handout and make sure it is no longer than 1 page front and back!
A Case of Acquired Hydrocephalus

History: 31 year-old white female presenting with increasing “migraine” headaches.

Differential Diagnosis of Headache:
- Tension-type
- Migraine
- Cluster
- Trigeminal neuralgia
- Vascular causes (stroke, ICH, SAH, SDH, AVM, unruptured aneurysm, arterial hypertension, venous thrombosis)
- Infection (meningitis, encephalitis, abscess)
- Brain tumor
- Hydrocephalus
- Decreased CSF (s/p LP, etc.)
- Extracranial causes (sinusitis, TMJ, temporal arteritis)

Imaging:

Differential Diagnosis of Hydrocephalus:
- Obstruction/Noncommunicating
  - Congenital: Neural tube defects, congenital aqueductal stenosis, X-linked hydrocephalus, Chiari malformation, Dandy-Walker malformation, Vein of Galen malformation, other congenital malformations, syndromic forms (with trisomies, etc.), intrauterine infection (TORCHS)
  - Acquired: CNS infection, tumor, post-hemorrhage (inflammation/scarring)
- Impaired CSF absorption—Inflammation of subarachnoid villi
- Excessive CSF production (rare)—Functional choroid plexus papilloma

Differential Diagnosis of Third Ventricle Lesion:

| - Astrocytoma, GBM, oligodendroglioma, craniopharyngioma | - Ependymal tumor/cyst | - Choroid plexus papilloma |
| - Metastasis | - Colloid cyst | - Choroid plexus carcinoma |
| Medulloblastoma, primitive neuroectodermal tumor, teratoma (kiddies) | - Epidermoid/dermoid cyst | - Central neurocytoma |
| Intraventricular meningioma | | - Primary CNS B-Cell lymphoma of the choroid plexus (!) |
Amyotrophic Lateral Sclerosis (ALS)

1) Extreme physical activity is a risk factor for development of ALS. TRUE OR FALSE
2) There is a higher incidence of ALS in U.S. Gulf War veterans than in the general population. TRUE OR FALSE
3) What is the most common autonomic symptom patients with ALS experience? ________________
4) What percentage of ALS patients had sensory abnormalities identified by NCS in one study?
   a) 63%  b) 4%  c) 12%  d) 23%
5) What laboratory tests do you need to monitor for patients on riluzole therapy? ______________________

**Case:** A 62 year-old white male office worker with a history of HTN, hypothyroidism, and CAD s/p stent placement presents with left foot drop and hyperreflexia at the left ankle. Patient notes no other weakness and denies any sensory or autonomic symptoms. No other abnormalities are present on exam. Can this patient be diagnosed with ALS at this point? What is this patient's likely prognosis and disease course? How typical is this patient's history for ALS?

**Epidemiology:**
- Incidence in Europe/North America = 1.47-2.7 per 100,000 per year
- Prevalence in Europe/North America = 2.7-7.4 per 100,000
- 90% of cases are sporadic, 10% are familial
- Possible higher incidence in Caucasians
- 1.3-1.5 times more common in males than females
- Peak incidence is at age 74
- Only clear risk factors are age and family history
- Physical activity and trauma are probably not risk factors for developing the disease, but may contribute to younger age of onset and faster progression
- Environmental exposures (heavy metals, factory byproducts, DEET, etc.) have also been proposed as risk factors, but none have been confirmed thus far
- Survival motor neuron (SMN) gene mutations may be related to disease progression as well as risk of sporadic form
- Prevalence is high in Guam, West New Guinea, and parts of Japan—this may be related to consumption of cycad plants that are rich in an excitatory amino acid (BMMA)

**Pathophysiology:**
- Degeneration and death of pyramidal and Betz cells in the cortex, leading to gliosis in the corticospinal tract
  - Loss of large myelinated fibers in motor nerves, with denervation atrophy of muscles and fiber type grouping
  - Loss of frontal or temporal cortical neurons, as well as loss of neurons in other locations, including the hippocampus (in some cases)
  - Intracellular inclusions in degenerating neurons and glia—neurofilament inclusions in spinal motor neurons, Bunina bodies (cystatin C aggregates), and ubiquinated inclusions
- Etiology is unknown—some proposed mechanisms:
  - Superoxide dismutase type 1 mutations (toxic gain of function vs. abnormal protein aggregation)
  - Excitotoxicity (excessive glutamate)... riluzole is anti-glutaminergic!
  - Defective cytoskeleton (problems with axonal transport, etc.)
  - Mitochondrial dysfunction (possibly from oxidative stress)
  - Viral infection
  - Excessive apoptosis
  - Abnormalities in growth factors (VEGF of special recent interest)
  - Microglial activation/Inflammation
The Psychiatric Manifestations of Multiple Sclerosis (MS)

**The Basics:**
- MS is a demyelinating disease of **unknown etiology**, with the predominant theory being that it results from autoimmune IgG production and alteration of lymphocytes in the CNS, causing inflammation, demyelination, and axonal disruption.
- **Highest risk groups:** Females, Northern Europeans, smokers, patients with other autoimmune diseases.
- Diagnosis based on **symptoms and lesions disseminated in space and time**, i.e., >1 attack + white matter lesions in >1 area of the brain, at >1 time.
- Can present with **a wide variety of neurological manifestations**, including sensory symptoms (optic neuritis, numbness, tingling, pain), motor symptoms (weakness, internuclear ophthalmoplegia), fatigue, epilepsy, and bowel/bladder/sexual dysfunction.
- Course of disease is variable and can be classified into four categories:
  1. Relapsing-remitting (66-90% at onset)
  2. Primary progressive (10-19% at onset)
  3. Progressive relapsing (15% at onset)
  4. Secondary progressive (~30% of relapsing eventually develop purely progressive disease).
- **Treatments** are generally aimed at either immunosuppression (corticosteroids, interferon, glatiramer acetate, cyclophosphamide, newer biologic immune modulators) or symptom relief (stimulants for fatigue, muscle relaxants for spasticity, etc.)
- **Progression of disability** is highly variable, but is slow in most patients.
- Life expectancy is 83% of the general population’s life expectancy, with a mean age of death of 58.

**Modern Phrenology:**

**MS and The Mind:**
- **40-70%** of patients with MS demonstrate behavioral changes.
- Up to 2/3 of patients exhibit affective disturbances.
- 34-65% of individuals with MS develop cognitive impairment.
- MS can cause significant social dysfunction—divorce rates are twice the rate of the general population.
- Diagnosis of psychiatric disorders in patients with MS can be difficult due to **overlap between neurological symptoms of MS and clinical criteria for psychiatric disorders** (such as fatigue, sleep disturbance, appetite changes, difficulties with concentration, etc.).
- The increased rates of psychiatric disorders in the MS population may result from a combination of the emotional impact of the disease and its resulting disability, the physical changes in the CNS, and/or the side effects of some medications used for treatment of the disease.
Down Syndrome:
Clinical Features, Management, and Special Considerations

Epidemiology:
- 1/1000 live births
- Increasing risk with increasing maternal age
- Increasing risk with increasing paternal age

Genetics:
Trisomy 21 can happen from 3 different cytogenetic abnormalities:
- Nondisjunction (94% of cases)
- Unbalanced Robertsonian translocation (3-4%)
- Mosaicism (2-3%)

Trisomy 15:
- Midline defects (face and forebrain): holoprosencephaly, microcephaly, seizures, severe MR, severe eye defects, cleft

Trisomy 18:
- MR, hypotonia (scissoring), delicate facial features, clenched hands with overlapping digits, rocker bottom feet

Trisomy 21:
- Brachycephaly, epicanthal skin folds, Brushfield spots, upslanting palpebral fissures, protruding tongue, flat nasal bridge, folded/dysplastic ears, narrow palate, short neck, brachydactyly, clinodactyly, transverse palmar crease, space between first and second toes, MR
<table>
<thead>
<tr>
<th>Health Supervision for Patients with Down Syndrome</th>
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<tbody>
<tr>
<td><strong>Growth</strong></td>
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<tr>
<td>- Measure at all health supervision visits</td>
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<tr>
<td>- Watch for obesity or excessive weight gain (e.g. hypothyroidism) or loss (e.g. celiac disease)</td>
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<td>- Promote physical activity and caloric intake less than generally recommended for age</td>
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<td><strong>GI</strong></td>
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<tr>
<td>- Evaluate for GI abnormalities at birth (duodenal atresia, imperforate anus, TE fistula)</td>
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<td>- Screen for celiac disease beginning at age 2</td>
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<tr>
<td>- Remain aware of increased risk of Hirschsprung's</td>
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<td>- Screen for feeding difficulties/aspiration risk</td>
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<td><strong>Pulmonary/Sleep</strong></td>
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<tr>
<td>- Screen for obstructive sleep apnea at all visits after 1 year of age</td>
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<td><strong>Endocrine</strong></td>
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<td>- Thyroid function tests at birth, 6 months, 12 months, and then annually</td>
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<td>- Monitor for type 1 diabetes</td>
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<td><strong>ENT</strong></td>
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<tr>
<td>- Hearing screen at neonatal visit (BAERs and otoacoustic emission if necessary) and evaluate every 6 mos. until age 3 and then annually</td>
</tr>
<tr>
<td><strong>Ophthalmology</strong></td>
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<tr>
<td>- Full assessment to monitor for strabismus, nystagmus, cataracts before 6 months</td>
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<tr>
<td>- Assess acuity at least every 2 years until age 5 and then annually after age 5</td>
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<tr>
<td>- Screen for keratoconus and lens opacities yearly after age 5</td>
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<tr>
<td><strong>Cardiology</strong></td>
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<tr>
<td>- Echocardiogram at birth to monitor for CHD</td>
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<tr>
<td>- Periodic evaluation for mitral valve prolapse and aortic regurgitation in adolescence/adulthood</td>
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<tr>
<td><strong>Hematology</strong></td>
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<tr>
<td>- CBC with differential at birth (myeloproliferative disorders/polycythemia)</td>
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<tr>
<td>- CBC annually between 13 and 21 years to monitor for abnormalities</td>
</tr>
<tr>
<td><strong>Orthopedics</strong></td>
</tr>
<tr>
<td>- Monitor calcium and Vitamin D intake and supplement if necessary (osteopenia)</td>
</tr>
<tr>
<td>- Spine radiographs to monitor atlantoaxial instability between 3 and 5 years OR Annual neurologic evaluation for evidence of spinal cord compression (Special Olympics requires neck radiographs)</td>
</tr>
<tr>
<td>- Screen for other orthopedic disorders</td>
</tr>
<tr>
<td><strong>Dental Hygiene</strong></td>
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<tr>
<td>- Encourage good hygiene and dental visits every 6 months</td>
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<tr>
<td><strong>Dermatology</strong></td>
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<tr>
<td>- Screen for skin disorders, especially in adolescence (folliculitis is most common)</td>
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<tr>
<td><strong>Education</strong></td>
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<tr>
<td>- Screen to ensure appropriate services and supports are in place</td>
</tr>
<tr>
<td><strong>Behavior/Psychiatry</strong></td>
</tr>
<tr>
<td>- Screen for psychiatric/behavioral disorders, especially ADHD, conduct disorder, depression, autism, and aggressive behavior</td>
</tr>
<tr>
<td><strong>Sexuality</strong></td>
</tr>
<tr>
<td>- Address puberty and sexuality in adolescent visits (including menstrual hygiene, PMS, etc. for females)</td>
</tr>
<tr>
<td>- Provide information about contraceptive options to females</td>
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<tr>
<td>- Screen for sexual abuse, particularly for females</td>
</tr>
</tbody>
</table>

Nephrotic syndrome – chronic management

**Definition:** heavy proteinuria (albuminurin greater than 3 g/24 hours), hypoalbuminemia (less than 3.0 g/dL), and peripheral edema. (Normal urinary protein excretion is less than 150mg/day)

**General pathogenesis:** the normal glomerulus blocks protein filtration with physical and electric forces (GAGs repel anionic proteins). Albumin primarily blocked by the latter. The destruction of podocytes is a major cause of increased permeability. There is early evidence for an antibody-mediated mechanism.

**Major causes:** The majority (50-75%) are due to primary disease of the glomerulus. Certain systemic diseases can also cause this picture:
- Primary causes vary by age; in kids think Minimal Change until proven otherwise; in the elderly think membranous glomerulonephritis

<table>
<thead>
<tr>
<th>Relative frequency of primary glomerular diseases causing nephrotic syndrome (%)</th>
<th>Children</th>
<th>Adults &lt;60 yrs</th>
<th>Adults &gt;60 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal Change</td>
<td>76%</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Focal Segmental glomerulosclerosis</td>
<td>8</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Membranous glomerulonephritis</td>
<td>7</td>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>Membranoproliferative glomerulonephritis</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Other diseases</td>
<td>5</td>
<td>18</td>
<td>39</td>
</tr>
</tbody>
</table>


- Secondary causes include diabetes (most common), lupus and amyloidosis
- Most glomerulopathies can be asst with malignancy, especially membranous glomerulonephritis; important to keep this in mind with elderly patients

**Symptoms/presentation:** Patients might be asymptomatic, or might present with classic edema (periorbital, b/l LE, ascites, even anasarca). Heavy proteinuria will result in “frothy urine.” Patients might also have a severe hyperlipidemia on route physical.

**Diagnosis:** 24-hour urine is the gold standard
- Easier way to diagnose is the protein-to-creatinine ratio (mg/mg) on a random urine specimen; the ratio is roughly equal to the g/24 hr
- Urinalysis will show protein and [maltose cross](https://www.ncbi.nlm.nih.gov/pubmed/10321077) under polarized light due to lipid
- Urine tests/serologies to determine cause: ANA, complement, protein electrophoresis, RPR, HBV/HCV, cryoglobulins, ASO
- Renal biopsy is indicated in adults to determine specific cause

**Clinical implications:**

**Edema:**
- Previously thought to be due to “underfill” – low albumin decreased oncotic pressure and loss of fluid from vasculature activation of renin-angiotensin and aldosterone fluid overload; but patients usually have a normal plasma volume and ANP is up (which occurs in hyper not hypovolemia)
- FSGS relapse patients show sodium retention before hypoalbuminemia, suggesting sodium retention is primary; appears to be mainly distal resorption
- Key danger of nephrotic edema is hypovolemia in early stages (when sodium resorption/albumin excretion is off balance)
• Treatment:
  o Low sodium diet (<3 g per day)
  o Diuretics; furosemide and thiazide combination is effective; need higher Lasix doses due to hypoaalbuminuria
  o Albumin infusion if symptomatic hypovolemia (concern re. pulmonary edema/HTN)

Hyperlipidemia
• ↑LDL/IDL/VLDL with or without ↑TG; HDL generally normal
• Over 80 percent of patients with the nephrotic syndrome also have LDL cholesterol levels greater than 130 mg/dL
• Elevated levels of apolipoprotein B due to overproduction (liver protein production increased) and decreased catabolism (unclear why – likely an enzyme lost in urine)
• Treatment: correction of nephrotic syndrome, also soy protein diet (25-30 percent reduction in lipids), statin (decreased total cholesterol by 31 to 33% with simvastatin); ACE inhibitors also shown to decrease cholesterol (9% in one small study)

Hypercoagulability
• 50% of patients have a thromboembolic complication
• Venous > arterial
• Due to low levels AntiThrombin III, plasminogen, increased fibrin, increased platelet activity
• Key complications:
  o Stroke, PE, DVT, MI (RR 4.4)
  o Renal vein thrombosis, which is particularly common in membranous glomerulonephritis; symptoms include flank pain, hematuria, large kidney
  o Prophylactic anticoagulation? Possibly for high risk patients (serum albumin <2.0 g/dL)
  o Known chronic asymptomatic RVT? Idea is to prevent PE, but no evidence that this works
  o Known symptomatic RVT, PE, DVT: heparin then warfarin for 6-12 months; note heparin may be less effective given low ATIII levels

Infection: low levels of IgG leads to susceptibility. Consider pneumo, influenza vaccines

Low binding proteins
• Affects absorption of metals (iron, copper, zinc), vitamins (especially D)
• Affects levels of thyroid, corticosteroids (though little evidence of clinical sign)
• Drug binding – prednisolone, warfarin and other drugs need to be watched carefully

Treatment:
• Treat underlying cause: Some responsive to corticosteroids (e.g. minimal change) and/or immunosuppressants (FSGS, MGN)
• Reduce proteinuria:
  o ACE inhibitors/ARBs: requires one month of treatment before effect peaks; only partly explained by lower BP
  o Low protein diet? Not worth the risk of protein malnutrition (top cause death in ESRD), but low-fat soy protein diet still works well (0.7 g/kg/day)
• Hyperlipidemia: Statin plus ACE/ARB; little evidence that diet helps (other than soy)
• Anticoagulation: consider ASA or dipyridamole (some evidence it might help for proteinuria too); heparin/warfarin only if known thromboembolic event

Sources: UptoDate online
Appel, G. “Improved Clinical Outcomes in Nephrotic Syndrome.” Cleveland Clinic, Feb 2006.
•♦ Looking for More Support? ♦•

Clerkship year can be stressful, but always remember that you are not alone!
Penn has many resources available to you:

Suite 100:
- Director of Student Affairs: Carrie Barjenbruch
- Registrar: Helene Weinberg
  - If you haven’t figured it out by now, Carrie and Helene are two of the most generous, helpful people that you will ever meet. Even if you think your question or concern has nothing to do with the Registrar or Student Affair’s offices, these two amazing women will always give you the time of day and go out of their way to help you out. Never be shy!
- Dr. Jon Morris (aka JoMo): JoMo is one of your biggest advocates. For such a big boss, he’s easily accessible and he can be especially helpful for bigger picture concerns about performance in school and regarding residencies and beyond.
- Tutors: If in need of extra help on specifics like Shelf exams or writing H&P’s, there are often tutors available through Suite 100. Contact Carrie to set this up.

Organized counseling:
- Counseling: CAPS: http://www.vpul.upenn.edu/caps/: Over 3,200 students at the University of Pennsylvania use this every year. For a 9-7 pm (open until 7pm Wednesday and Friday, until 5pm other weekdays) appointment: 215-898-7021. For after hours/weekends: 215-349-5490.
- Therapists in the community (Carrie from Student Affairs can provide names and contact info)
- Paired mentoring: Join SNMA, LMSA, Elizabeth Blackwell Society for peer mentorship opportunity. Also, reach out to your house mentors. They are your advocates!

Other people to turn to:
- The Gold Humanism Society: Penn Chapter: You can reach out to Dr. Katie Margo, the faculty advisor or any of your peers in this group. Among the Gold Humanism Society’s many goals include supporting students throughout their clerkship year. They want to take an active role in improving the emotional and humanistic components of medical school (for both you and your patients), so please contact them with any specific concerns or ideas.
- Doctoring preceptors.
- Advisory deans.
- Clerkship directors (it’s really ok to talk to them!)
- Mentors you have connected with in pre-clinical years (through clinics, volunteering, etc).
- Don’t forget how important friends and family are outside of medicine. Don’t exclude them from what can be a very busy, emotional but rewarding world. Share your good and bad days with them.

***Put together by the Gold Humanism Society***