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COLLEGE OF MEDICINE
AT CHICAGO

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Welcome to the online Housestaff Survival Guide.
The purpose of this website is to provide residents with quick online access to the all the information in their housestaff survival manuals, and beyond.

How to use this site:
Use the links on the left to navigate. You can find most of this information in your copy of the Housestaff Survival Guide. This website combines this guide with links to useful online resources. Here's what you will find:
Crosscover: common overnight issues, such as chest pain/sob
Specialty: common overnight issues for specialty services, such as heme/onc and sickle cell
Procedures + Calculators: information on interventions such as procedures, O2 and ECGs
Electrolytes: a quick reference for daily electrolyte repletion
Call survival tips: a collection of on-call tips, and more
Phone Numbers: a collection of phone numbers, pagers, tips, and more

Other important sites:
Online ICU Guidebook
UIH Clinical Care Guidelines
New-Innovations
AMION [cards]

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Crosscover

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- Chest pain
- Hypotension / HTN
- Tachycardia / Bradycardia

Pulm
- Shortness of breath

GI
- Abdominal pain
- Nausea and Vomiting
- Constipation / Diarrhea
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- Etoh withdrawal
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ID
- Fever
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- Pain
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On the phone:

Complete set of vitals. Try to get a good history on the phone. Generally:

Onset (gradual = ischemia, pneumonia v sudden = PE, aortic dissection, PTX)
Crushing, squeezing, pressure (MI), severe tearing with sudden onset (dissection)
Dull/sharp/pleuritic; radiation; location; alleviating factors; assoc'd sx (nausea, vomiting, cough, hemoptysis); cardiac risk factors

Based on your first impression, order immediate tests. Consider EKG, CXR, cardiac enzymes. Coags required unless clear musculoskeletal pain.

Always **go see the patient**, to assess for stability, eliminate doubts and help you figure out what is going on.

PE: all vital signs; BP in each arm and pulses in both arms and legs (aortic dissection)
CV: new murmurs, extra heart sounds, JVP, carotid pulses, sternum/chest wall pain with palpation
Lungs: crackles, decreased breath sounds, hyper-resonant percussion, friction rub, trachea deviation
Abd: tenderness, BS
Ext: Leg edema (CHF, DVT)

Based on your history and physical, continue with further workup.

Diifferential includes: CV (Angina, MI, pericarditis, dissection), Pulm (PE, PTX, PNA, Effusion) GI (Esophageal spasm, rupture, GERD, PUD, Pancreatitis) MSK (costochondritis, zoster, etc)

CV

If concern for coronary etiology

What to think/risk stratification
What type of chest pain is it (typical v atypical)? What are his risk factors?
What is his TIMI score?
What to order immediately
Cardiac enzymes + EKG: compare to prior EKG. 3 sets q6hrs
Call senior for ST elevations, LBBB, TWI or any questions
ABG if pulse ox <95% , tachypneic and to calculate A-a gradient;
CXR: look for infiltrate, wide mediastinum, pleural effusion
Aspirin 324mg chewable if no contraindication
If confirmed to be cardiac
Call your senior!
ABCs/ACLS, O2
ASA + nitro + morphine + telemetry
(nitro 0.5mg SL up to 3 doses 5m apart or 1inch topical paste)
(morphine: low dose, can repeat if awake and SBP>90)
If ACS: call cardiology fellow to discuss heparin + plavix, consider CCU

If concerned for aortic dissection:

Check BP on both arms, review mediastinum on CXR, consider CT Angio
If confirmed to be dissection
Call senior! Call CT surgery & vascular surgery!
Transfer to CCU/MICU
Control BP w/labetalol or nitroprusside drips for BP

Pulmonary

If you suspect a PE

What to think/risk stratification
What type of chest pain is it (typical v atypical)? Risk factors?
What are his O2 requirements and vital signs?
What is the patients Well's Score?
What to order immediately
Diagnostics: CT w/PE protocol, VQ
ABG. R heart strain? (EKG, troponin, BNP)
Therapeutics: empiric anticoagulation until you can r/o
supplemental O2

If you suspect a PTX

CXR upright with inspiration and expiration
If present, and is > 20% of lung: call surgery for chest tube
100% oxygen non-rebreather: improves reabsorption
If tension PTX: 16g IV catheter in 2nd intercostal space, then chest tube

GI

Al hydroxide (Maalox) 30mL po q4hrs, famotidine 20mg po BID or IV
Elevate HOB
Viscous lidocaine
Other: Write a note; avoid morphine until dx and tx are established
Re-assess as needed

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Recall that BP = CO x SVR, Low cardiac output: cardiogenic (acute MI, worsening CHF, tamponade) hypovolemia, PE, tension PTX, tense ascites
Low vascular resistance: sepsis, anaphylaxis, medications, adrenal insufficiency

First: **Full set of vitals** over the phone. Go to patient. Assess for SHOCK: decreased organ perfusion: brain (mental status), heart (chest pain), kidneys (urine output <20ml/hr), skin (cold, clammy), absent bowel sounds. *Initially,* if there are any concerns for shock, ask RN for 2 large IVs, pt in Trendelenburg, start bolus NS, and get ABG kit to bedside to evaluate acidosis
Hx: compare to pt's baseline BP and make sure cuff is appropriately sized.
Is the pt confused or disoriented? Chest pain? Bleeding? h/o infection, allergy, cardiac event? Trauma/surgery/procedure/GI bleed?
Sudden onset? Consider massive PE, tension PTX, major cardiac event
Recent medications? (IV contrast or antibiotics)

PE: Manually re-check vitals
Gen: how sick? Cold/clammy, sweaty, obtunded?
Neck: JVP, tracheal deviation (PTX?)
CV: HR, new murmurs, pulse volume
Lungs: crackles, decreased breath sounds
Abd: tenderness, GI bleeding
Ext: skin temp, cyanosis, cap refill (normal is <2s)
Neuro: Mental status

Potential tests: orthostatics, ECG, CXR
cardiac enzymes, ABG, CBC, type&cross, lytes (anion gap?), lactate, LFTs, coags, blood cultures
Echo if concern for cardiogenic shock

Dx algorithm: (oversimplified)
cool skin & normal JVD -> hypovolemia
or septic shock
cool skin & increased JVD: -> cardiogenic
warm skin & fever -> sepsis
warm skin, rash, wheeze, stridor -> anaphylaxis

Management
If pt is asymptomatic and SBP > 90 (and close to patient's baseline), let it be.
If concerned about shock, get 2 large IVs, give oxygen, consider foley to monitor UOP, intubation if obtunded.

Cardiogenic Shock:
- arrhythmias – VT, complete heart block, SVT, VF, Afib w/ RVR
- ischemia – ST elevation or new LBBB
- Post cath, consider tamponade (Triad: JVD, diminished heart sounds, hypotension; also tachycardia, narrow pulse pressure and pulsus paradoxus)
- cautious with fluids (except in tamponade – fluids needed until pericardiocentesis)
- transfer to CCU or MICU (if any concern for non-cardiology etiology)

Sepsis/anaphylaxis/hypovolemia:
-bolus fluids (e.g. 500ml normal saline) or wide open and assess immediate response
-access: minimum 2 large bore IVs
-anaphylaxis: fluids, epipen (from arrest cart if necessary), then q10-15min PRN; hydrocortisone 250mg IV, diphenhydramine 50mg IV, famotidine 20mg IV (ranitidine at VA)
-sepsis: IV fluids and antibiotics

Other considerations:
Acute adrenal insufficiency (esp. in pt with h/o Addison's, hypopituitarism, long-term steroids): give dexamethasone 10mg IV q6hrs, or hydrocortisone 100mg IV q8hrs
If pt is symptomatic or in shock, call your senior, and consider transfer to MICU/CCU for pressors.

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First: Full set of vitals over the phone. Repeat manual BP yourself (use larger cuff if needed)

Hx: Review baseline BP: Acute increases in BP are more dangerous.
Assess for chest pain, back pain (dissection), change in MS, change in vision, unilateral weakness or
decreased sensation (stroke), SOB (pulmonary edema).
If there is any evidence of end-organ damage (myocardial ischemia, hematuria, proteinuria, CNS
symptoms), this is Hypertensive Emergency

PE: BP in both arms (aortic dissection); HR (bradycardia may = increased ICP)
Gen: mentation; how sick is the pt?
HEENT: papilledema, retinal hemorrhages or exudates, arteriolar narrowing
CV: elevated JVP, S3
Lungs: crackles (pulmonary edema), decreased sounds (effusion)
Neuro: mental status, lethargy(encephalopathy), focal deficits (CVA)

Tests: If concern for urgency/emergency consider UA (for blood/protein), EKG, CXR (widened mediastinum for aortic dissection), non-conCT(subarachnoid hemorrhage, hemorrhagic CVA)

DDX: pain, anxiety, nausea, alcohol withdrawal are common, but
Do Not Miss: hypertensive emergency associated with hypertensive encephalopathy, aortic dissection, pulm edema, MI, subarachnoid or cerebral hemorrhage

Management: Treat pain and anxiety. Review boxes on the right side of this page. Consider stopping IVF. Aim for slow decrease in BP if it's chronic.
. . . or see below . . .
(avoid reflexively ordering hydralazine and other meds that are difficult for the pt to take at home)
***Blood pressure for post-stroke/neurology patient is DIFFERENT -> usually BP >180/100 to*
*maintain adequate cerebral perfusion (CPP = MAP – intracranial pressure)***

Hypertensive Urgency: asymptomatic; SBP >220, DBP >120
Treatment: PO antihypertensives, decrease MAP by 25% or to 160/110 over several hours
First try to increase doses of meds pt is already taking; or consider
Labetalol 50mg po,
Nitropaste 1 inch topical (also helpful with chest pain),
Hydralazine 25mg po (risk of rebound tachycardia; avoid with dissection or wide pulse pressure),
Clonidine 0.1-0.3mg po (risk of rebound hypertension).
Recheck BP in 1.5-2 hours after giving po meds
Ask your senior before giving IV antihypertensive as acute drop in BP can cause stroke.

Hypertensive Emergency: see pt, EKG, IV access – will need MICU
Evidence of end-organ damage
Neuro: encephalopathy (HA, N/V, confusion, seizures), CVA, SAH (HA, stiff neck)
Cardiac: MI, angina, LVF, aortic dissection (back & chest pain)
Pulm: pulmonary edema (SOB)
Renal: ARF, proteinuria, hematuria
Treatment: Goal: decrease MAP by 25% (max.) over 1hr to avoid watershed infarct
- While transferring to the MICU:
  Nifedipine 5-10mg po and may repeat in 30min, or Labetalol 20mg IV q15min or 200mg PO
- In the MICU:
  Nitroglycerine IV 5mcg/min(first-line for cardiac patients)
  Nitroprusside 0.3mcg/kg/min(usual is 0.5-10mcg/kg/min)
  Esmolol load 500mcg/kg, then 50mcg/kg/min infusion
  If active myocardial ischemia or infarction, also use B-blocker (also consider for h/o MI or CVA)
  If Cocaine-induced hypertension: avoid B-blockers that cause unopposed alpha stimulation; use
  labetalol, nitroprusside, phentolamine
  If Amphetamine-induced hypertension: consider chlorpromazine 1mg/kg IM

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First:
- **Full set of vitals** over the phone. Assess pt immediately for ABCDs & ask RN for stat EKG
-low BP or symptomatic (decreased alertness, pulm edema, chest pain) – call your senior, may need DC conversion
-non-sustained V tach – check electrolytes and replace
-sustained (> 30 sec.) – assess hemodynamic stability; consider calling a code if pt is unstable

Hx:
chest pain, palpitations, SOB, previous episodes, h/o cardiac or thromboembolic disease, drug hx (incl. recreational, caffeine, smoking, alcohol); assess for causes of sinus tach (pain, hypovolemia, infection)

PE:
vitals, mentation, JVP, skin temp/cyanosis, cap refill, heart rate, murmurs, lung crackles and breath sounds
edema or evidence of DVT

Tests:
ECG; consider CBC, glucose, Mg, Ca, Chem, (thyroid)?, ABG if low pulse ox or considering PE, CXR

DDX:
Narrow Complex Tachycardia:
Regular: sinus tach, SVT, atrial flutter
Irregular: atrial fibrillation, MAT, a. flutter w/ variable conduction

Wide Complex Tachycardia:
do not miss V. Fib!
Management: call your senior. if unstable -> shock
-oxygen, telemetry, correct electrolytes (Mg, K), underlying causes (infection, hypovolemia, PE), address management for any primary arrhythmias
-A FIB: with RVR – rate control with diltiazem or beta-blocker if pt is stable
-SVT: may be broken with valsalva, carotid massage (r/o bruits 1st), adenosine 6mg IVP followed by rapid saline flush, then repeat adenosine 12mg IVP if needed (record on a rhythm strip!!)
-VT without pulse or BP: ACLS management as V. Fib
-NSVT: if infrequent, monomorphic and pt is asymptomatic, check lytes and watch
-MAT: treat pulm disease, rate control (consider CCB like diltiazem, or B-blocker)

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First
-**Full set of vitals** over the phone. Assess pt immediately for ABCDs & ask RN for stat EKG
-If hypotensive or symptomatic, call your senior; give atropine 0.5-1mg IVP (up to 3mg); if no improvement, consider pacing
-If asymptomatic and HR>45 no further interventions unless Mobitz II (2nd degree) or complete heart block (3rd degree)

Hx:
falls, dizziness, syncope, h/o CAD, drug hx (b-blocker, non-dihydropyridine CCB, digoxin)

PE:
heart rate, mentation, JVP, cannon waves (heart block), skin temp/cyanosis, cap refill, murmurs, lung crackles and breath sounds

Tests: EKG. Digoxin level if indicated.

DDX: drugs (beta-blockers, digoxin, CCB, amiodarone); sick sinus; MI; AV block; hyperkalemia; hypothyroid; hypothermia

Management:
Oxygen, telemetry, correct electrolytes (Mg, K), Call your senior and consider atropine (as above)
Consider pacing and transfer to CCU
If digoxin toxicity: correct K, Mg; talk with senior about digibind antibodies
If B-blocker overdose, may give glucagon 50mcg bolus, then infusion

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First: Full set of vitals over the phone. Onset? Reason for admission in the first place? Order oxygen if hypoxic (goal 88-92% in CO2 retainers), nebs, ECG, ABG kit to bedside and go see pt now

Hx

sudden onset (PE, PTX, pulmonary edema) vs. gradual onset (pneumonia, COPD/asthma exacerbation, edema or effusion)
h/o lung or heart disease, associated sx (cough, hemoptysis, fever, chest pain), risk factors for PE or MI

PE:

vitals, use of accessory muscles, midline trachea, signs of cyanosis, JVP, lungs, heart, loud P2, RV heave, edema, mental status (confused, drowsy)

Tests:

ABG, CXR, EKG, CBC. Consider chest CT with PE protocol (bolus w/IVF x 12hrs after dye if pt not overloaded. Patient will need 18g IV access for the contrast dye (often can't use PICC). Generally, can't get V/Q scans at night/weekends (that goes for both VA & UIC).

Differential Diagnosis

Pulm	CV	Gi	Systemic
COPD/Asthma, Pneumonia, PE, Aspiration, PTX, pulm edema, effusion	CHF, MI, arrhythmia, pericardial effusion/ tamponade	acute abdomen (pain and splinting), pancreatitis (met acidosis and ARDS), perforated esophagus	sepsis, anemia, metabolic acidosis (with resp comp) as in renal/liver failure, DKA, aspirin or TCA overdose, anaphylaxis to IV dye, PCN, ASAr

Other: anxiety/pain/opiates/narcotics

Quick Links

- ABG Calculator
- A-a Gradient
- Wells Criteria for PE
- TIMI Score
- Chest Pain
- Supplemental O2 / NIPPV
- Acute chest syndrome

Do not miss:

Hypoxia – insufficient tissue oxygenation (look at PO2, goal is above 60)
Anaphylaxis (wheezing, itch/urticaria, hypotension)

Management:

-supplemental oxygen (cannula -> ventimask -> nonrebreather {ICU eval if comes to this})
-BIPAP if obstructive airway disease, or volume overloaded
-nebulizer: albuterol +/- ipratropium
-diuresis: double the home dose (lasix PO:IV is 2:1, bumex is 1:1). Take creatinine and multiply by 20 to ballpark needed dose for those not on lasix. Can double 1hr later if no urine output, consider lasix ggt or metolazone.
-check peak flows if asthma, culture sputum if present
-if narcotic overdose, give naloxone 0.2 to 2mg IV
-anaphylaxis: epi 0.3cc of 1:1000epi SC (3cc of 1:10000epi IV if accompanying shock), hydrocortisone 250mg IVPB, Benadryl 25-50mg IVPB, Famotidine

Indications for intubation?

1) airway protection 2) decline in mental status 3) increasing pCO2 4) pO2 < 60, not responding to supp oxygen
5) pH <7.2; *Acute respiratory failure*: pO2 < 50 or pCO2 > 50 with pH <7.3 on RA

Housestaff Survival Guide | Crosscover | Abdominal pain

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First: if any concern for surgical abdomen, get a **full set of vitals** over the phone & go to bedside immediately

Hx: severity of pain, onset; (red flags: sudden, severe, fever, hypotension)

PE:
serial abd exams, look for peritoneal signs, rebound tenderness (pain w/ percussion of abd)
(Unlikely to be peritoneal if pt can cough, laugh, sit up or roll, or if not bothered when you nudge the bed)
Abd: Bowel sounds (high with SBO, absent with ileus), percussion – tympany, shifting dullness,
palpation – guarding, rebound, Murphy's, psoas, obturator, CVA tenderness
Consider rectal or pelvic exam

Tests: consider CBC, Chem, amylase/lipase, ABG, anion gap, lactic acid, LFTs, UA, INR if suspect liver disease or sepsis. Also consider bHCG, cultures, type&cross

Studies: Flat and upright KUB (abdominal obstructive series) and upright CXR
Have films read by radiology resident; look for dilated toxic megacolon (>7cm); air under diaphragm or between viscera and subcutaneous tissue on lat decub; air/fluid levels suggesting obstruction; gallstone or pancreas calcifications
consider abdominal CT or US, (no oral contrast if obstructed), EKG

DDX
-Do not miss: acute abdomen: AAA rupture, bowel perforation, ascending cholangitis, acute appendicitis, mesenteric ischemia, incarcerated hernia (happens every once in a while)
-myocardial infarction
-shock (hypovolemia or sepsis),spontaneous bacterial peritonitis

Management
If acute abdomen, notify general surgery. If not acute abdomen, continue serial abdominal exams & document them.
NPO, give IVF, hold analgesics while evaluating.
If suspect obstruction: NPO, place NGT (with low-intermittent suction), serial abd exams q2 hours,
(consider famotidine or ranitidine H2-blockers)

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*****Is this an anginal equivalent/atypical chest pain? > go to Chest Pain*
Watch for complications – dehydration, electrolytes, acid/base

DDx:
Medications – NSAIDs, erythromycin, morphine, codeine, aminophylline, chemo, digoxin, antiarrhythmics, nicotine, bromocriptine
Infection – gastroenteritis, otitis media, pharyngitis, CNS, pneumonia
Gut disorder – obstruction, PUD, gastroparesis, hepatobiliary, pancreatic, cancer
CNS – increased ICP, migraine, seizure, anxiety, bulimia/anorexia, pain
Other – MI, metabolic, pregnancy, drugs/alcohol, radiation sickness, Labyrinthine disorders

Tx:
PO if mild, IV if severe
Promethazine (Phenergan) 12.5-25mg po/IV q4-6h (sedating)
Prochlorperazine (Compazine) 5-10mg IV/PO/IM q4-6h PRN, or suppository 25mg bid
Metoclopramide (Reglan) 10mg PO/IV q6h prn *(not with obstruction)*
Ondansetron (Zofran) 4mg IV (esp with chemo)
Tx of GI upset: PUD, reflux: Maalox (aluminum hydroxide/magnesium hydroxide) 30-60mL

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if no N/V, abd pain, fecal impaction:

- Stool softeners: Docusate 100mg po bid *(Colace)* (schedule if bedridden or on opiates)
- Stimulants: Bisacodyl 10mg PO/PR prn *(Dulcolax)*; prune juice
- Enemas: Tap water or Fleet enemas (type these under Nursing Orders)
- Osmotics: Lactulose 30cc PO q4-6h until BM; sorbitol 30cc po q4-6hrs; Miralax (polyethylene glycol) 17gm in 8oz water
- Milk of magnesia; Magnesium citrate
- Bulk agents: Metamucil (psyllium)
- Prokinetic agents: Reglan (metoclopramide) *(caution if ileus or SBO)*
- Lubricants: Glycerin suppositories
- Mineral oil *(do not use if concern for aspiration)*

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Things to consider:
- Recent antibiotic exposure?
- Fevers? Bloody?
- Is this a consequence of a GI bleed?
- How bad is it? How dehydrated is the patient?

Labs: Consider cbc, lytes, stool for fecal leuks, culture and sens, heme occult, O&P if pt had diarrhea at admission or within first 3 days of admission, C. diff PCR (x1)

DDx: infection, GI bleed (blood is a stimulant), ischemia, fecal impation with overflow, laxatives, abx, antacids with mag

Tx: IVF hydration with serial monitoring and correction of electrolytes if any abnormalities. Consider empiric metrondiazole or vancomycin if strongly suspecting C diff. Generally no anti-motility agents until infection is ruled out.

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First: Full set of vitals over the phone. New v. reason for admission? How much blood, Upper/lower, hemoptysis, hematemesis, melena, BRBPR, hematochezia, PUD, medications (ASA, warfarin), liver disease

PE: check orthostatics (if positive >20% volume loss), mentation, abd masses, hepatomegaly, skin temp and cap refill, rectal exam
ATLS has developed a good assessment for hemorrhage and corresponding classification. This is useful to estimate blood-loss. A loss of 0-15% is considered a class I hemorrhage. A delay in capillary refill of longer than 3 seconds corresponds to a volume loss of approximately 10%. Usually no changes in VS occur in this stage.
Class II hemorrhage corresponds to 15-30%. VS will change in this stage, usually postural tachycardia will occur first, can be seen w/500cc blood loss. Further VS changes will continue as the bleeding worsens. Class III (30-40% loss) and IV (>40%) become more life threatening, and sympathetic compensatory mechanisms are more visible (tachy, clammy skin, oliguria).

Tests: type and cross, CBC, chem, coags

DDx:
Upper GI: esophageal varices, Mallory-Weiss tear, PUD, esophagitis, aortoenteric fistula, neoplasm
Lower GI: diverticulitis, colorectal ca/polyps, hemorrhoids, angiodysplasia, Meckel's diverticulum

Quick Links
- Glasgow score
- Ranson's criteria

Management:
IV access (min. two 18-gauge IVs)
Place NG tube for NG Lavage: (15% of hematochezia (thought to be a LGIB) is a really bad UGIB)
If stable, get serial hemoglobins (q6-q8hr), give IVF, keep NPO
If unstable, fluid resuscitate aggressively, transfuse blood, call GI fellow, transfer to MICU
Reverse coagulation defects if actively bleeding – plts, vit K, FFP

Upper GI:
place NGT, start octreotide and PPI for variceal bleed (lansoprazole 30mg at UIC; omeprazole 40mg at the VA, consider IV esomeprazole -> need to put in nonformulary medication),
call GI (may need EGD)

Lower GI:
tagged RBC or IR embolization if active bleeding
Monitor UOP and evidence of shock; Give Fluid!!
Call your senior; call GI fellow, May need MICU.

Variceal bleeding
give pantoprazole IV (refer to pharmacy guidelines), octreotide & antibiotics
If uremic bleeding, can consider DDAVP (0.3micrograms/kg IV at 12-24hrs) in dialysis or renal failure pts.

Surgery consult if uncontrollable/recurrent bleeding, aortoenteric fistula, bleed requiring > 6U PRBC, naked vessel in peptic ulcer seen on EGD

Note: Serial CBCs can take 8-24 hours to represent acute bleed.

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- FENa calculator
- FEUrea calculator

Definitions
Normal: 0.5cc/kg/hr, oliguria: <500cc/day, anuria: <50 cc/day
anuria is most often seen in two conditions: shock & complete bilateral urinary tract obstruction

Hx
vital signs, amount of urine in last 24hrs/last 8hrs, flush/replace Foley, review I/Os over past few days, recent procedure with contrast, any new meds (ACE-I can cause AKI, anticholinergics like benadryl, general anesthesia can cause retention), most recent lytes (BUN, Cr, HCO3, K)

PE
Orthostatics, weight changes, JVD, friction rub, crackles, skin turgor, ascites, enlarged bladder
Tests: bladder scan. UA. Check urine electrolytes AND urine creatinine (these need to be ordered separately) to calc FENa
Calculate FeUrea if patient is on diuretics

Differential / Causes

Prerenal	Renal	Post-renal
hypotension, tachycardia, thirsty, BUN/Cr >20 suggests dehydration, FENa<1% Intrinsic renal: often not worked up overnight – but consider ATN from hypoperfusion, drug toxicity	, glomerular, tubular/interstitial, obstruction	BPH, clogged Foley, stones; (urinary retention also with sacral nn disease, cord compression if mets to vertebrae, narcotics, anticholinergics) - bladder distended, bladder scanner (measurement of PVR) or insert foley to measure PVR (normal PVR is <12cc)

Management:
1) R/o Urinary Retention: bladder scan. Foley; or try a Coude catheter to pass enlarged prostate; beware of post-obstruction diuresis; replace lost fluids. If there's a problem with a suprapubic catheter -> call senior and then urology resident

2) Determine volume status
If dry, pre-renal -> fluid challenge with 250-500cc of normal saline, followed by maintenance (caution with heart failure)
If wet, CHF -> diuresis with Lasix; (escalating doses); add metolazone PO; if no response, may need nesiritide or dobutamine (if need inotrope). If contrast-induced nephropathy -> (up to 2 days post-contrast), ensure adequate hydration

Follow clin chem.: do not miss hyperkalemia with renal failure
N.B. It is poor form to give both fluids and lasix!!

Additional measures with renal failure: stop nephrotoxic meds: NSAIDs, ACE-I (if new addition), aminoglycosides; stop digoxin, metformin, check vanc level. Consider renal u/s (won't get done in the middle of the night, but you can place the order)

Emergent dialysis: "AEIOU" -> i.e. indications for a stat renal consult (call your senior)
Acidosis, EKG changes from hyperkalemia, Intoxication, overloaded with fluid (refractory to lasix), Uremia with pericarditis or encephalopathy

Housestaff Survival Guide | Crosscover | Hyperkalemia

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Is the specimen hemolyzed? If suspicious of result, repeat lab stat (can get a K on an ABG if you need it really fast)

Causes: renal insufficiency, medications (ACE-I/ARBs/K-sparing diuretics/K supplements/heparin) acidosis, type 4 RTA, tissue destruction (bowel infarct, rhabdo, hemolysis)

Eval: look for ECG changes (peaked T-waves with shortened QT interval -> lengthening of the PR interval and QRS duration -> P wave may disappear -> QRS widens further -> sine wave pattern -> flat line

Management: If there are ECG changes, call your senior, then proceed in this order:
-calcium gluconate 10% 10mL IV (1 amp) over 2-3 minutes (cardiac protection. Avoid w/ digoxin)
-Insulin 10-20 units IV with glucose 50gms to prevent hypoglycemia
-B-agonist -> albuterol nebs
-NaHCO3 1 amp IV if severe metabolic acidosis (avoid in ESRD as huge osmotic load)
-Diuretics: furosemide 40mg IV if renal function adequate
-Kayexalate (sodium polystyrene sulfonate) 15-45gms PO or as enema (not in the critically ill)
-Dialysis

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Fever = >38.3C (100.9F) or >38C (100.4F) for 1 hour+

First: Full set of vitals over the phone. Reason for admission (is fever expected?), cough/sputum/SOB, CP, dysuria, diarrhea, recent surgery and wounds, PE/DVT risk factors, abd pain, headache, IV lines, transfusion reaction, drug reaction, tumors in places where there are macrophages (esp. hepatoma, lymphoma)

Quick Links

- Antimicrobials
- Neutropenic fever
- UIH Abx Guidelines
- UIH PNA Guidelines
- UIH VAP Guidelines

PE:
current vitals; mental status, agitation, lethargy; photophobia, neck stiffness, pulse volume
Brudzinski's sign: flex the neck; if pt's hips and legs flex, it's positive
Kernig's sign: flex hip and knee; if straightening the leg causes pain/resistance, it's positive
Skin temp and color (hot and flushed with septic vasodilation; cold and clammy if hypotensive)
Look for sources, including wounds, rashes, cellulitis, DVT, line infections

Tests:
2 complete sets of Blood Cultures, including peripheral culture *and* culture from each lumen of central lines (label the samples!) *see technique below;*
UA and UCx, CXR PA and Lat if stable (portable if not), sputum culture, consider stool studies (C.diff PCR) Head CT if any neuro signs, LP if concern for meningitis, diagnostic paracentesis in pt with ascites

DDx:
Infection (lung, UTI, wounds, IV sites, CNS, abd, pelvic), PE and DVT, Drug-fever, neoplasm, atelectasis, septic shock, meningitis
Hidden sources: AEIOU: abscess, endocarditis, IV catheters, osteomyelitis, UTI (foley)
Recall 5W's of Postop Fever:
Wind: atelectasis (POD 1-2, doesn't *really* cause a fever by itself), pneumonia, PE
Water: UTI
Wound: IV line or wound infxn POD 5-7
Walking: DVT, PE, thrombophlebitis
Wonder drugs: drug fever

Management:
-If pt is stable, make the diagnosis before starting abx.
-If pt is unstable, neutropenic, or you are concerned for meningitis, start abx right away and find your senior
- D/c foley and lines if NOT needed, but ensure IV access and give IVF.
- Fever + hypotension = ***septic shock***: aggressive IVF; broad spectrum Abx, pressors

If ***suspected Meningitis*** (headache, seizure, change in sensorium, neck-ache)
- get blood cultures and LP, then Abx; if there is any delay in getting the LP
- start empiric abx NOW and dexamethasone10mg IV stat and q6h x4 (for bacterial meningitis) and do LP within 3 hours
- Antibiotics for bacterial meningitis: Ceftriaxone +/- vanc for S. pneumo and N. meningitides
If age > 50y, add ampicillin as well for Listeria
If immunocompromised: ampicillin and ceftazidime
If trauma/shunt: vanc and ceftazidime
Pseudomonal coverage – monotherapy: cefipime, zosyn, or ceftazidime
If already on these or unstable – add gent, tobra, amikacin OR ciprofloxacin to double cover
Consider fungal if already covering GPC, GNR, and anaerobes (but don't treat asymptomatic candiduria, likely colonization)

Housestaff Survival Guide | Crosscover | Antimicrobials

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Quick empiric choices:
Meninges – Ceftriaxone/Vancomycin, consider Ampicillin | Aspiration – Cover for anaeurobes, clindamycin
GU – FQ, bactrim, amp/gent | Skin – think community acquired MRSA: clindamycin, vancomycin
GI – FQ, metronidazole, pip/tazo | Lines – Vancomycin

Antibiotics for COPD Exacerbations (www.goldcopd.org)
Step 1 Assessment of antibiotic indications for COPD
· Three cardinal symptoms
· Increased dyspnea, increased sputum volume, increase sputum purulence
· Require mechanical ventilation
Step 2 Antibiotic Choices:
· High Risk: Levofloxacin
· Low Risk: Azithromycin, Doxycycline
Step 3 Thorough Eval for Other Causes of Exacerbation
· Drugs
· Arrythmias (Afib)
· Coronary Ischemia
· Pneumothorax
· Viral Infection

Quick Links
- Neutropenic fever
- UIH Abx Guidelines
- UIH PNA Guidelines
- UIH VAP Guidelines
- Vancomycin dosing

Double coverage of Gram Negative Organisms
Rationale: Utilizing two different antimicrobial classes will increase the likelihood of active antimicrobial therapy in critically ill patients. Should only be used for empirical therapy. Discontinue after microbiological susceptibilities are reported.

Patients to consider double coverage (Clinicians should be selective in application!)
· Patients with febrile neutropenia (follow current U of I hospital guidelines)
· Patients with little physiologic reserve
· Severe sepsis and septic shock
· ARDS from infections cause
· Patient with significant exposure to anti-pseudomonal beta-lactam agents
· Patients with late onset (>14 days) nosocomial infections
· MDR organisms: Psuedomonas, Acinetobacter, KPC Klebsiella pneumoniae

How to double cover Gram-negative
· Aminoglycosides (Amikacin, Gentamicin, Tobramycin) are preferred over quinolones
· A single dose of an aminoglycoside has not been shown to increase the risk of AKI in septic shock patients
· Quinolones add little additional coverage to anti-pseudomonal beta-lactam agents (Micek et al. Antimicrob Agents Chemother. 2010)

Duration of treatment (Chastre. *JAMA*. 2003)
An 8 day course was shown to be non-inferior to an 15 day course (mortality)
There was more relapse with a short course in patients with Psuedonmonal/Acinetobacter pneumonia when treated with a short course
Consider 15 day course in patients with:
MDR (High MIC) Psueomonas or Acinetobacter pneumonia
Patients with slow clinical response (>4 days)
Patients with severe hypoxia

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Housestaff Survival Guide | Crosscover | Vancomycin

How to order Vancomycin
- Check your sources, confirm the medication is indicated
- Check table below for appropriate/inappropriate uses
- initial dose is based on actual body weight, subsequent doses based on blood levels
- Adult dose calculation:
  initial dose = 15mg/kg based on total body weight , load at 20mg/kg if very sick
  dosing interval based on CrCl: 80 = Q12h, 40-79 = Q24h, 25-39 = Q48h, < 25 15 mg/kg x 1

Quick Links

- Antimicrobials
- UIH Abx Guidelines
- UIH PNA Guidelines
- UIH VAP Guidelines
- UIH Vanc Guidelines

Pharmacokinetic level monitoring
- Obtain trough concentration (30 minutes prior to infusion) before 4th consecutive dose
- Adjust dose to obtain goal trough concentration of 10 - 20 mcg/mL
- Trough concentration 15 - 20 mcg/mL is recommended for bacteremia, endocarditis, osteomyelitis, meningitis and hospital acquired pneumonia caused by Staphylococcus aureus to improve clinical outcome

Frequency of vancomycin trough concentration monitoring:

1. For patients receiving > 5 days of vancomycin should have least one steady-state trough concentration obtained. Frequent monitoring (more than single trough concentration before 4th dose) for < 5 days or for lower intensity dosing (target trough vancomycin concentration < 15 mcg/mL) is not recommended.

2. For patients with stable renal function with goal trough concentration 15 - 20 mcg/mL, monitor vancomycin trough concentration once weekly for duration of therapy.

3. For hemodynamically unstable patients when goal trough concentration is 15 - 20 mcg/mL, more frequent than once weekly vancomycin trough concentration is recommended. Frequency of monitoring should be guided by clinical judgement.For patients with renal failure, follow levels, and re-dose for concentrations < 15 mcg/mL

I. Situations in which vancomycin use is appropriate or acceptable:	Situations in which vancomycin use is discouraged:
A. Treatment of culture documented infections caused by ß-lactam resistant gram-positive organism such as methicillin-resistant Staphylococcus aureus (MRSA) when no alternative antibiotic therapy is available. B. Treatment of culture documented infections caused by gram-positive organism in patients with immediate-type hypersensitivity reaction to ß-lactam antibiotics (urticaria, angioedema, or anaphylaxis) when no alternative antibiotic therapy is available. C. Empirical therapy for presumed gram-positive infection in patients with: 1. Neutropenic fever and severe mucositis, history of MRSA colonization or infection, suspected or known catheter-related infection or hypotension 2. Severe sepsis pending cultures 3. Skin and soft tissue infection not responding to other agents 4. Gram-positive organisms cultured from blood or sputum pending identification 5. Bacterial meningitis in pediatric patients 6. Hospital acquired or ventilator associated pneumonia D. Treatment of metronidazole-refractory C. difficile infections (oral vancomycin only	A. Routine surgical prophylaxis other than in a patient who has a life-threatening ß-lactam allergy, when indicated by the microbial environment, or when indicated based upon the patient's infection or colonization history. B. Empiric antimicrobial therapy for patients with neutropenic fever unless there is high clinical suspicion or evidence that indicates the presence of a gram-positive infection (see I.C.1. above) C. Treatment in response to a single blood culture positive for coagulase-negative Staphylococcus, if other cultures taken during the same time frame are negative D. Continued empiric use for presumed infections in patients whose cultures are negative for ß-lactam-resistant gram-positive microorganisms E. Systemic or local (antibiotic lock) prophylaxis for infection or colonization of indwelling central or peripheral intravascular catheter F. Selective decontamination of the digestive tract G. Eradication of MRSA colonization H. Primary treatment of C. difficile-associated colitis I. Routine prophylaxis of very low-birthweight infants J. Routine prophylaxis for patients on continuous ambulatory peritoneal dialysis or hemodialysis K. Treatment of infections caused by ß-lactam susceptible infections in patients without ß-lactam allergy L. Topical use of vancomycin solution for application of irrigation

For more information of Vancomycin dosing, check micromedx and/or UIC Clinical Care guidelines for Vancomycin use

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1. Withdrawal: Tremors – 12-36 hours after decrease in ETOH; mild agitation, insomnia, tachycardia, headache, nausea, sweating, autonomic instability
2. Hallucinations – visual, auditory, tactile, olfactory
3. Seizures – 7-30 hours after; peak at 13-24hours
4. DTs – 2-7 days after cessation; up to 20% mortality. Presents with delirium, confusion, tachycardia, dilated pupils, diaphoresis, worsened autonomic instability, hypertension, seizures

Quick Links

- CIWA-Ar Score

Hx/PE
The CIWA-Ar score can help you assess the patient and guide your treatment

Tx: If pt agitated -> frontload w/ ativan IV 2mg q5min or diazepam IV 5-10mg q5min until calm.
- Sedation with benzodiazepines: consider starting lorazepam 2mg IV/IM q2h (hold if pt asleep), and titrate as needed –large doses may be required, but the bottom line is that if the patient is still agitated, you are not giving enough benzo.
-may consider diazepam if need higher doses of rapid-onset, long-acting bzd; then may convert 24hr requirements to longer-acting chlordiazepoxide (Librium)
- Thiamine 100mg IV/IM (Give the thiamine before glucose!)
- Correct K, Mg, Phos, glucose (after giving thiamine)
- Banana Bag (D5W with MVI 1mg; thiamine 100mg, folate 1mg, +/- magnesium)
- Seizures: if generalized convulsions; give diazepam 2.5mg/min IV until controlled, check lytes

Housestaff Survival Guide | Crosscover | Seizures

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Initially: stay calm, put pt in lateral decubitus position, suctioning to bedside, pad bed rails to prevent injury
Assess ABCs – oxygen, protect airway, get f**ull set of vitals**
Ask RN to call your senior

Causes: infection, metabolic (incl. hypoglycemia), stroke, structural, trauma, neoplastic, iatrogenic, delirium tremens

Labs: accucheck; clin chem., Ca, mag, phos; also consider ABG, urine tox, serum tox, UA, EtOH level, drug levels; (can also consider prolactin level after seizure)
If seizure is over: assess pt, labs, meds, diagnoses, consider head CT; treat the underlying cause

Management
-airway: oxygen, ready to intubate
-lorazepam 4mg drawn up: push 2mg slowly → follow by other 2mg if needed (0.1mg/kg is textbook required dose) (have ambu bag available b/c benzodiazepines can cause respiratory depression)
-call neuro resident to discuss loading of antiepileptics
-status epilepticus if >5min or 2 seizures with incomplete recovery ->involve ICU, neuro, anesthesia

Housestaff Survival Guide | Crosscover | AMS

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Initially: Determine if acute, acute on chronic, or chronic
When you are first called, ask for **full set of vitals** over the phone including O2 saturation, accucheck
Pts with FEVER or decrease in LOC require urgent evaluation.

Levels of consciousness: alert -> lethargic (arousable but falls asleep) -> stupor -> coma
Hx: time course, history of sundowning, change in level of consciousness, trauma, diabetic patient, recent meds (narcotics, sedatives, benzodiazepines), alcohol history and time of last drink, baseline mental status

PE:
vitals; O2sat; accucheck; mentation, pupils (pinpoint pupils suggests opiate o.d.), papilledema, nuchal rigidity, ascites/jaundice/liver ds, focal neuro findings, asterixis, seizure activity

Tests
CBC, Clin Chem, Ca, Mg, Phos, ABG, TSH, LFTs, ammonia
Noncontrast CT if concern for bleeding or CVA
Cultures, LP for infections
EtOH, tox screen

DDx:: "MOVE STUPID"
Metabolic (Na, Ca, thiamine, B12)
Oxygen
Vascular (hypo/hypertension, CVA)
Endocrine (glucose, DKA, thyroid, adrenal)
Seizure
Trauma, tumor, TTP
Uremia or hepatic encephalopathy
Psychiatric
Infections (inc sepsis, fever)
Drugs (opiates, alcohol, illicits, benzodiazepines)
Do not miss: sepsis, meningitis, EtOH withdrawal, increased ICP or mass; Delirium Tremens

Sundowning
-Address underlying conditions; r/o delirium which can be an ominous sign; stop benzodiazepines which can precipitate sundowning
-First try to reorient pt, turn off lights and TV, may encourage family member to stay with pt
If sedation is necessary:
Risperidone 0.5mg PO/IM/dissolving tablets
Seroquel (quetiapine) 25mg PO (less sedating)
Haloperidol (Haldol) 0.25mg PO/IM; increase to 1-5mg if needed (caution due to anticholinergic, orthostatic, urinary retention, extrapyramidal side effects; also, reduce the dose in LIVER PTS)

Management:
Hypovolemia – hang 1L NS
Low blood sugar – 1amp D50
Hypoxia – facemask, CXR, ABG (DDx PE, aspiration, volume overload)
Seizure – suction, lorazepam, oxygen, monitor, protect airway
Trauma or CVA – stat head CT (without contrast)
If suspect meningitis: start empiric abx, fundoscopic/neuro exam (or head CT), followed by LP
If alcohol withdrawal: give lorazepam 2mg IV q2-4hrs scheduled, with 1mg PRN (increase as needed); give thiamine first, then glucose
If overdosed on pain meds (i.e. too much morphine): give naloxone 0.4mg IVP

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Housestaff Survival Guide | Crosscover | Glycemic control

HYPERGLYCEMIA

Quick tips

-check that diet is ADA and no dextrose in the IVF
-may be worsened with illness
-adjust meds; can give up to 10 units of insulin, then re-check after 2 hours (not sooner)
-hydration: IVF 0.9 normal saline

Do not miss: DKA (type I diabetes mellitus > type II)

Dx:
(1) elevated glucose on clin chem.
(2) serum ketones specific, urine ketones sensitive
(3) pH <7.3 or HCO3 <22, presence of anion gap
Precipitants: infection, inadequate insulin, diet, pancreatitis
Tx: aggressive fluids (caution with CHF), insulin IV and then consider a drip, call your senior

Do not miss: HONK hyper-osmolar non-ketotic state (type II diabetes mellitus)

Dx: hyperglycemia, not acidotic, no ketones in urine, raised calculated osmolality= 2(Na+K) + BUN/2.8 + glucose/18
Precipitants: MI, infection (pneumonia, UTI, cellulitis, gastroenteritis), stroke, dehydration,
exogenous corticosteroids
Tx: aggressive fluids (caution with CHF), insulin IV and then consider a drip, call your senior
Note: Common cause of hyperglycemia is holding insulin for NPO studies. This is an error: pts on insulin should receive at least 1/3 -1/2 of their basilar insulin even if NPO.

HYPOGLYCEMIA

Causes

do not miss *SEPSIS* (may precede sepsis and decompensation); decreased PO intake, renal insufficiency (not clearing insulin); reactive post-prandial, etoh, liver disease, adrenal insufficiency, hypopituitarism, severe malnutrition, insulinoma

Tx

- give juice, or 1amp of D50; If severe (i.e. symptomatic) and no IV access, give glucagon 1.0mg SQ or IM
-consider holding or decreasing the next scheduled dose of insulin or oral med
-be aware that low BS can precipitate seizures.

Housestaff Survival Guide | Crosscover | Pruritus and Rash

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PRURITUS

-> R/O anaphylaxis
If this is anaphylaxis, can give epi 0.3cc of 1:1000epi SC (3cc of 1:10000epi IV if accompanying shock)
Diphenhydramine (Benadryl) 25-50mg PO q6-8h prn (don't give IV) & Hydroxyzine 25mg PO q6-8h prn if not
Could be 2/2 narcotics, bedbugs, systemic illness (polycythemia, biliary cirrhosis, renal pruritis, etc)

RASH

1) r/o anaphylaxis -> associated with SOB, wheezing, laryngeal edema, hypotension, rash/urticaria
-large bore IVs for IVF
-Epinephrine 0.5mg as above
-Diphenhydramine 50mg IV/IM; Hydrocortisone 250mg IV; intubation if needed

2) drug rash -> hold suspected, non-essential meds
diphenhydramine 25-50mg po q6-8h, loratadine 10mg po if itching
caution with steroid creams that can increase skin breakdown and risk of Infection
Remember that fever may be only manifestation of drug reaction

3) associated with blood transfusion -> stop the blood, send remainder for blood bank analysis
benadryl and APAP if stable
epinephrine 0.5-1.0mL (1:1,000) IM, hydrocortisone 250mg IV & intubation as well if needed
IVF: 500-1000ml of NS bolus

Housestaff Survival Guide | Crosscover | Pain

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Quick Links

- Acute chest syndrome
- Chest pain
- Abdominal pain
- Pain medication converter

On the phone:
Ask for complete vitals. Try to get a good history on the phone.
Is this pain new?
Where is this pain located?
If this is a new complaint, or worsening complaint, go and assess the patient
Your goal is to a) asses s for any underlying issue that needs to be treated and b) control pain

Diagnosis
When evaluating patient, use a standardized scale to assess the level of pain and for subsequent assessments. If you are evaluating a sickle cell patient, it is likely that this patient knows her baseline pain level or where it was earlier during the day.

Management
Schedule pain meds – then write patient may refuse, or hold if sedated

NSAIDs are good for musculoskeletal pain, pleuritic pain, gout

Avoid NSAIDS if: pt has renal insufficiency, is anticoagulated (relative contraindication), low platelets, h/o active PUD or GI bleed, CHF (can cause sodium retention), has ASA sensitivity/bronchospasm/nasal polyps, caution with ACE/ARBs

Housestaff Survival Guide | Crosscover | Decision making capacity

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Basic definitions:
*Competence/Incompetence: legal designations determined by courts/judges
*Decision-Making Capacity: clinically determined by physician's evaluation

To assess decision making capacity
Ask the patient 5 questions:
1. What is your present medical conditions?
2. What is the treatment that is being recommended for you?
3. What do you think might happen to you if you decide to accept (or not accept) the recommended treatment?
4. What do we, as your medical team, think might happen if you decide to accept (or not accept) the recommended treatment?
5. What are the alternatives available and what are the consequences of accepting each?

Ask yourself 5 questions:
1. Can the pt communicate a choice?
2. Can the pt understand the essential elements of informed consent?
3. Can the pt assign personal values to the risks & benefits of intervention.
4. Can the pt manipulate the information rationally & logically.
5. Is the pt's decision making capacity stable over time?

Document that the pt has decision-making capacity for the following reasons:
***** Pt understand his present medical condition and the tx that is being recommended.
* He understand the risks, consequences, and alternatives of accepting/not accepting the tx.
* He can communicate a choice.
* He understands the essential elements of informed consent.
* He can assign personal values to the risks/benefits of intervention.
* He can manipulate information rationally & logically.
* His decision-making capacity is stable over time.
**if capacity is in question, obtain complete evaluation fro Psychiatry.

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Housestaff Survival Guide | Crosscover | Death pronouncement

Phone Call:
Pt's location/age? Family present? Circumstances? Get there immediately.

Patient's Floor:
Talk w/ nurse about what happened.
Was the Attending called?
Autopsy desired?
Organ donation?
Review chart for other med/family issues

In the Room:
Explain the purpose of the pronouncement to family.
Ask if family wishes to be present, Also, ask if family would like the chaplain to be present
Address any questions from family.

Pronouncement:
ID pt.
Note that the patient is NOT hypothermic (not dead until you are warm and dead).
Note general appearance of pt and if any spontaneous movement. There may be some twitching.
Note no rxn to verbal or tactile stimulation.
Note no pupillary light reflex (pupils should be fixed/dilated).
Note no breathing or lung sounds or heart beat/pulse
when to call coroner: if pt was in hospital <24hrs, death w/ unusual circumstances, or if death was associated w/ trauma regardless of cause of death

Orders to be done.
1. Expiration order on Powerchart.
2. Fill out paper documentation.
2. Call Gift of Hope –ROBI (regardless if organ donor or not) -630.758.2600, www.robi.org
Documentation---What to write in your death note:
Called to bedside by RN to pronounce pt's name or Code blue called at time. Resuscitation efforts stopped at time.

Template Death note
Use the note below. Modify to represent specific case.

DEATH NOTE
<Document all above findings here. What happened? Document time.>

No spontaneous movements were present. There was not response to verbal or tactile stimuli. Pupils were mid-dilated and fixed. No breath sounds were appreciated over either lung field. No carotid pulses were palpable. No heart sounds were auscultator over entire precordium. Patient pronounced dead at date & time. Family and resident (or attending physician) were notified. Document if coroner was notified. The family accepts/declines autopsy. The family accepts/declines organ donation. Document if pt was DNR/DNI vs. Full code.

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Heme	Neutropenic fever Tumor lysis syndrome Transfusions
Liver	Hepatic encephalopathy
Sickle	Acute chest syndrome Hyperkalemia Pain
	Geriatric assessment

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Housestaff Survival Guide | Specialty | Neutropenic fever

If Temp > 38.3 (101F) x 1 or 38 sustained (100.4) x 1hr. If patient appears ill, can treat without waiting 1hr for temperature to sustain. And ANC 500 or less, or was < 500 within the prior 48h, or patient on chemo and ANC < 1000:

First: **Full set of vitals** over the phone. Assess the patient. Neutropenic fever is a MEDICAL EMERGENCY. Antibiotics need to be ordered immediately and running in the next 30 mins

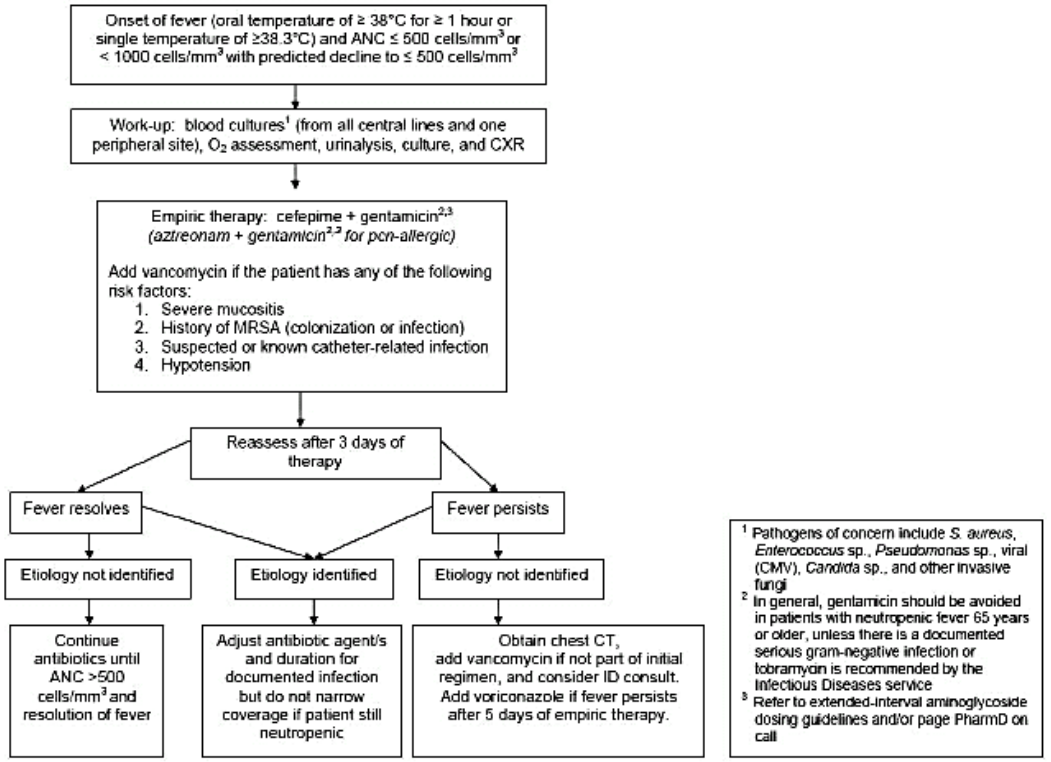
PE: Localizing signs/symptoms of infection
If the patient is unstable, patient will need ICU evaluation and transfer with early goal directed therapy (see ICU guidebook)

Management
Send BCx s 2, urine Cx, +/- CXR
Cefepime , add aminoglycoside (gentamicin here) if renal fxn ok [aztreonam and gent if PCN allergic]
Add VANC for hypotension, sepsis, mucositis, catheter infxn, MRSA
Order antibiotics and call pharmD on call to help you get them hanging STAT

If pt continues to be febrile after 3d (& w/o etiology found)-> consider chest CT, ID consult
**after 5d -> add voriconazole 6mg/kg q12 x 2 doses, then 200mg po q12
**>6d -> consider switching to imipenem/cilastatin

Quick Links

- Antimicrobials
- Vancomycin dosing
- UIH Abx Guidelines
- UIH PNA Guidelines
- UIH VAP Guidelines



Housestaff Survival Guide | Specialty | Tumor lysis syndrome

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Definition

Development of hypocalcemia, hyperuricemia, hyperphosphatemia, hyperkalemia, and lactic acidosis from rapid release of intracellular metabolites into the systemic circulation following mass cytolysis of neoplastic cells.
Can lead to mental status changes, renal failure and fatal arrhythmias.

Management

- Considered a medical emergency
- Contact your senior
- Aggressive IV hydration
- Consider medical management with the following:
    - Rasburicase 0.2 mg/kg IV over 30 minutes daily for up to 5 days; do not dose beyond 5 days or administer more than 1 course of treatment
    - Allopurinol
    Adults: 200 to 400 mg/m2/day IV daily or in divided doses OR 600 to 900 mg/day orally; reduce dose by half after 3 to 4 days ; titrate dose to level of serum uric acid desired
    - Sodium Bicarbonate / Sodium Chloride / Dextrose
    Isotonic sodium bicarbonate in 0.45% normal saline with 5% dextrose infused at a rate of 150 to 300 mL/hour to keep urine pH>7 (discontinue when uric acid level is normal)

-Closely monitor UO

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Housestaff Survival Guide | Specialty | Hemolysis

Acute Hemolytic reaction: - most serious reaction, due to ABO incompatibility
Sx often start within 15min: Fever, back pain, renal failure, headache, chest pain, diaphoresis, oozing from IV line, abd pain

Management:
STOP transfusion; call senior; send blood to lab; give IVF (start with 500cc NS bolus)
Monitor renal function to mtn UOP>100cc/hr, using Lasix if needed
Monitor for hyperkalemia

Labs: send remaining blood product and a new pt blood sample to the blood bank: test for crossmatch, Coombs' test, CBC, Clin chem., DIC panel, total bilirubin and indirect bilirubin
Check UA for free Hb (i.e. +ve blood, 0 rbc)

Allergic/Anaphylaxis (Nonhemolytic reaction): urticaria/hives, hypotension, fever >40, wheezing, bronchospasm, laryngeal edema,

Management:
- STOP transfusion; send blood to lab as above
- Epinephrine 0.5-1.0mL (1:1,000) IM
- Benadryl (diphenhydramine 25-50mg PO/IV)
- Hydrocortisone 250mg IV
- IVF: 500-1000ml of NS bolus
- Intubation if needed

Fever:
<40 (1-2% of transfusions): Non-hemolytic Reaction; due to body's immune rxn to WBC (i.e. in pt with prior transfusions or pregnancies)
Management: Acetaminophen 650mg po, diphenhydramine 50mg po; slow down the blood; r/o infection, r/o hemolytic rxn; monitor

SOB:
noncardiogenic pulmonary edema: TRALI – transfusion-related acute lung injury, TACO – transfusion associated cardiac overload
Management: CXR, ventilatory support, diuresis
decrease rate of transfusion, give 20-40mg furosemide IV

Housestaff Survival Guide | Specialty | Acute chest syndrome

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Acute chest syndrome is a non-specific clinical endpoint with variable underlying pathophysiologies, that leads to sickling in the lung and respiratory compromise in patients with sickle cell disease. Most common cause death in SCD patient.
Definition updated: any CXR finding (used to be pulmonary complaint with CXR finding)
Classically occurs 24-48hrs into simple pain crisis
Can be 2/2 infection (atypical organisms), oversedation, underlying asthma, marrow/fat emboli or PE

PE: get a **full set of vitals**, with attention to O2 sat >95%. Classically pulse-ox is incorrect in sickle patients, might need an ABG.
Look for signs of respiratory distress, do not hesitate to quickly escalate care.

Management
Immediately give supplemental O2
Stat CXR 2 views, portable if unstable
Stat CBC, type and cross.
Goal HgB of 10, or very near patient's baseline. Achieve with simple transfusion if possible, otherwise need exchange transfusion
Start levofloxacin
Work-up for what you believe to be the underlying etiology
Call your senior. Might have to contact attending, ICU.

Quick Links

- SOB
- Fever
- Chest Pain
- Acute chest syndrome
- Supplemental O2 / NIPPV
- ABG Calculator
- A-a Gradient
- Wells Criteria for PE
- TIMI Score

Housestaff Survival Guide | Specialty | Hepatic encephalopathy

Suspect hepatic encephalopathy on patients with liver disease and mental status changes. Hepatic Encephalopathy is a range of neuropsychiatric abnormalities in patients with compromised liver function. Multiple pathways contribute to this disorder. It is important to r/o other causes of altered mental status and proceed with treatment.

Management

- RULE OUT OTHER CAUSES AND ASSESS FOR PRECIPITATING CAUSES
    - Initiate infectious workup
    -Assess for other causes of mental status changes
    -Remember that liver patients bleed, consider SCANNING THE HEAD
- Assess if patient can protect airway (gag reflex?)
- Lactulose (via NG tube, Oral if alert/awake, or rectal)
    - 30-45 mL (20 g/30 mL) orally 3-4 times daily; adjust every 1-2 days to achieve 2-3 soft formed stools/day OR 300 mL (200 g) in 700 mL of water or saline rectally as a retention enema every 4-6 hours as needed; retain enema for 30-60 minutes

-Rifaximin 200mg Orally

-If occurring in setting of fulminant hepatic failure, can be due to cerebral edema, and lactulose will not help you in this case.

Quick Links

- HE calculator

Housestaff Survival Guide | Specialty | Geriatric assessment

A comprehensive assessment of geriatric patients on outpatient or inpatient encounters can help us assess the patient's functional status and progression of dementia. Below are some of the commonly used standardized scales for a comprehensive geriatric assessment:

MMSE: http://enotes.tripod.com/MMSE.pdf

ADL/IADL: http://son.uth.tmc.edu/coa/FDGN_1/RESOURCES/ADLandIADL.pdf

Geriatric Depression Scale: http://www.stanford.edu/~yesavage/GDS.english.short.html

BOMC test: http://www.gcrweb.com/alzheimersDSS/assess/subpages/alzpdfs/bomc.pdf

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CV

- ECG Basics
- TIMI Score
- CVC/Central Line
- Arterial Line

GI

- Child-Pugh-Turcot score
- MELD Score
- Paracentesis

Pulm

- How to assess an ABG
- ABG Calculator
- O2 / NIPPV
- Thoracentesis
- Lights Criteria

Other

- Heparin dosing
- Argatroban dosing

Housestaff Survival Guide | Procedures&Calculators | ECG

ECG INTEPRETATION:
1) RATE: Count the large block between 2 consecutive R's → 300-150-100-75-60-50
*Source of rhythm? SA node (60-100/min), Atrial (75/min), AV (40-60), Vent (30-40)

2) RHYTHM: *Is there a P for every QRS?
*Check consecutive P-P distance for consistency.
*Check consecutive R-R distance for consistency.

3) AXIS: Look at leads I & aVF

Lead I	Lead aVF	Axis
Up	Up	Normal axis (-30 to +100)
Up	Down	Left axis (-30 to -90)
Down	Up	R axis deviation (+90 to +270)
Down	Down	Extreme R axis deviation (-90 to -180)

*Find the most isoelectric lead. The axis is 90 from this lead OR can look at the tallest lead

4) INTERVALS:

PR	0.12 to 0.20 sec (3-5 small blocks)
QRS	<0.12 sec (<3 small blocks)
QT	0.34 to 0.42 sec (~ _ RR interval)

*PR interval: short → WPW vs. longer (Heart block
*QRS widened (RBBB, LBBB, vent rhythm, hyper K+, ventricular rhythm
*Prolonged QT(MI, myocarditis, diffuse myo dz, hypoCa2+, hypothyroidism, subarach hemorrhage, drugs (sotalol, amiodarone), hereditary

5) HYPERTROPHY:

RAE (P pulmonale)	LAE (P mitrale)	RVH	LVH (if QRS <0.12s)
*Tall P >2.5mm in lead II *Large diphasic P w/ large initial phase in V1	*P > 0.12sec *Diphasic P w/ downward terminal phase > 1mm wide 1mm deep in V1 *M-shaped P in I, II, or aVL	*qR pattern in V1 (very specific for RVH) *RAD >110 *R >S in V1 *R in V1 > 7mm *S in V1 >2mm *rSR' in V1 w/ R'>10mm	*R in I + S in III>25mm *R in aVL >11mm *R in aVF >20mm *S in aVR >14mm *R in V5 or V6 + S in V1 >35mm *Largest R + Largest S in precordial leads >45mm

6) INFARCTION/ISCHEMIA:
Progression:
Hyperacute T waves→Inverted T waves →Q wave (0.04sec &/or >25% height or R wave)→ST segment elevation

Q waves: q, ABSENT in V1-V3, definitely ABSENT in V2-V3
**pathologic Q = >0.04seconds, >5mm or 1/3 the R wave

Location	Leads	Vessels
Anterior	V2-V4	LAD
Anteroseptal	V1-V4	LAD
Anterolateral	V1-V6, I, aVL	LAD, diagonal
Inferior	II, III, aVF	RCA, circumflex
Lateral	I, aVL, V5-V6	Circumflex, diagonal
Posterior	Large R wave V1-V3 ST depression in V1-V2	RCA

7) BLOCKS:
*1st degree: PR interval >0.22 sec
*2nd degree:
Mobitz Type I (Wenkebach): progressively lengthening PR interval w/ dropped QRS
Mobitz Type II (bundle of His, requires pacemaker): constant PR w/ dropped beats
*3rd degree: complete dissociation of p waves from atrial QRS complexes

8) BUNDLE BRANCH BLOCK/HEMIBLOCK
RBBB:
QRS>0.12 sec
R-S-R' in V1 or V2 >0.12sec
Wide S in I, aVL, V5, V6
LBBB:
QRS>0.12 sec
R-R' in I, V5, and V6
Wide S in V1-V2
Absence of Q waves in I, V5, V6
T wave inversions in lateral leads

Hemi blocks (Left fascicular blocks): axis deviation w/ no definable cause.
*Anterior fascicular block: left axis deviation (may be physiologic)
*Posterior fascicular block: right axis deviation (pathologic)
CANNOT DIAGNOSE HYPERTROPHY OR MI BY EKG IF BBB EXISTS

9) EFFUSION:
Low voltage → R waves < 5mm in limb leads, < 10mm in precordial leads

10) ST OR T WAVE CHANGES ASSOC W/ VENTRICULAR HYPERTROPHY:
LVH: ST depression w/ downward concavity & TWI in leads where QRS + (V5/V6)
ST elevation w/ upright T waves in leads where QRS - (V1/V2)
RVH: ST depression w/ downward concavity & TWI (V1/V2 & s/f II, III, aVF)

Housestaff Survival Guide | Procedures&Calculators | Central line

A central line is useful for many interventions. Consider central line placement in critically ill patients that might need pressors, medications or aggressive resuscitation.

Indications:
Venous access is needed for intravenous fluids or antibiotics and a peripheral site is unavailable or not suitable
Central venous pressure measurement
Administration of certain chemotherapeutic drugs or total parenteral nutrition (TPN)
For hemodialysis or plasmapheresis

Contraindications:
Uncooperative patient
Uncorrected bleeding diathesis
Skin infection over the puncture site
Distortion of anatomic landmarks from any reason
Pneumothorax or hemothorax on the contralateral side

Supplies:
CVC kit
Portable/Bedside Ultrasound

Method:
Read the following document:: NEJM—CVC Placement
Procedure video: NEJM Videos in Clinical Medicine > CVC Placement

Complications:
Pneumothorax (3-30%)
Hemopneumothorax
Hemorrhage
Hypotension due to a vasovagal response
Pulmonary edema due to lung re expansion
Spleen or liver puncture
Air embolism
Infection

PROCEDURE TEMPLATE

PROCEDURE:
Internal jugular central venous catheter, U/S guided.

INDICATION:

PROCEDURE OPERATOR:

CONSENT:

PROCEDURE SUMMARY:
A time-out was performed. The patient's <LEFT/RIGHT> neck region was prepped and draped in sterile fashion using chlorhexidine scrub. Anesthesia was achieved with 1% lidocaine. The <LEFT/RIGHT> internal jugular vein was accessed under ultrasound guidance using a finder needle and sheath. U/S images were permanently documented. Venous blood was withdrawn and the sheath was advanced into the vein and the needle was withdrawn. A guidewire was advanced through the sheath. A small incision was made with a 10 blade scalpel and the sheath was exchanged for a dilator over the guidewire until appropriate dilation was obtained. The dilator was removed and an 8.5 French central venous quad-lumen catheter was advanced over the guidewire and secured into place with 4 sutures at <__> cm. At time of procedure completion, all ports aspirated and flushed properly. Post-procedure x-ray shows the tip of the catheter within the superior vena cava.

COMPLICATIONS:

ESTIMATED BLOOD LOSS:

Housestaff Survival Guide | Procedures&Calculators | Arterial line

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A central line is useful for accurate BP monitoring, frequent vital signs and reccurent arterial access such as blood gases.

Indications:
Continuous monitoring of blood pressure, for patients with hemodynamic instability
For reliable titration of supportive medications such as pressors/inotropes/antihypertensive infusions.
For frequent arterial blood sampling.

Contraindications:
Placement should not compromise the circulation distal to the placement site
Do not place if Raynauds, Thrombangitis obliterans, or other active issues.
Do not place if active infection or trauma at the site

Supplies:
A-line kit
Sterile equipment

Method:
Read the following document:: NEJM—A line Placement
Procedure video: NEJM Videos in Clinical Medicine > A line Placement

Complications:
Arterial spasm
Bleeding
Infection

PROCEDURE TEMPLATE

PROCEDURE:
Radial artery line placement. (A-line)

INDICATION:

PROCEDURE OPERATOR:

CONSENT:

PROCEDURE SUMMARY:
The patient was prepped and draped in the usual sterile manner using chlorhexidine scrub. 1% lidocaine was used to numb the region. The <LEFT/RIGHT> radial artery was palpated and successfully cannulated on the first pass. Pulsatile, arterial blood was visualized and the artery was then threaded using the Seldinger technique and a catheter was then sutured into place. Good wave-form was obtained. The patient tolerated the procedure well without any immediate complications. The area was cleaned and Tegaderm was applied. Dr. ____ was present during the entire procedure.

ESTIMATED BLOOD LOSS:

Housestaff Survival Guide | Procedures&Calculators | ABGs

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Quick Links
- Na Correction
- Anion Gap Calculator
- ABG Calculator

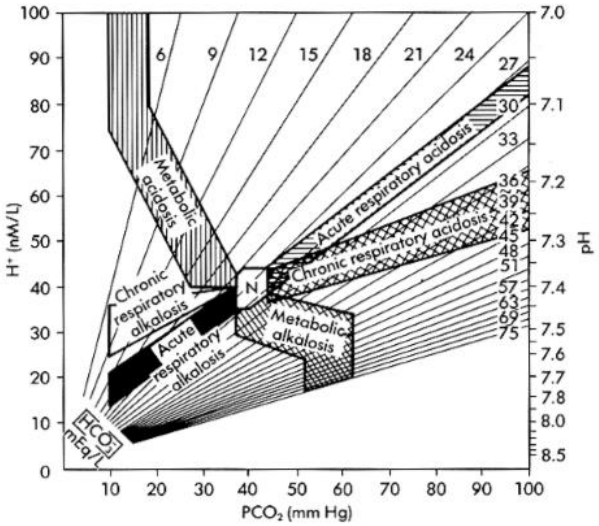
HOW TO ASSESS AN ABG?

General Approach:

1) pH: acidotic (<7.35) or alkalotic (>7.45)
2) pCO2: resp acidosis (>45mmHg) or alkalosis (<35mmHg)
can look at pH and pCO2, and if same direction, then primary d/o is metabolic
3) pO2: hypoxic or non-hypoxic
*PaO2/FiO2: nL >400, <300 -> Acute Lung Injury, <200 -> ARDS
*A-a Gradient: PAO2 = 150 -(PaCO2/0.8)
nL = 2.5 + 0.25 (pt's age)
Elevated = V/Q mismatch = think PE, CHF, Pneumonia
4) HCO3: metabolic acidosis (>27mEq/L) or alkalosis (<21mEq/L)

Concerning levels from an ABG & VS that may suggest future need for intubation:

* *PaO2/FiO2 <300-200*
* *Increased PaCO2 + tachypnea*
* *RR >30-35*
* *PaO2<50 on 50% or greater FiO2*
* *PaCO2 >55 w/ nL lung fxn (I.e no COPD, fibrotic lung dz)*
* *pH <7.3*



COMPENSATION??

1) Simplistic rule? RULE OF 80 (add last 2 digits of pH + PaCO2)
*pH + PaCO2 = 80: pure resp d/o
*pH + PaCO2 <70: met acidosis
*pH + PaCO2 >90: met alkalosis
2) Met acidosis: PaCO2 = 1.5 (HCO3) + 8 +/-2
PaCO2 *decrease* 1.25mmHg per mEq/L change in HCO3
3) Met alkalosis:
PaCO2 *increase* 0.75mmHg per mEq/L change in HCO3
4) Resp acidosis:
Acute: HCO3 *increase* 1mEq/L per 10mmHg ↑PaCO2
Chronic: HCO3 *increase* 4mEq/L per 10mmHg ↑PaCO2
5) Resp alkalosis:
Acute: HCO3 *decrease* 2mEq/L per 10mmHg ↓PaCO2
Chronic: HCO3 *decrease* 4mEq/L per10mmHg ↓PaCO2

Later, look at:

1) Anion Gap: Na - (HCO3 + Cl) (NL 12 +/- 2)
Think MUDPILES (methanol/metformin, uremia, DKA, Paraldehyde, INH/Iron, Lactate, Ethylene Glycol, Salicylates, Cyanide)
2) Delta Gap (also known as corrected HCO3) = (AG -12) + HCO3 = 24 +/- 2
presence of delta gap means concomitant metabolic acidosis or alkalosis on top of an AG acidosis
<20 =concomitant metab acidosis
>26 =concomitant metab alkalosis
3) Osmol Gap: 2Na + glc/18 +BUN/2.8
corrected Osmol Gap for ETOH = ETOH/4.6
corrected OG >10 points to methanol or ethylene glycol exposure

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Quick Links
- Acid Base
- ABG Calculator
- A-a Gradient
- How to assess an ABG

Supplemental Oxygen

Nasal Cannula > Simple face mask > Venturi-mask > non-rebreathing mask

Nasal Cannula
- 1L ~ 0.24 FiO2
- Each additional liter ~ adds 0.04 FiO2

Venturi mask
- Precise administration of O2
- Usual preset values of FiO2 of 24%, 28%, 31%, 35%, 49% and 50%

Nonrebreathing mask
- 0.80 to 0.90 FiO2

Non-Invasive Positive Pressure Ventilation (NIPPV) --BIPAP/CPAP

How does it work? Increases alveolar ventilation, decreases work of breathing
Assess pt's VS including O2sat, ABCs, and stability before deciding to pursue NIPPV
Contraindications of BIPAP/CPAP (using your common sense): severe encephalopathy,
inability to cooperate/protect airway, high risk of aspiration, inability to clear secretions, upper airway obstxn, hemodynamic instability
If stable ->
1. Determine mode and delivery device to be used (BIPAP vs. CPAP, nasal vs. facial mask)
->BIPAP: IPAP (inspiratory + airway pressure): 6-10
*helps overcome the work of breathing, adjust this will help change pCO2 EPAP (expiratory + airway pressure): 2-4
*similar to PEEP on vent, adjust this will help change pO2 along w/ the amount of O2 supplied
**start low at IPAP of 7 and EPAP of 2 (keep AT LEAST 4-5 pressure difference btwn IPAP & EPAP or will just be like CPAP)
->CPAP: 5-7pressures
2. Monitor ABG q30-45minutes for the first 2 hours.
-> if NO improvement in pH or pCO2, consider trial failure and may need to proceed w/ intubation.

LIBERATING FROM THE VENTILATOR (NO LONGER CALLED WEANING TRIALS)

1. Can consider if pt on FIO2 of <0.3 and PEEP of 5
2. Also calculate Rapid Shallow Breathing Index = RR/TV. Offers some predictive value of success of weaning
RSI >105 (failure to wean likely)
RSI 51-104 = offer CPAP trial?)
RSI <50 (success weaning likely)
**Remember to turn off all sedation, tube feeds for 4-6hrs prior to trial
3. If pt able to maintain oxygenation & ventilation w/o evidence of tiring after 30 min, then extubate

Indications for Intubation

Look for rapid shallow breathing and fatigue. Try to reverse underlying conditions.
1) airway protection 2) decline in mental status 3) pCO2 increasing 4) pO2 < 60, not responding to supp oxygen 5) pH <7.2; *Acute respiratory failure*: pO2 < 50 or pCO2 > 50 with pH <7.3 on RA

Housestaff Survival Guide | Procedures&Calculators | Thoracentesis

A thoracentesis is a very useful diagnostic procedure. Fluid analysis can be used to assess the nature of the effusion, and the need for further management such as antimicrobials.

Indications:
Pleural effusion which needs diagnostic work-up
Symptomatic treatment of a large pleural effusion

Contraindications:
Uncooperative patient
Uncorrected bleeding diathesis
Chest wall cellulitis at the site of puncture
Bullous disease, e.g. emphysema
Positive end-expiratory pressure (PEEP) mechanical ventilation
Only one functioning lung
Small volume of fluid (less than 1 cm thickness on a lateral decubitus film)

Supplies:
Thoracentesis kit
Bedside US Machine

Method:
Read the following document: NEJM > Thoracentesis
Procedure video: NEJM Videos in Clinical Medicine > Thoracentesis

Complications:
Pneumothroax
Hemothorax
Arrhythmias
Air embolism
Introduction of infection

PROCEDURE TEMPLATE

PROCEDURE:
Thoracentesis, U/S guided.

INDICATION:
Large pleural effusion.

PROCEDURE OPERATOR:

CONSENT:
Consent was obtained from the patient prior to the procedure. Indications, risks, and benefits were explained at length.

PROCEDURE SUMMARY:
A time out was performed. The patient was prepped and draped in a sterile manner using chlorhexidine scrub after the appropriate level was percussed and confirmed by ultrasound. U/S images were permanently documented. 1% lidocaine was used to numb the region. A finder needle was then used to attempt to locate fluid; however, a 22-gauge, 3 1/2-inch spinal needle was required to actually locate fluid. Fluid was aspirated on the second attempt only after completely hubbing the spinal needle. Clear yellow fluid was obtained. A 10-blade scalpel used to make the incision. The thoracentesis catheter was then threaded without difficulty. The patient had 1200 mL of clear yellow fluid removed. No immediate complications were noted during the procedure. Dr. _____ was present during the entire procedure. A post-procedure chest x-ray is pending at the time of this dictation. The fluid will be sent for several studies.

ESTIMATED BLOOD LOSS:

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A paracentesis can be used to diagnose the etiology of ascites. SAAG → fluid protien.
Also used to assess for spontaneous bacterial peritonitis, which can be asymptomatic in nearly 40% of patients.
Large volume paracentesis are peformed for patient comfort

Contraindications:
Uncooperative patient, uncorrected bleeding diathesis, acute abdomen that requires surgery
intra-abdominal adhesions, distended bowel, abdominal wall cellulitis at the site of puncture, pregnancy.

Supplies:
This will vary at your site (JBVA/UIC). There are kits available at both institution. In general, this is waht you need:
16 G Angiocath (or a spinal needle) x 1
10 cc syringe x 1
Thoracentesis kit tubing x 2
Sterile gloves x 2
Betadine swab x 3
Sterile drape x 2
4x4 sterile gauze x 4
Band-aid x 1
If therapeutic paracentesis:
One-liter vacuum bottle, bags currently at the VA.
Proper tubing and wall suction kit

Method:
Read the following document: NEJM Paracentesis
Procedure video: NEJM Videos in Clinical Medicine > Paracentesis

What to send fluid for:
- cell count with diff (PMN > 250 = SBP) (lavender top)
- culture (fill each blood culture bottle (2) with 10cc of fluid)
- gram stain (separate syringe or tube, positive smear = SBP)
- LDH, protein, albumin, amylase (gold top tube)
- Cytology (send as much as you can – fill a sterile jug)

SAAG
Calculate the serum-ascites albumin gradient (SAAG): subtract ascitic albumin from serum albumin
If > 1.1g/dl -> portal hypertension. Send fluid protien.
If < 1.1g/dl -> not portal HTN and less likely to have SBP
(Note – if hemorrhagic, subtract 1 PMN for every 250 RBCs)

PROCEDURE TEMPLATE

PROCEDURE:
<Diagnostic?/Therapeutic?> paracentesis

INDICATION:

PROCEDURE OPERATOR:

CONSENT:
Informed consent was obtained after risks and benefits were explained at length.

PROCEDURE SUMMARY:
A time-out was performed. The area of the <LEFT/RIGHT> abdomen was prepped and draped in a sterile fashion using chlorhexidine scrub. 1% lidocaine was used to numb the region. The skin was incised 1.5 mm using a 10 blade scalpel. The paracentesis catheter was inserted and advanced with negative pressure under ultrasound guidance. Ultrasound images were permanently documented. No blood was aspirated. Clear yellow fluid was retrieved and collected. Approximately 65 mL of ascitic fluid was collected and sent for laboratory analysis. The catheter was then connected to the vaccutainer and <__> liters of additional ascitic fluid were drained. The catheter was removed and no leaking was noted. 50 g of albumin was intravenously during the procedure. The patient tolerated the procedure well without any immediate complications. Dr. ____ was present during the procedure.

ESTIMATED BLOOD LOSS:

COMPLICATIONS: none

Complications:
Persistent leak from the puncture site
Abdominal wall hematoma
Perforation of bowel
Introduction of infection
Hypotension after a large-volume paracentesis
Dilutional hyponatremia
Hepatorenal syndrome
Major blood vessel laceration
Catheter fragment left in the abdominal wall or cavity

HEPARIN DOSING
(UIC Guidelines)
Assess for h/o bleeding PUD, recent stroke or bleeding, recent surgery, guaic negative

Initial:

Weight (kg)	IV Bolus (~65u/kg)	Infusion (~13u/kg/hr)
< 50	3000	600
51-60	3500	700
61-70	4000	900
71-80	5000	1000
81-90	5500	1100
91-100	6000	1200
>100	7000	1400

Maintenance: recheck PTT in 6hrs after every change

aPTT:

< 45	reassess IV/bag/pump: repeat full bolus and increase by 200u/hr
45-60	repeat _ bolus and increase by 100units/hr
60-80	no change: repeat PTT until 2 consecutive therapeutic levels, then daily
80-115	decrease rate by 100units/hr
116-195	HOLD for 1 hr, then decrease by 200units/hr
>195	recheck PTT stat, hold until results return: check for signs of bleeding: consider protamine sulfate or blood products if signs of active bleeding

Protamine Sulfate reversal of heparin:
1) Overdose with bleeding (call senior): 1-1.5mg for every 100units of heparin
After 30-60min: 0.5-0.75mg per 100 units
After 60 min: 0.25-0.375mg per 100 units
2) elevated aPTT and/or bleeding with maintenance heparin:
give 25-50mg of protamine sulfate,
OR protamine SO4 = 2(heparin infusion rate units/hr) / 100
3) elevated aPTT and/or serious bleed after SC heparin:
give 1-1.5mg for every 100units; give the first 25-50mg by slow IVP (approx 5mg/min); then give the balance over next 8-16hrs
NB: slow IVP of protamine sulfate at 5mg/min; max 50mg/dose
Hypersensitivity reaction to protamine sulfate: anaphylaxis (esp if pt is sensitive to fish, prior protamine sulfate, s/p vasectomy or infertile)

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Order a baseline aPTT, Hct, and plt count prior to initiation of Argatroban
Standard bag: Argatroban 250mg/D5%W 250mL --Conc: 1 mg/mL

Initial Dosing:
1) If no hepatic impairment □ 2mcg/kg/min
2) If moderate hepatic impairment □ 0.5mcg/kg/min
3) Max dosing weight is 140kg and max rate is <=10mcg/kg/min
4) Goal aPTT: 60-100 seconds

Protocol for dosing adjustments of argatroban:

aPTT	Change of rate of infusion	Next aPTT test
30-39	+1.0mcg/kg/min	2hrs
40-59	+0.5mcg/kg/min	2hrs
60-100	0	Next am
101-119	-0.5mcg/kg/min	2hrs
>120	-1.0mcg/kg/min	2hrs

Protocol for dosing adjustments of argatroban w/ HEPATIC IMPAIRMENT

aPTT	Change of rate of infusion	Next aPTT test
30-39	+0.2mcg/kg/min	2hrs
40-59	+0.1mcg/kg/min	2hrs
60-100	0	Next am
101-119	-0.1mcg/kg/min	2hrs
>120	-0.2mcg/kg/min	2hrs

Interpretation of INR upon initiating warfarin:

1) Co-adm of argatroban and warfarin produces synergistic effects on INR.
2) INR should be >4 before d/c of argatroban infusion.
3) Estimated INR for warfarin dose alone = 0.185 + [(0.51) x (measured INR)]

Lytes

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Guidelines for Electrolyte Replacement (in patients with normal renal function)

Magnesium (replace Mg before K)
1.6-1.8 mEq/L -> 2 grams MgSO4 IVPB (i.e. 8mEq)
1.2-1.5 mEq/L -> 4 grams MgSO4 IVPB (i.e. 16mEq)
< 1.2 mEq/L -> 4 grams MgSO4 IVPB and re-check in 4h
If there are sx of bronchospasm, EKG changes, can give 2 grams over 15 min.
If asymptomatic, give no faster than 8mEq/hr

Potassium: (also check Mg level and correct) Goal is >4 in cardiac patients.
3.0-3.5 mEq/L -> 40mEq KCl PO or IVPB
2.5-2.9 mEq/L -> 80mEq KCl PO or IVPB and recheck
< 2.5 mEq/L -> 120mEq KCl PO or IVPB and recheck
- if Cl is > 110mEq/L, use potassium acetate
- if Phos is < 3, use potassium phosphate
- preferred route is oral, but giving > 40mEq/L can give GI side effects (consider giving 40mg orally every 2-3hrs)
- IV replacement max rate is 10mEq/hr. If painful for the patient, you can slow down the rate
- every 10mEq of KCl should increase K level by 0.1

Calcium:
8.0-8.5 and alb > 3.5 (or ionized Ca 3.5-4.0) -> 1 gram Ca gluconate (4.5mEq) over 15-30min
< 8.0 and alb > 3.5 (or ionized Ca < 3.5) -> 2 grams Ca gluconate (9mEq) over 30 min and recheck in 2hrs
If albumin is < 3.5: Ca (corrected) = (4 – serum albumin) x 0.8 + Ca(measured)

Phosphate:
2.6-3.0 and K < 3.5-4.0 -> K-phosphate 15mmol IVPB (= 22mEq of phos)
2.6-3.0 but K > 4.0 -> Sodium phosphate 15mmol IVPB (= 22mEq of phos)
1.5-2.5 and K < 3.5 -> K-phosphate 30mmol IVPB and page senior
< 1.5, give phosphate as above, check all lytes
Max phosphate is 5mmol/hr or can cause decrease in Mg, Ca and EKG changes
-can also give packets of Neutra-phos or Neutra-phos-potassium orally (NB both contain sodium)

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Meal Tickets
-Meal tickets will be provided via EZ Card. Ask JB or scheduling chief for details
- No meal tickets at the VA. On call teams can get lunch, dinner, and post-call breakfast from the café on 3rd floor (opposite hallway of the MICU). There are "hot" and "cold" meals, depending on what hours you come in. You can get both meals. Remember to sign-in! God bless America.

Cafeterias
VA inpatient cafeteria hours: Breakfast 6:30-9:00am; Lunch 11:30-1:30pm; Dinner 4:30-6:30pm
VA general cafeteria hours: 7-10am and 10:30-2pm
VA canteen-shop hours: 9-4pm
UIH cafeteria hours: M-F 6:30am-7pm. Weekend/Holiday: 7am-6pm
Jive-Café = 24 hours

Pagers
If your pager is broken, you can exchange it at Suite 1300 in UIH; first floor, near cafeteria (same room as the Gemini training lab).
Lost pagers must be reported to the medicine office; the charge is $125
Pager batteries: hospital no longer giving them out. Ask UIH chief or JB. In a pinch, get from MICU or nursing office (1500)
Recycle your old batteries on 6W or give them to UIH chief

Security at night
-When you are at the VA, security can escort you to the University parking garage.
-UIH has free emergency auto assistance available 24 hours: tire inflation, fuel assistance, lock-outs, escorts, dead battery charging. Phone 355-0555

Coats
Location: Laundry Services in Basement of UIH
Hours: posted on the door
-Unisex coats available in basement of UIH "Environmental Services". May exchange your coat for clean one. Can also get scrubs for call.
-VA instituted new policy that does not allow people to enter or exit hospital with scrubs to help with infection control.

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To Call a Code (#1 Emergency): dial 171

Call-room code: 54508
Team room code: 67237

Other UIC tips:

Echo Reports: usually read in the afternoon; the echo reading room (x38663) in on the second floor (on the way to the parking garage); if the echo has already been read, you can go to the office next door and ask the secretary to show you or copy the hand-written report. Or call the Echo office (60327) and ask when the report will be in Gemini (usually the following day).

Blood transfusions:
1. Get Consent 2. Type and Cross (expires after 72hrs) 3. Under Lab, order "Release of Blood Products", and under Nursing, order "Transfuse Blood Products" & "Blood Component Ordering"

Laboratory
Specimens need to have a sticker with the patient information AND a paper requisition that you print from Gemini.
Labs: tube specimens to station #620;
Blood Bank: If you need to pick up blood products for a patient, go to the third floor – blood bank is near the anesthesia offices (if you find yourself entering the OR, you are going the wrong direction!)
Pathology – this is where you take Cytology Specimens – also on the third floor, just past the blood bank. It is generally best to drop off cytology specimens yourself. If no one is there (e.g. at night), it warrants a quick call the next day to ensure they received the specimen.

Tech Support:
Tech support (24hrs/d): 37717

Medication Assistance Program: -to assist patients who have trouble affording meds
Call MAP: 6-5083; MAP intake (Naomi) 6-7235

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Main VA number is 312-569-8387
Chief resident #: 312 - 569 – 8912

VA PAGING
To page someone from Northwestern, call 695-XXXX
To page a VA pager, call 5 # #, then the pager number

Crosscover pagers
There will be ONE X-cover pager for teams VA1, VA2, VA3, VA8 -> the "1-2-3-8" pager 389-3071
There will be ONE X-cover pager for teams VA4, VA5, VA6, VA 7 -> the "4-5-6-7" pager 389-3611

ORDERS
Admission checklist
(1) Admit order
(2) Orders > diet/vitals/telemetry
(3) Medication reconciliation
(4) CPR note
(5) Admission note
***IF from the ER > delayed orders
***IF from another floor > right-click/renew/leave unsigned until reaches floor
***Do not copy to new

Discharge Checklist:
(1) write the Discharge order
(2) Discharge Instructions
(3) Order medications from pharmacy (as early as possible to get them ready)
*For patients going to nursing homes, they often need a 3-day supply of meds to accompany patients (check with your discharge planner)

Blood transfusions:
1. Get Consent; 2. Type and Cross (expires after 72hrs); 3. Write a nursing order to transfuse the number and type of units you need

LABORATORY
Specimens need to have a sticker with the patient's name, social security number, and ORDER # (which you obtain on Gui after signing your order on the computer). No paper requisition needed.
Labs: there is no tube system; you must hand-deliver specimens to the Lab on the 4th floor. Place blood cultures in the incubator – just ask for help.
Blood Bank: On the fourth floor (on your left hand side before you get to the laboratory – just past the sliding doors).
Pathology: same location as the laboratory.
Lab at Hines (for results of send-out tests): 21311, 21313
Note that the liver profile does not include AST nor protein/albumin; order these separately or you can also order a Chem 12 and then select the tests you want.

FOOD
Cafeteria on 3rd floor Damen > free food for on-call staff
Vending machines in 1st floor and on each floor of bed-tower
VCS Store > you can buy anything, tax free!

TECH SUPPORT: i.e. Darlene 5-6853; CPRS coordinators: page 389-3644

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Online Kulik Card and all UIH/JBVA Phone numbers

SkyDrive > UIH Phone numbers

SkyDrive > JBVA Phone numbers

UIH Paging system

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AMION [Cardiology]

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Sign-Out

This is probably the most important part of your call: transferring information to-and-from the different physicians and shifts. Take pride in your sign-out and help your fellow interns by keeping it accurate and up-to-date. Remember that there is a digital copy of signout online. This is a very helpful tool for finding patients, as you can open the document and press 'Ctrl+F' to quickly find patients when a nurse calls you. This means less shuffling of papers. When logged in, go to *Team Sites > Internal Medicine Residents* to find all the sign-out documents. We are working on a Cerner based sign-out, and will hopefully be able to implement that soon.

Always include anticipated treatments and goals. Also, remember to mention key things that would affect management overnight, such as:

- Neutropenia
- Cardiac function
- Anemia/Goals

Documentation of Cross-Cover Calls

A concise, focused note is very helpful for patient care and important to understand the patients hospital course. A crosscover note should be written for every major event or decision. Consider including the following when writing a cross-cover note:

Who you are: e.g. Resident on-call note
Who called you, what time, and reason
Brief statement about patient (age, PMH, reason for admission, # of days in-house)
Focused history regarding this issue
PEx focusing on the complaint and relevant systems
Relevant labs and tests
A/P, including differential, if warranted

If a patient is transferred to MICU, include the events leading to the transfer in addition to a complete Transfer Note (basically a complete H&P including a detailed Hospital Course).

Credits

- **Housestaff Survival Guide**

  Many generations of Chief Residents have contributed to the creation of the Housestaff Survival Guide.
  Original digital form was created by the 2012-2013 team [Alfredo, Tom, Marci and Travis]
  The current version was updated by the 2013-2014 team [Anne, Jeff, Nahreen and Joe].

  Last edit: 08/23/2013