

Common Calls From The Floor

- Bradycardia
- Tachycardia
- Hypotension
- Hypertension
- Fever
- Low urine output
- Dyspnea
- Chest pain
- Combative or Confused patients
- Falls
- Insomnia

Bradycardia

Evaluation

- Check if the patient is stable or unstable
- Get a complete set of vital signs and EKG
- If concerned, have pacer pads and atropine at the bedside (if unstable, see ACLS bradycardia)
- Determine whether this is sinus bradycardia based on EKG
- Take history and examine the patient, pay attention to symptoms, vital sign abnormalities, and mental status (often be the result of a vagal event from pain, vomiting, or recent surgery)
- Evaluate the medication list and obtain an electrolyte panel, especially potassium, TSH if not done recently and a troponin to evaluate for an ischemic etiology

Management

- Ensure that atropine and pacer pads are easily available
- If unstable follow ACLS protocol for temporary pacing
- Treat the underlying conditions
- Atropine 0.5mg IV repeat every 3-5 minutes max 3mg is first-line for symptomatic/unstable bradycardia
- Medication is a common cause of bradycardia in the hospital particularly beta-blocker and CCB. Consider reversal agent for beta-blocker use IV glucagon and for CCB use IV calcium gluconate
- Transcutaneous pacing is uncomfortable and a transition to temporary transvenous pacing wire should be made if continuous pacing for >12hrs is anticipated. These patients should be transferred to the ICU and cardiology should be consulted

Tachycardia

Narrow complex tachycardia

Evaluation

- Obtain EKG and complete set of vital sign to check for hemodynamic instability
- If unstable follow ACLS protocol

Management

- Unstable: follow ACLS protocol and do not delay synchronized cardioversion
- Try vagal maneuver or adenosine.
- Vagal maneuver:
 - Valsalva
 - Carotid massage
- Adenosine: Warn patients that adenosine will make them feel terrible but it will be short.
 - Dosing:
 - Peripheral IV 6mg x1. may repeat one more time with the same dose several minutes later if not improving, then increase to 12mg dose x1
 - Central line: 3mg with a repeat dose and then increased dose to 6mg
 - **DO NOT use in heart transplant recipient, wide complex tachycardia and WPW or previous allergy**

Wide Complex Tachycardia

Evaluation

- Is patient stable or unstable
- If unstable or in doubt call code blue and follow ACLS protocol
- If stable obtain EKG, troponin, and electrolyte panel including magnesium
- Look for precipitating cause and medication list for QT prolonging agents

Management

- Replete electrolytes

- Discontinue QT prolonged agents. Magnesium sulfate 2g IV should be given if patient have prolonged Qtc (>450 in women and >470 in men)

Hypotension

Evaluation

Decreased SVR: Exam = warm extremities, sometimes flushing

- Sepsis: common cause. Obtain blood culture x2, CXR, UA/micro/culture, and lactate. Rapid administration of IVF and antibiotic
- Medications: Look for antiHTN, pain meds, sedative, if concern for opioate overdose, give naloxone
- Adrenal insufficiency: Is the patient on chronic steroids and unable to mount a stress response? consider stress dose steroids
- Anaphylaxis: Give epinephrine 0.2-0.5ml SC/IM q20mins, benadyrl 50mg IV, hydrocortisone 100mg IV

Decreased preload: Exam= cold extremities

- Hypovolemia: STAT CBC, consider central venous pressure monitoring. Give IVF
- Pulm emboli
- Tension pneumothorax: Unequal breath sounds on examination. DO not wait for CXR. Insert 14 or 16 gauge needle into the second intercostal space at the midclavicular line ASAP
- Tamponade: elevated JVP, muffled heart sound and hypotension
- Right ventricular infact
- Pulmonary hypertension

Decreased contractility

- MI
- Medication
- Aortic dissection: Get STAT chest CT

Management

1. Is the patient stable?
2. Have low threshold to transfer a hypotensive patient to the ICU for better nursing support, pressors and/or intubation
3. Treatment is aimed at the underlying cause but almost all cases call for fluid resuscitation. If suspicion of CHF is low then give rapid isotonic fluid resuscitation
4. If there is concern for mixed cardiogenic and septic shock, let your volume exam guide treatment. Keep fluid boluses small (i.e 200ml and reassess). Trend lactate.

5. In general, start O₂, additional large bore peripheral IVs, put patient in trendelenburg, draw basic STAT labs (CBC, lytes, BUN, creatinine, glucose, LFTs blood/urine culture), STAT EKG, CXR, ABG/lactate

If the patient stable then ask this question

1. Is this BP real?
2. Is the BP different from prior values? if the patient usually has a BP 80/40 then the acuity may be decreased somewhat
3. Is there associated hypoxemia, AMS, or increased RR (reasons for intubation)?
4. Is the MAP <60? MAP less than 60 results in significant risk of hypoperfusion to vital organs

Hypertension

Evaluation

Physical examination

- Brain: headache, confusion, lethargy, stroke
- Eye: blurred vision
- Heart: Chest pain, dyspnea
- Kidney: low urine output, edema

Lab: not always required. Use selectively to determine cause and whether patient meets criteria for hypertensive emergency.

- CBC with peripheral smear
- EKG, troponin, BNP
- UA (looks for proteinuria), electrolytes, BUN and creatinine (look for renal dysfunction)
- CXR if chest pain or dyspnea
- Head CT for those with neurologic symptoms
- Chest CT with contrast in patients with severe chest pain, unequal BP in arms, unequal pulses, or widening of mediastinum on CXR

Management

For **hypertensive urgencies**: Majority of patient with HTN have no acute end organ damage and their BP can be lowered over days with oral medications. Consider rechecking BP after 30 minutes of quiet rest. Restarting a patient's home med is a good first step. Alternatively, consider starting one or more long acting oral med that can be continued on discharged.

- Amlodipine 5-10mg PO daily
- Lisinopril 10-20mg PO daily or losartan 25-50mg daily

In cases where more rapid lowering and closer titration of BP is desired, consider shorter acting med

- Captopril 6.25-25mg PO TID
- Clonidine 0.1mg BID. can titrate to TID. DUE to the risk of rebound HTN, often reserved for resistant HTN
- Hydralazine 10mg PO q8hr can increase to q6hr. use with caution due to unpredictable effect and reflex tachycardia

For ***Hypertensive emergencies***

- Labetalol: 10-20mg IV initial, followed by 10-80mg IV q10 mins until BP falls
- Nicardipine: Initial infusion of 5mg/hr, increasing by 2.5mg/hr every 5 mins to a maximum dose of 15mg/hr. Watch out for reflex tachycardia
- Nitroprusside: 0.3mcg/kg/min-4mcg/kg/min
- Esmolol: 0.5mg/kg loading dose, followed by starting infusion of 50mcg/kg/min up to 200mcg/kg/min

Fever

Differential

- Infection (lung, heart, brain, urine, sinuses, prostate, abdomen, skin, joints, lines, etc)
- Inflammation (Collagen vascular disorder, neoplastic disorder)
- Mucositis
- Atelectasis
- Blood product reaction
- Drug fever (beta lactam antibiotics and amphotericin common causes)
- PE vs DVT

Is it a true temperature?

- Is it greater than >100.4 F?
- Quickly chart check and determine if patient is stable vs unstable (look at vitals, etc). If **unstable go to bedside immediately!**

If **unstable:**

First: Brief yet thorough chart check

Go assess bedside.

Get as much hx as you can - drug allergies, recent infections, blood transfusions, etc. Targeted exam (skin, lungs, extremities, etc). If patient is not responsive or sudden change in mentation, address those first.

- If you have an idea where the infection is coming from, start targeted antibiotics.
- If no idea where infection is coming from, repeat blood culture if > 48 hours since last blood culture. If blood culture performed less than 48 hours ago, usually no need to repeat blood culture.
- Consider pan culture - UA, Urine Clx, line clx, CXR, and EKG on top of repeat blood cultures.
- Labs to order (based on presentation/suspicion): CBC, CMP, Lactate, Trop, BNP, D-dimer, PT/PTT, etc.
- Also start broad-spectrum antibiotics (Vancomycin/Zosyn) (unless antibiotic allergies)
- ICU consult, Stat.

If stable:

- Assess where the nurse took temperature, is it in the correct location?
- Have RN recheck temperature in 30 mins and dochal/ call you. You do not have to act on one temperature, first confirm it. (Exceptions might be if the patient is neutropenic, then consider neutropenic fever).
- Do a thorough chart check while you wait for a call back:
 - Why was the patient admitted?
 - What was the WBC?
 - What was the urine output?
 - Any recent meds/blood transfusions/surgeries?
- If after 30 minutes temperature is confirmed, go assess patient bedside.
- Get a detailed history from patient.
- Do a thorough PE, looking for skin infections (including decubitus ulcers), and looking at all lines.
- If worried about an infectious cause, start appropriate antibiotics.

Low urine output

Normal urine output

- typically at least 0.5 cc/kg/hr.
- Oliguria: urine output < 400cc/day
- Anuria : urine output < 100cc/day

Do you believe the numbers?

- If patient has foley, flush tubing to make sure it is not clogged.
- If no foley, ask about urine output, look at daily weights, etc.

Examine patient bedside.

- Assess volume status: mucous membranes, skin pallor/dryness, edema, complaints of thirst, neck veins (assess CVP), crackles in lungs (pulmonary edema), bladder palpable on exam, prostate exam, etc.

Check a post-void residual by bladder scan.

- If volume > 300cc, then insert foley (In and out). If consistent > 300cc, keep foley in.

Causes of urinary retention:

- BPH, anticholinergic medication, side effect of medication:narcotics/benadryl/anesthetics

Assess for renal failure (AKI)

- Prerenal, renal, postrenal causes.
- Look for fluid overload (CHF), and obstruction (renal US).
- If both negative, then fluid challenge is acceptable: 500cc L bolus. (Go to AKI for further management).

CHF/Volume overloaded? Initiate diuresis:

- Working kidneys: lower IVF rate and self-diuresis
- CHF/symptomatic: use lasix 20mg - 80mg IV
- Renal failure: Dialysis? If kidneys still working, can try high dose lasix - 160mg- 240mg IV Lasix.

Dyspnea

DDx (5 major categories of disease to consider)

Pulmonary

- Pneumonia = fever, purulent vs dry cough, pleuritic chest pain
- Pneumothorax = acute onset, pleuritic chest pain. Consider in any intubated patient.
- Pulmonary embolism = Hx DVT, recent surgery, pleuritic chest pain, tachypnea, tachycardia, hypoxia - Often difficult to rule in or out by history/exam. Consider this early.
- Aspiration = common problem if acute loss of consciousness
- Bronchospasm = seen with CHF, pneumonia, asthma/COPD
- Upper airway obstruction = often acute onset, stridor/focal wheezin- If albuterol fails, consider vocal cord dysfunction
- ARDS = usually in pts hospitalized with another dx (e.g. sepsis)

Cardiac

- MI/ischemia = dyspnea can be an anginal equivalent
- CHF = common in elderly pts on IVF or due to ischemia
- Arrhythmia = can cause dyspnea with or without CHF/ischemia
- Tamponade = consider if signs of isolated right heart failure

Metabolic

- Acidosis = pts become tachypneic to blow off CO₂ in compensation
- Sepsis = dyspnea can be an early, non-specific sign of systemic infection

Hematologic

- Anemia = easy to miss this by Hx/exam
- Methemoglobinemia = rare; consider if taking dapsone, nitrates, topical/local anesthetics
 - - Cyanosis, blue discoloration of skin/mucous membranes confusion, seizures, normal PO₂

Psychiatric

- Anxiety = common, diagnosis of exclusion

Evaluation of Patient

History

- Learn about acuity of onset of dyspnea
- Associated symptoms? (cough, chest pain, palpitations, fever)
- Review recent events or meds given at time of symptoms onset (IV fluids)
- Review relevant PMHx and admitting diagnosis

Physical exam

- Start by asking nurse for vital signs (HR, RR, BP, O2 sat). Ask for second set 15-30 minutes later.
- Lung exam = listen for wheezes, rales, stridor, symmetry of breath sounds
- Cardiac exam = attention to JVP, carotids, rate/rhythm, murmurs/rubs
- Keep in mind adventitious lung sounds may be absent in someone with severe airflow limitation
- Look at extremities for edema (unilateral vs. bilateral) and perfusion (cool vs. warm, cap refill, cyanosis).
- Mental status = gives you idea of cerebral oxygen delivery

Labs/Studies

- EKG, CXR, ABG, CBC
- 4 basic studies will give you a good deal of information, and help you sort out what might be going on with your patient if it's not clear from above.
- Consider CTPA if high risk of PE/DVT (Wells criteria)

Initial Management

A. Oxygen

- Initial intervention for any patient with dyspnea. Even CO2 retainers need O2 and it takes longer than the few minutes you need to evaluate them for significant respiratory depression to develop. Your goal is a PO2 > 60 or O2 sat > 92%. If nasal cannula isn't working (max FIO2 is ~40%), try a simple mask (up to 50%), non-rebreather (70%) or high humidity mask (90%). Remember that respiratory therapist (RT) is your friend; call early if you're having any trouble and they will help with nebs, suction, masks, ABGs, oral/nasal airways

B. Diuretics

- Consider Lasix in any patient with history or exam consistent with CHF; other processes associated with increased lung water (pneumonia, ARDS).
- One dose of Lasix is unlikely to do any irreversible damage.

C. β -Agonists

- Bronchodilators will benefit patients with wheezing from any etiology
- Remember wheezing can occur in many conditions other than asthma (e.g., CHF, pneumonia)

D. Intubation

- Assess potential to protect airway (see Pulmonary section); consider calling ICU

E. Other

- Once you stabilized patient and results of initial studies returned, you can initiate directed therapy at the specific etiology of dyspnea.

Chest pain

I. DDx (Biggest killers)

- MI : Dull pressure pain associated with dyspnea, diaphoresis, radiation to left jaw/arm, N/V, cardiac risk factors present
- Aortic Dissection: Tearing pain that radiates straight to the back, associated with HTN, smoking Hx, unequal pulses
- Pneumothorax: Pleuritic chest pain, COPD, trauma, decreased breath sounds, hyperresonance, deviation of trachea away from affected side, hypoxia
 - Consider in any intubated patient.
- Pulmonary Embolism: Pleuritic chest pain, dyspnea, hypoxia, hemoptysis
- Other: Pericarditis, pneumonia/pleurisy, GERD, PUD, esophageal spasm, costochondritis, anxiety (diagnosis of exclusion), HOCM, myocarditis,
 - If HIV/AIDS = herpes, CMV, candida esophagitis

Evaluation of Patient

History:

- Learn about acuity of onset of chest pain
- Associated symptoms? (cough, dyspnea, palpitations, fever)
- Review recent events or meds given at time of symptoms onset
- Review relevant PMHx and admitting diagnosis
- Look at initial EKG (from chart if available)
- Focus on ruling out the major killers rather than definite diagnosis

Physical exam:

- Start by asking nurse for vital signs (HR, RR, BP, O2 sat). Ask for second set 15-30 minutes later.
- Ask nurses to get immediate EKG as you walk to patient's room.
- Lung/cardiac exam

Initial Labs/Studies to Order

- Ask nurses to get immediate EKG as you walk to patient's room.
- Crisis panel
- CBC, CMP, troponin x3 q6h, CXR, ABG
- CHF = echo

Suspected Angina/MI

- Start O2 by NC and give sublingual NTG 0.4mg q5 min x3; hold for SBP < 100
- Remember, if chest pain responds to NTG it does not automatically rule in angina.
- If ineffective, try other antianginals
- Metoprolol 5mg IV q5 min x 3 (avoid in COPD/asthma)
- Nitropaste
- If not already on aspirin/Plavix and has no contraindications, order ASA 325mg and Plavix 300mg x 1
- Further meds = high-dose statin, consider ACE inhibitors

Suspected Dissection

- Call and transfer to ICU to reduce BP and inotropy with beta-blocker
- Order CT scan or echo and call surgery
- EKG may show evidence of ischemia in RCA distribution if dissection is proximal

Suspected Pneumothorax

- Call surgery for chest tube placement
- If tension pneumothorax, immediate needle decompression at 2nd intercostal space at midclavicular line. Don't wait for CXR.

Suspected PE

- ABG confirms hypoxia
- Consider CTPA or V/Q scan and start anticoagulation

Suspected Pericarditis

- NSAIDS and colchicine

Wrap up:

- Obtain post-pain EKG and document event

Combative or Confused patients

1. Does the patient have altered mental status or is he/she upset over something?
2. If there is any question of physical injury, call security (0). No matter how many years of commando training you have, it is not your responsibility to restrain patients in a safe manner. Also, patients generally tend to calm down when they are confronted by overwhelming numbers of people who are responsive to their needs or anxieties.
3. Try to do as much of an altered mental status workup as you can. If you suspect an underlying reason for the agitation (pain, sundowning, hypoxia, medication), then obviously treat the underlying reason.

Management

Non-pharmacologic

- Accompaniment (sitter, family members at the bedside or via phone)
- Minimize restraint but if you
- If you feel restraints are needed, you need to put order under non-violent restraint specifying the type of restraint and the reason for initiating. They must be renewed every 24 hours. Generally, try to initiate the least restrictive type of restraint. Posey vests prevent patients from leaving the bed but leave the arms and legs free. Four-point cloth restraints limit the movement of arms and legs. They are more restrictive than Poseys but may be necessary if a patient is pulling out lines, etc.

Pharmacologic

- Haldol 0.5mg - 1mg BID PO or IM can also used as needed q4hr
- Quetiapine 12.5mg-25mg once at night
- Olanzapine 5mg-10mg IM, may repeat based on response 2 hrs after the initial dose and 4hrs after second dose. Max 30mg/day
- Benzo (avoid in elderly): 0.5-1mg q4hr

Falls

Evaluation/Management

- Assess patients at bedside. Look for any injury; any locality on exam must be worked up in the appropriate manner (e.g. head CT, plain films, immobilization, etc). In particular, look for: ecchymosis, abrasions, fractures, pain, asymmetry, deformity, decreased range of motion, look at head, hands, shoulders, hips, knees, feet.
- Do a complete neuro exam including gait, strength, and cerebellar tests. Mental status testing may be necessary if a patient is confused or altered.
- Check orthostatics.
- Try to find out the circumstances of the fall. Witnessed? By whom?
- Loss of consciousness (does the patient remember hitting the ground)? Mechanism (getting out of bed, going to bathroom, standing up, turning around, etc.)? Associated symptoms (premonitory aura, incontinence, dizziness, headache, visual symptoms, palpitations, chest pain, dyspnea)? Preceding actions (coughing, urinating, straining, standing suddenly)? Past medical history, prior falls)?

Differential diagnosis.

- Differentiate mechanical fall vs. transient loss of consciousness.
 - Don't forget the following:
 - Neuro: seizure, CVA/TIA, gait disorder, Parkinson's, vertigo, dementia, normal pressure hydrocephalus, poor proprioception
 - Cardiac: arrhythmia, MI, vasovagal, hypovolemia, orthostasis
 - Meds: new medication or new dose, especially sedative/hypnotics, antidepressants, antihypertensive, vasodilators, opioids, alcohol, diuretics (requiring frequent trips to the bathroom). Don't forget alcohol and illicit drugs.
 - Musculoskeletal: arthritis, pain, deconditioning, weakness
 - Other: anemia, poor eyesight, dim lighting, room change, bed rails left down, wet floor.
4. Document the fall by writing a progress note.

Insomnia

1. Trial non pharmacological measures first: sleep hygiene, noise reduction (ear plugs/muffs), reduce lighting, avoid night time interruptions if able, turn off TV/radio/etc. In room
2. Before using pharmacotherapy, check patient allergies
3. Melatonin is generally a safe starting point for medications, with 1-3mg PO scheduled at 9 to 10pm
4. If not effective, can consider trazodone 50mg PO at bedtime (caution with orthostatic hypotension, atrial/ventricular arrhythmias)
5. Can also consider benadryl 25-50mg or hydroxyzine 50-100mg PO nightly PRN (safer for elderly) insomnia. Watch for anticholinergic side effects (dry mouth, blurry vision, urinary retention) and use with caution if impaired cognition.
6. If still ineffective can consider ambien 5-10mg PO nightly
7. If above measures not effective, evaluate the patient before considering any strong sedatives.