

MOUNT SINAI CONFERENCE



Documentation in the ED, Pt. 1: Billing - Dr. Ashton

In the first of 4 lectures in collaboration with Dr. Pour on ED **documentation**, Dr. Ashton led a boisterous discussion on upcoming changes in how Level of Service (LOS) will be determined. No more click boxes? Not quite; we're still keeping them for medico-legal purposes (for now?), but **as of 1/1/2023, LOS will be determined solely by the documentation of Medical Decision Making (MDM).**

This makes it important to document acknowledgement of **positive results** that affect decision making (ED course @MS/comment->ED note @ EHC) and to document conversations with **consultants** (with epic order) and family/NH staff/etc for **collateral**. Procedure notes continue to alert coders to procedural billing. Attendings will continue to document critical care time. Check your email: Dr. Pour sent an attachment from Dr. Schimmel of MSH costs.

Cardiology Conference with a Twist - Dr. Shah

Dr. Shah kicked off conference with a complicated case of acquired Torsades de Pointes in a patient who initially presented with seizure.



This patient had significant electrolyte abnormalities, and after normalizing electrolytes and giving magnesium continued to have TdP, most likely 2/2 QT prolonging ED/inpatient medications including azithromycin, levetiracetam, famotidine, and suboxone in addition to his prescribed methadone. This was the springboard into a discussion of Torsades triggers, diagnosis, and management.

Important takeaways included:

- **Torsades comes in two varieties:** Pause-dependent (most common, as in our case) and Adrenergic-dependent. EKG helps distinguish them and they are treated differently, so diagnosis is important.
- **Shock if unstable.**
- **If TdP is Persistent**, plan for TVP with overdrive pacing @ 100 BPM. If pause-dependent, consider isoproterenol or dopamine or temporization. Avoid beta-blockers if adrenergic-dependent.
- **Avoid stacking QT prolonging medications.** check med list and EKG, use crediblemeds.org

Junior Small Group

Junior residents were split into three groups and reviewed cardiology cases. Through the (physical but by no means emotional) temporary divider they were heard to have a raucous time and, per report, learned intricacies of the defibrillator/monitor/pacer device (AKA zoll) in addition to other tasty cardiologic tidbits.

Senior Small Group

Dr. Lucasz Cygan (NYP Brooklyn) led the senior residents in a less raucus, but rousing game of *find evidence (link) to convince your cardiology colleagues to do what you believe is best for the patient*. His discussion armed residents with evidence relevant to 4 scenarios:

1. Patient with **active** exertional chest pain, normal EKG, **positive** trop. Cards states NSTEMI doesn't need immediate cath. **TIMACS** trial: In 3031 patients with ACS; showed no difference in death, MI, or stroke between early (≤ 24 hours, median 14) vs. late (≥ 36 hours, median 51). cath. **However** TIMACS **excluded patients with persistent chest pain and did not investigate immediate cath**. The **VERDICT** trial looked at "very early" cath and found no overall benefit, **But** in

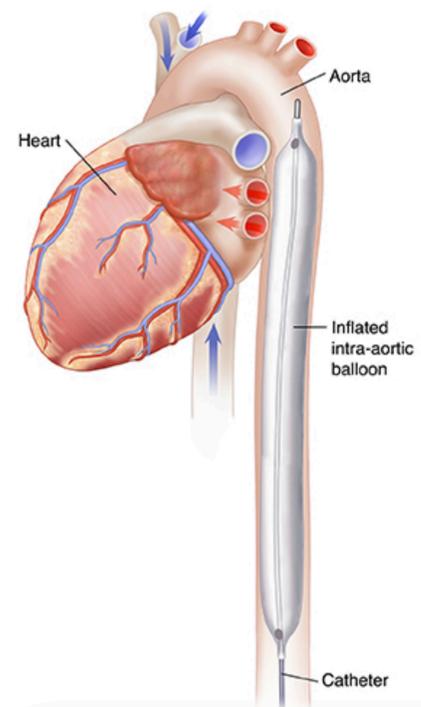
- **Treat** with Magnesium (acts as CCB) bolus + infusion, replete electrolytes, stop QT prolonging medications.
- **HR affects QTc**. Use nomogram to determining TdP risk.

Cardiology Conference Part II: The Intra-Aortic Balloon Pump - Dr. Groden

Dr. Groden started by clarifying that we should address him as "Phill" (2 ells), "Phillip," "Dr. Groden," but not "Grodey" or "Dr. Phil". He also implored us to vote in the important upcoming election.

He presented a CPORT case, reviewing occlusive EKGs and lesion localization before spending the bulk of his talk discussing the intra-aortic balloon pump (IABP). IABP is indicated as a bridge to more definitive device (i.e. LVAD, Impella) or surgical repair in patients with cardiogenic shock, who are pre/post cath, or who have an occlusive myocardial infarction. The device is placed with seldinger technique, then connected to a monitor. It decreases oxygen demand in the heart and improves cardiac output, but has unclear mortality benefit.

Patients with the device in are uncomfortable, sometimes in pain from the device and must like still in bed. Complications include iatrogenic dissection/ischemia, balloon leaks, bleeding and patients require frequent neurovascular checks, renal perfusion monitoring, checks for blood in the line (balloon leak), wound checks. The device has a mortality benefit in the setting of thrombolytics for occlusive MI and Dr. expects these devices to be more common, especially in hospitals which must transfer to a cath-capable center.



both trials the subgroup analysis of the highest risk patients (GRACE score >140) did find benefit to early cath. Also the outcomes measured (subsequent MI, death and stroke) **do not account** for the likelihood that if the patient is actively losing myocardium, **time to intervention affects quality of life, which was not measured.**

2. *Patient with concerning symptoms but **EKG that does not meet classical STEMI criteria:*** literature (i.e. Steven Smith) is moving from STEMI nomenclature to Occlusive Myocardial Infarction (OMI) because **STEMI paradigm misses 25-30% of occluded patients.** OMI findings of **STEMI equivalents** include Sgarbossa criteria (LBBB/V-paced), anterior QS waves, subtle inferior OMI, Posterior OMI, subtle LAD occlusion, de Winter T waves.
3. *Patient with recent Coronary CTA, now with angina, refusing troponin.* Current AHA guidelines give "warranty period" for cardiac testing (CCTA, stress test), **but only once ACS is ruled out.** Patient needs troponin.
4. *Patient with Out of Hospital Cardiac Arrest (OHCA), now*

Cardiac Risk: Beyond HEART- Dr. Mukherji

Visiting from Northwell NSLIJ, Dr. Mukherji led an interactive discussion on chest pain, helping us focus our clinical acumen on the most important parts of the chest pain workup, specifically highlighting the HEART score as a subjective, operator dependent, measure that can be appropriately and inappropriately applied. He states that the adoption of the HEART score did not change practice statistics, that the same numbers of patients are still being admitted, though perhaps these are a slightly different population.

History	Slightly suspicious	0
	Moderately suspicious	+1
	Highly suspicious	+2
EKG 1 point: No ST deviation but LBBB, LVH, repolarization changes (e.g. digoxin); 2 points: ST deviation not due to LBBB, LVH, or digoxin	Normal	0
	Non-specific repolarization disturbance	+1
	Significant ST deviation	+2
Age	<45	0
	45-64	+1
	≥65	+2
Risk factors Risk factors: HTN, hypercholesterolemia, DM, obesity (BMI ≥30 kg/m ²), smoking (current, or smoking cessation <3 mo), positive family history (parent or sibling with CVD before age 65), atherosclerotic disease: prior MI, PCI/CABG, CVA/TIA, or peripheral arterial disease	No known risk factors	0
	1-2 risk factors	+1
	≥3 risk factors or history of atherosclerotic disease	+2
Initial troponin Use local, regular sensitivity troponin assays and corresponding cutoffs	normal limit	0
	1-3x normal limit	+1
	>3x normal limit	+2

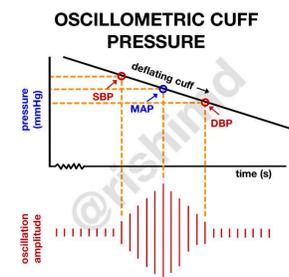
He highlighted the history as the most important part of our workup, showing that *exertional, radiating, pressure* associated with *nausea, vomiting, diaphoresis* that is *similar to prior MI* is most concerning. No single aspect of the history is un concerning, however features that are less likely ACS may be "stacked." These include pain that is *pleuritic, positional, reproducible with palpation, stabbing* (though "stabbing" is present in 3-5% of ACS), *localized to a small area.*

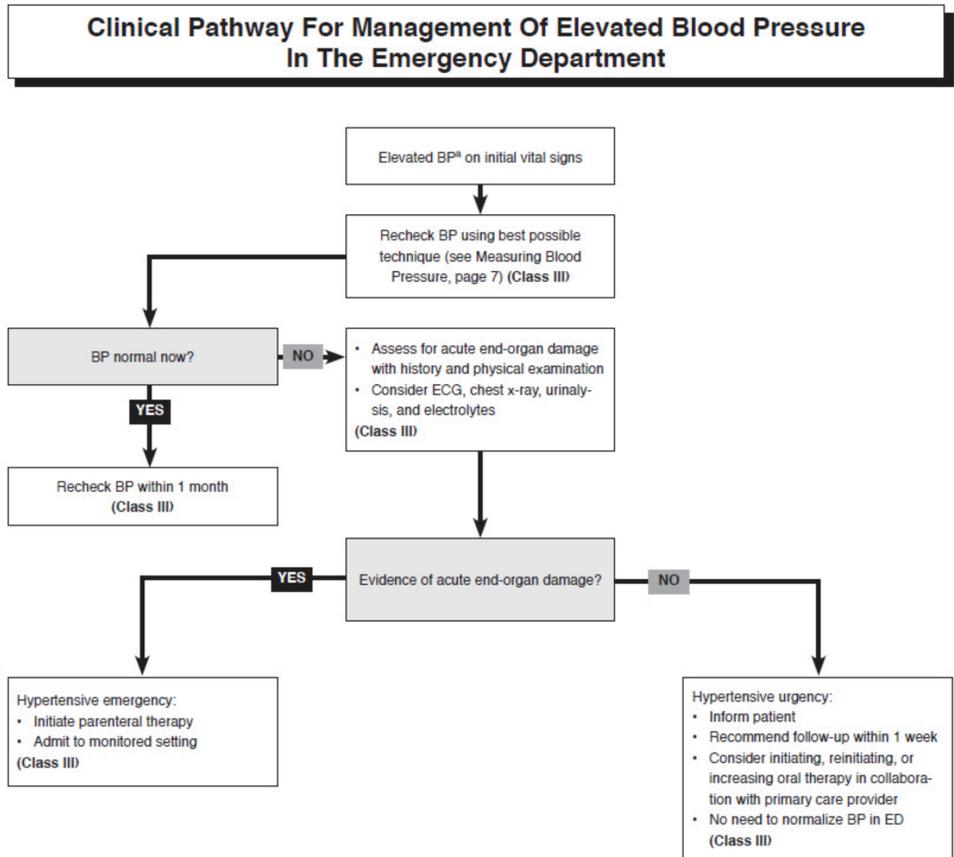
Finally, Dr Mukherji pressed learners not to rely on the HEART score blindly, impressing upon us that the EKG, troponin and history are the most useful tools we have to guide chest pain management.

Under Pressure: Blood Pressure Management in the ED - Dr. Trivedi

Hypertension is common in the emergency department. When should we be managing BP in the ED? What are common pitfalls in BP management? Dr. Trivedi bravely led an expedition through the tumultuous topic of high blood pressure.

Oscillometric cuff pressures measure the MAP and extrapolate SBP/DBP. Therefore we should define Hypertensive Emergency as end-organ damage and an acute elevation of MAP to 135-140 in a patient who is normally normotensive.





ED workup of hypertension should first confirm the reading with a repeat measurement, then assess for end organ damage suggested by symptoms/history/exam. This testing may include US (aortic dissection? volume overload? LVH), labs (Ureg, BMP, troponin, UA, Utox), EKG, imaging (CTH, CTA H/N/C/A/P).

If you diagnose Hypertensive Emergency, how do you treat it? BP goal should be to decrease MAP by 20% in 1-2 hours. If you drop your

patient's pressure too fast you may cause ischemia. After the initial drop, slowly lower the MAO to 125 over the next 2-6 hours. initial drop, slowly lower the MAP to 125 over the next 2-6 hours. If managing stroke, BP goals are still listed as SBP, with hemorrhagic goal SBP <160, ischemic CVA treated with tPA/endovascular intervention goal <185/110, but should allow permissive hypertension for ischemic strokes that do not receive tPA/endovascular intervention up to 220/110.

What meds to use to treat BP in the ED? Dr. Trivedi recommends nicardipine drip (onset 5-15 min, lasts 1 hour, contraindicated in cirrhosis patients) or clevidipine drip (onset 2 min, lasts 10 min, contraindicated in patients with issues 2/2 lipidemia). If you need to push a medication, Dr.

^aAll patients with elevated blood pressure should have it addressed in the clinical decision-making notes or discharge instructions. Abbreviations: BP, blood pressure; ECG, electrocardiogram; ED, emergency department.

Intravenous Antihypertensive Drugs for the Management of Hypertensive Emergencies				
Drug	Dose	Mechanism of Action	Adverse Effects	Contraindications
ESMOLOL	500 to 1000 µg/kg i.v. bolus in 1 min or 50-250 µg/kg/min continuous i.v. infusion	Cardioselective β1-blocker resulting in decreased cardiac output	Hypotension, Dizziness, Peripheral ischemia, Infusion site reaction, Bradycardia	Sinus bradycardia, Sick sinus syndrome, Second- or third-degree heart block, Heart failure, Cardiogenic shock, Pulmonary hypertension, Asthma, COPD
LABELTALOL	0.25-0.5 mg/kg i.v. bolus or 2-4 mg/min i.v. infusion, thereafter 5-20 mg/h	Non-selective α1 and β-adrenergic blocker resulting in decreased cardiac output and direct vasodilation	Symptomatic postural hypotension, Flushing, Acute left ventricular failure, Bronchospasm, Bradycardia	Asthma, Heart failure, Second- or third-degree heart block, Cardiogenic Shock, Severe bradycardia
CLEVIDIPINE	1-2 mg/h i.v. infusion, increase every 2 min with 2 mg/h i.v. bolus or 15-30 mg/min continuous i.v. infusion	Block L-type calcium channels, which leads to coronary and peripheral vasodilation	Systemic hypotension, Reflex tachycardia	Allergies to soybeans, soy products, eggs or egg products, Defective lipid metabolism, Severe aortic stenosis
NICARDIPINE	5 mg/h continuous i.v. infusion, increase dose by 2.5 mg/h every 15 min to a maximum dose of 15 mg/h	Block L-type calcium channels, which leads to coronary and peripheral vasodilation	Dizziness, Flushing, Reflex tachycardia, Nausea, Vomiting, Increased intracranial pressure	Liver failure
NITROGLYCERINE	5-200 µg/min continuous i.v. infusion, increase by 5 µg/min every 5 min	Nitric oxide donor	Headache, Reflex tachycardia, Vomiting, Flushing, Methemoglobinemia, Syncope, Venodilator	Known history of increased intracranial pressure, Severe anemia, Right-sided myocardial infarction, Concurrent use with PDE-5 inhibitors

*intubated, s/p ROSC, with STD in V2,V3: According to the **COACT and PROCAT I and II** trials we do **not** have evidence to push cards to take patient to cath unless **initial rhythm** was shockable and patient **meets STEMI criteria**.*

Trivedi recommends labetalol pushes (onset 5-10 min, lasts 3-6 hours, contraindicated in bradycardia, heart block, cardiogenic pulmonary edema, asthma exacerbation, cocaine/sympathomimetic intox).

Should we treat asymptomatic uncontrolled hypertension in the ED? According to ACEP guidelines, routine ED medical intervention is not required. However if patient is likely to be lost to follow up it is reasonable to start an antihypertensive; Dr. Trivedi recommends amlodipine for its low side-effect profile. Regardless, all patients with a single reading of high blood pressure in the ED should receive guidance on the importance of blood pressure management and lifestyle modifications in addition to primary care follow up

Focused Case Review - Dr. Remy

Dr. Grossman introduced Dr. Remy, stating that “the artist formerly known as M&M” is no more. He detailed a recent law suit in which evidence thought to be inadmissible in court was obtained. We will have new opportunities for case review but M&M is over.

Dr. Remy presented a Focused Case Review, which was not recorded by your faithful scribe due to issues of privacy and confidentiality.

