The shift begins...
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### QT Interval (Seconds)

<table>
<thead>
<tr>
<th>Heart Rate/min</th>
<th>UPPER LIMITS OF NORMAL</th>
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<tbody>
<tr>
<td></td>
<td>Men</td>
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<tr>
<td>150</td>
<td>0.25</td>
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<tr>
<td>136</td>
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<tr>
<td>52</td>
<td>0.42</td>
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<tr>
<td>50</td>
<td>0.44</td>
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Prolonged QT interval in various overdoses (especially TCAs) indicates potential for arrhythmias—consider admission and telemetry.

### IMPORTANT PHONE NUMBERS

- ED Green Fax: 744-5240
- Orca/FirstNet support: 897-6722
- HMC ED Doctor’s Line: 4-4074
- ED Green: 4-5256
- Psych Emergency Services (PES): 4-3076
- Lab: 4-3451
- Pharmacy-Inpatient: 4-3220
- Pharmacy-Outpatient: 4-3219
- Code to battery room: 3259
- Radiology:
  - Trauma radiology: 4-3346
  - CT scanner: 4-6106
  - Neuro reading room: 4-6143
  - Radiology resident: 4-3651
  - Ultrasound: 4-2812
- Cell phones:
  - Medic One Doc: 4-7227
  - Medic One Attending: 4-7974
  - Trauma Doc: 4-7228
  - Trauma Attending: 4-7138
  - Green Attending: 4-7137
  - Charge Nurse: 4-4025
  - ED pharmacist: 948-9010
- Poison Control: 1-800-222-1222

### INTRODUCTION

Welcome to the Harborview ER. Generations of UW residents remember this rotation as a defining experience of their medical training - “The time when I really learned to be a doctor.” We hope that your experience here will be both educational and personally rewarding. You will be responsible for directly caring for some of the sickest patients in the WWAMI region, remotely overseeing the care provided by medics and nurses during transport, and tending to the medical, social, and emotional needs of multiple underserved populations. We have a reputation for being the most capable facility in the region and the most welcoming to the medics—a reputation we must constantly work to maintain. Further, we provide the majority of charity care in our region; it is our responsibility to embrace this population with the utmost grace.

By working at Harborview, you are responsible to your community and you assume Harborview’s definite mission population, vulnerable in one
way or another: By the severity of their medical needs, by lack of social or financial standing, by mental illness, or by cultural difference. Everybody here is a VIP. The less respect a patient gets outside the hospital, the more s/he needs from you.

The process of care in the ED is different from almost any other setting. Therefore we provide these guidelines to help you navigate the environment from your very first shift. Please read this guide carefully prior to your rotation.

**Staffing and Scheduling:**
*Medic One* side staffing varies from day to day, depending on the volume in the ED and the number of residents available to schedule. You will be assigned either Medic One Doc or Medicine Team shifts. When you are a Medic One Doc, you will be carrying the pagers for some portion of your shift. The shift structures are either...

- 6am to 4pm
- 10am to 8pm
- 4pm to 2am
- 8pm to 6am

**Medicine teams shifts** are 10am and 8pm

*Medic One Doc:* When you are in this role, you will hold two pagers and a radio. Medics and Airlift nurses will contact you via phone or radio to tell you about patients they are evaluating in the field or are transporting from one facility to another. Your role is to provide medical control and approve or (rarely) modify their plan of care and to alert the receiving hospital (usually but not always Harborview) about the patient.

Patient care begins when that ambulance arrives at the side of that sick patient. Early communication between paramedic and physician is essential. This ensures a mutual understanding of the magnitude of illness; the paramedic gains the support of a physician; the receiving hospital gains an element of anticipation; and the patient is delivered to a hospital that is prepared.

The telephone--and especially radio calls with the Medics--are monitored and undergo regular QA. It is therefore very important that you document these calls on the forms provided in the radio room, and sign for any medications given. It is rare that you will need to change the Medic’s plan, but your input is important to them. If you have concerns about any care that they have provided, do not challenge them publically once they arrive in the ED. You may ask them for additional information, or ask to speak to them privately in the radio room or talk to your attending about your concerns.

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**Done Nomogram for Salicylate Toxicity**

**U.S. values: mg/dL**

Adapted from Done AK. Salicylate intoxication: significance of measurements of salicylate in blood in cases of acute ingestion. *Pediatrics* 1960;26:800-7.
The other resident (when present) and other team members (when present) see all the other, less acute patients and help the Medic One Doc. The other Medic one resident or attending should hold pagers and answer calls if you need to leave the ED or are doing a procedure. If you are working on a shift where two residents are scheduled at the same time (typically the 2p-12a shift), then please evenly split the time you carry the pagers.

Most months, there are emergency medicine residents and interns, 4 internal medicine resident and 1 internal medicine intern. Some months we have visiting residents from other programs. The schedule is as follows:

0700 Resident 1 arrives. Medic One Attending holds the pagers while Blue attending provides teaching from approximately 7:15-7:45am.
0730/745 Resident 1 takes pagers from attending after morning teaching and starts seeing patients.
1400 Resident 2 arrives and takes pagers from Resident 1. 1700 Resident 1 stops seeing patients. Has until 1900 to finish documentation.
2000 Resident 3 arrives and takes pagers from Resident 2. 0000 Resident 2 stops seeing patients. Has until 0200 to finish documentation.
0600 Resident 3 stops seeing patients, gives pagers to attending, has until 0700 to finish documentation.

Interns and visitors work 1000-2000, 1200-2200 or 2000-0600. Interns report directly to the attending but value teaching and direction from residents. Medic One Docs work these shifts occasionally, when there are extra Medic One Docs.

Students work 0600-1400, 1400-2200 or 2200-0600. They report directly to the attending, but they value any teaching that residents can give them. Our specific goals for them are (1) to be able to generate a broad differential, including life-threatening issues, for each patient, (2) to be able to manage 3 patients at a time.

Attending coverage is 24 hours a day, with shift changes at 0600, 1400, and 2200. They hold the pagers from 0600-0730, when there is no Medic One Doc and during teaching rounds. Check in frequently with your attending to make sure all patients are being seen and have a plan in place.

PRE-HOSPITAL CARE

Medic One System Operations

The Seattle Fire Department and HMC run the Medic One Emergency Medical System, which is world-renowned. Our success at resuscitation, effectiveness of intubation, and care of trauma patients is some of the best in the world. The Medic One Doc acts as a communication link between the medics in the field and the hospitals in the area. The Medic One system includes Seattle and several outlying communities such as Vashon and Bainbridge Islands. The Medic One resident carries two alpha-numeric pagers belonging to Medic One and Airlift Northwest. These pagers alert you when medics or Airlift Northwest wish to talk to you. Alternatively, Airlift Northwest dispatch may call the triage nurse, who will overhead page you to the phone or radio. Other air transport companies or other organizations may call on a regular phone line.

Radio Room

When the pager goes off, go immediately to the radio room. If the pager reads “M10” or “T10” it means that Medic 10 (or whichever number) will telephone you. Wait for the phone labeled MEDIC ONE to ring. When the medics call in, they will present the case. Take notes on the special Medic One slips and make sure you print your name and sign at the bottom if any medications are given. You will approve (or modify) their plan, get the patient’s name if known, destination hospital, and ETA.

If the pager reads “R16” or an overhead page says “Medic One Doc to Radio for Medic 16” or “Medic One Doc to Medcom for Medic 16,” use the radio labeled MEDIC 1 SEATTLE FIRE. Lift the receiver and push button to talk (wait at least one second before speaking), release to listen. Say “Medic One Doc standing by for Medic 16.” Repeat in ten seconds if no answer. When the unit asks, “How do you read?” Say “Loud and clear,” or “scratchy,” or “broken,” etc. Then listen to the presentation, which will be more formal than a phone presentation. Patient and doctor names are not given over the radio. At the end of the presentation you need to acknowledge the information and give approval for the plan without repeating everything, e.g. “I appreciate your history of an 80 year old female with severe dyspnea. Permission granted for current therapy of IV lasix, etomidate, succinylcholine, and intubation. I will inform Swedish First Hill of your arrival in 12 minutes.” When they say “Medic One Doc clear” you may hang up.

If you get a text page or overhead call that says “Medic One Doc to Radio for Airlift” or “Medic One Doc to Medcom for Airlift,” use the radio labeled AIRLIFT. The procedure is the same as for medic unit calls.

unresponsive to intravenous antihypertensives to reduce blood pressure to within these limits.
• Presumed septic embolus.
• Surgery or biopsy of parenchymal organ within the previous 14 days.
• Trauma with internal injuries or ulcerative wounds within the previous 30 days.
• Any active bleeding or acute trauma (fracture) on examination
• Gastrointestinal or urinary tract hemorrhage in previous 21 days.
• Known hereditary or acquired hemorrhagic diathesis
  ▪ PTT or PT greater than normal;
  ▪ unsupported coagulation factor deficiency;
  ▪ oral anticoagulant therapy with prolonged PT (>15 sec or INR > 1.7);
  ▪ use of heparin in previous 48 hours with a prolonged PTT;
  ▪ use of any experimental antithrombotic agent or participation in such a trial (unless randomization is emergently broken and patient identified as having been on placebo).
  ▪ [Note: use of ASA up until time of CVA was not an exclusion per NIH protocol, the effect of prior use of ticlopidine or clopidogrel has not studied thus is not a clear exclusion]
• Parturition within the previous 30 days.
• Baseline lab values:
  ▪ glucose < 50 or > 400;
  ▪ platelets < 100,000;
  ▪ Hct < 25.
• Arterial puncture or venous puncture at non-compressible site in the last 7 days.
• Other serious, advanced, or terminal illness.
• Any other condition that the physician feels would pose a significant hazard to the patient if t-PA therapy were initiated.
**Thrombolytic Therapy Checklist for Ischemic Stroke**

**INCLUSION CRITERIA**
- Age 18 or greater
- Clinical diagnosis of ischemic stroke causing a measurable neurologic deficit with NIHSS > 4
  - Defined as impairment of language, motor function, cognition, gaze, vision, neglect or some combination of these problems; isolated severe aphasia may present with NIHSS < 4 and still be worthy for consideration for IV tPA treatment.
  - Ischemic stroke is defined as an event characterized by the sudden onset of an acute focal neurologic deficit presumed to be due to brain ischemia after CT excludes hemorrhage.
- Onset of symptoms of ischemic stroke within 3 hours of the time to initiation of treatment with intravenous tissue plasminogen activator (t-PA).

**CAUTIONARY CRITERIA** (not absolute contraindications, usually imply overall poorer prognosis, may increase risk of early symptomatic hemorrhage, yet do not exclude the possibility of benefit from tPA therapy)
- Age > 80 (use is based only on observational, phase IV data, this should be pointed out during consent of such cases).
- Severe stroke; including coma, severe obtundation, fixed eye deviation or complete hemiplegia, NIH Stroke Scale > 20
- Evidence of early CT changes consistent with brain ischemia, such as loss of differentiation between gray and white matter, sulcal effacement, hypodensity or mass effect. Especially if > 1/3 of the MCA territory.
- Pregnancy; tPA has been given, with varying levels of success, risks to fetus and woman not clearly known, but may be considerable.

**EXCLUSION CRITERIA**
- CT scan with evidence of hemorrhage.
- Patient has minor stroke symptoms (NIHSS < 4) or has major symptoms that are rapidly improving by the time of initiating treatment with t-PA.
- History of a stroke, myocardial infarction or head trauma within the previous 90 days.
- Paralysis that might be due to a known active seizure disorder or a first seizure within the 6 hours immediately prior to initiating treatment with t-PA.
- Previous known intracranial hemorrhage, neoplasm, subarachnoid hemorrhage, arteriovenous malformation, or aneurysm.
- Clinical presentation suggestive of subarachnoid hemorrhage, even if initial CT scan is normal.
- Hypertension with systolic blood pressure > 185 mm Hg or diastolic blood pressure > 110 mm Hg on repeated measures prior to study entry.

Whether the call arrives by phone or radio, you then need to call the receiving hospital (numbers are on speed dial.) Give the info to the triage or charge nurse. If the destination is HMC, notify the charge nurse, triage, and attending. You can do this using your radio. These presentations should be succinct. For example, “Attention charge, triage, and Medicine Team, Medics are bringing a 50 year old man with chest pain in 10 minutes. Patient has stable (or is hypotensive, tachycardic) vital signs and is not (or is) intubated” Omit specifics (i.e. HIV status, patient is a Seahawk football player, gruesome details etc) as the radios can be heard by everyone in the ED and these announcements can be disconcerting to other patients/visitors. If you need to tell the charge nurse or triage nurse something sensitive, tell them in person or call their cell phone. Make sure you announce if a patient is intubated.

Patients who are transferred to Harborview from other hospitals will be cleared through the transfer center and will be entered in First Net in yellow at the bottom of the tracking board.

**Long Distance calls:** Call the operator to put these through.

**12-lead ECGs** done by the Medics will appear on a printer located under the counter. Fax these to the receiving hospital using the fax machine in the radio room.

**Contacting Dispatch:** if you want a unit to call you (i.e. you need to re-direct them to a different hospital or need additional information), pick up the phone labeled SEATTLE FIRE DEPT—DIRECT LINE TO DISPATCH. It will ring automatically.

If the regular phone rings, pick it up. It is either Dr. Copass calling with advice on your current medic call, or a medic unit that couldn’t reach you because you were on the usual medic phone.

**Paramedic Protocols**
The medics have strict protocols for standard scenarios and call for approval for those protocols. Listen carefully to their reports; if you feel uncomfortable use your judgment to modify their plan as appropriate.

Certain patients almost always come to HMC: significant trauma (Trauma Doc should get these calls), possible intracranial hemorrhages, possible AAAs, and most ODs. ODs in children <14 go to Children’s. Active labor should (almost) never come to HMC. Discuss any concerns with the attending.

“Closed” to Medic One
Emergency departments in King County cannot go on diversion to ambulance traffic unless the ED has physical plant failures. There is a “WaTrac” computer in the radio room, which continually updates if
hospitals are closed. The charge nurse is able to log in if you need to consult the “WaTrac” system. If that hospital is closed, inform the medics and ask for an alternate destination. Do not divert medics from HMC to other hospitals—consult the attending if you have questions.

**Miscellaneous Transportation Issues**

Group Health patients use the ED at Virginia Mason.

Chest pain and neurology patients going to Swedish go to the Cherry Hill Campus. All other Swedish patients go to the First Hill Campus.

If INR is 2-4, infuse 25U/kg (+/- 10%) body weight Bebulin over 10 minutes, not to exceed 200 IU/min

If INR is >4, infuse 40U/kg (+/- 10%) Bebulin over 10 minutes, not to exceed 200 IU/min

Repeat INR 15 minutes after completion of above Bebulin infusion and follow above algorithm for repeat Bebulin dosing as needed. Do not repeat more than twice (switch to “alternative pathway” if INR still elevated.)

Once INR <1.5, repeat INR testing every 4 hours for 24 hours. If INR increases to > 1.5, give another 10mg vitamin K IV and consider 2 more units FFP. Consult hematology if needed.

At 24 hours, repeat dose of Vitamin K 10 mg slowly IV over one hour

*** Obese patients, dose on a maximum weight of ideal body weight + 20% ***

Alternative (FFP) pathway

Immediately give additional 2 Units (for total of 4 Units) universal-donor FFP and request 4 U of type-specific FFP to be sent as soon as possible. Begin transfusion of first 4 units of FFP as soon as possible. Use a diuretic such as furosemide if the patient has a history of congestive heart failure, because of the potential for volume overload.

If INR is <1.5, stop infusion, if it has already been started, or do not initiate the infusion.

If INR is >1.5, complete the infusion. Upon completion of the infusion, immediately repeat the STAT Emergency Hemorrhage Panel.

If INR is still >1.5, give the 4 U of type-specific FFP. Upon completion of this infusion, immediately repeat the STAT Emergency Hemorrhage Panel.

If INR is still >1.5, consult hematology through the paging operator.

Once INR is 1.5 or less, repeat INR every four hours for 24 hours to make sure it does not drift up above 1.5.
**Reversal of Coagulopathies in Intraparenchymal Hemorrhage**

This is an abridged version. Please see Stroke algorithm for full version: [https://depts.washington.edu/uwstroke/stroke_rx/ReverseCoag.pdf](https://depts.washington.edu/uwstroke/stroke_rx/ReverseCoag.pdf)

1. STAT bloods for:
   - Emergency Hemorrhage Panel (PT/INR, fibrinogen, platelets, hematocrit)
   - PTT, TT
   - Emergency Type and Screen. If crash craniotomy is considered, request 2 Units emergent uncrossmatched Group O (universal donor) packed red blood cells.

2. Obtain history about use of antithrombotic treatments (antiplatelet agents, warfarin, unfractionated heparin, low-molecular-weight heparin, and others).

3. If on warfarin:
   - Give vitamin K 10 mg slowly IV over one hour
   - If INR ≥1.5 order “2 units FFP STAT” and transfuse 2 units universal-donor (AB) thawed plasma (FFP). At Harborview, call Transfusion Support Services (4-3088) and request 2 units of thawed AB plasma stat from PSBC (30 minute turn-around time).
   - Depending on INR (see below) infuse Bebulin immediately upon arrival from Pharmacy, in the dose indicated below. Do not wait until the FFP is infused.

Bebulin is a prothrombin complex concentrate (PCC). Relative contraindications to Bebulin use include:

1. history of thrombotic or thromboembolic event in past 6 weeks such as DVT, pulmonary embolism, ischemic stroke, acute coronary syndrome, acute mesenteric ischemia or acute peripheral arterial ischemia
2. known prothrombotic condition such as major surgery within 6 weeks, malignancy, DIC, or polytrauma
3. hepatic disease
4. intraparenchymal hemorrhage thought not survivable

IF ANY OF THESE CRITERIA IS MET, please discuss with stroke attending the possibility of giving bebulin nevertheless, or giving additional FFP (as outlined below) instead.

Bebulin-pathway

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**PATIENT MANAGEMENT**

**Consults**

**General Surgery:** For patients who might need an operation or admission to surgery, call General Surgery Consults (an R3). You can often find him/her in the fishbowl seeing trauma patients.

**Ob/Gyn:** Not in-house but on call for any Ob/Gyn problems. They must see any patient in active labor before being transferred to a hospital with Labor and Delivery, usually UWMC or Swedish First Hill. They should also be consulted for any pregnant patient with major respiratory illness or influenza as the disease is potentially severe in these patients.

**Psychiatry:** Patients who need an emergent psychiatric evaluation (i.e., suicidal/homicidal, new psychiatric symptoms) need to go to the PES (Psychiatric Emergency Services). You need to complete their medical evaluation and treatment, remove IVs and Foley's, and speak directly to the PES attending (4-3076) before the patient can move to that zone. Your ED medical note also needs to be completed so the PES has details of their medical clearance. Suicidal/homicidal patients must be in 2-point restraints while awaiting PES transfer.

If you have a psychiatric question (i.e. medication issues) but the patient does not need a full psych evaluation, the PES attending or resident may be able to see them in the main ED. Call the PES to discuss.

Patients who need a medical admission should be admitted. The admitting team then calls the Psychiatric Consult Liaison team. The PES is not involved in these patients.

King county jail patients are not transferred to the PES. Once they are medically cleared, they are transferred back to jail to see psychiatry there.

See “medical clearance for psych” below under Specific Medical Problems.

**Social Work:** Consult social workers with placement, transportation, shelter, and drug treatment issues. Consult them for all patients in whom you suspect domestic violence, sexual assault, child abuse or elder abuse. Consult them for any assaulted patient. They interface with families of critically ill or deceased patients, and will accompany you to speak with these families.

**ED pharmacist:** We have a pharmacist in the ED in the evening hours for assistance with medication questions. They sit on the Green side but cover all areas of the ED. Pharmacist contact number: 948-9010.
Physical Therapy: A physical therapist is present in the ED, varying daytime hours, 7 days a week. S/he can help with low back pain and other musculoskeletal problems, gait safety assessments. Place an order in the computer and take the printed copy from the printer below PT’s computer and place it in the basket near their desk. If the patient needs/wants to be seen during PT in-person coverage hours, page them to discuss the consult.

Intubation in the ED
If your patient needs to be intubated, the ED attending or one of the EM residents will intubate. As intubation is not in the internal medicine scope of practice, intubations will be given to the EM residents, even if they are practicing in another area.

Time-Sensitive Events

Code STEMI. If the medics send an EKG with ST elevations and the patient is coming to HMC, tell the attending and the charge nurse right away so the cath lab can be activated—this is a “code stemi”. Consider getting an EKG on patients with ANY concerning symptoms including pain, dyspnea, nausea, syncope, indigestion, etc, and do it right away, before proceeding with your full H&P. If you see ST elevations, tell the attending immediately. If the finding is new and real, activate the cath lab. Remember aspirin, oxygen, nitro, morphine. Our goal is <30 mins from ED arrival to cath lab. If there are inferior ST changes, do a right-sided EKG. If there are lateral changes, do a posterior EKG.

Code Stroke. A patient with stroke or TIA symptoms within 6.5 hours of arrival, or within 12 hours for posterior circulation symptoms is a code stroke. Call the charge nurse to activate. Do quick H&P, glucose check, labs, EKG, and non-contrast head CT immediately. Labs include EHP, “emergency hemorrhage panel,” which gets the coags back very quickly. Stroke algorithm is updated on-line: https://depts.washington.edu/uwstroke/stroke_rx/HMC_Rx_Algorithm.pdf

Code Sepsis. Draw a lactate (VBG or ABG) with the initial labs on any patient with known or suspected infection. If they have 2 or more SIRS criteria (T>38 or <36; HR>90; RR>20 or PaCO2<32 or intubated; WBC>12,000 or <4,000) make sure you draw 2 sets of blood cultures and give antibiotics as soon as possible. Give 2 liters IVF (20cc/kg) and re-draw the lactate. If 2nd lactate>4 or MAP<65, then ask the charge nurse to call a “code sepsis.” This will notify the MICU team and bring a stat nurse to the bedside. The patient will need a central line for CVP/ScvO2 monitoring which should be placed in the ED if at all possible. Use the “sepsis” order sets, which include guidance on antibiotics.

BP Control: Acute Ischemic Stroke (AHA guidelines)

**Nonthrombolytic candidates**
1. **DBP > 140 mm Hg**  Nitroprusside 0.5-10 μg/kg/min. Aim for 10% to 20% reduction in DBP.
2. **SBP > 220, DBP > 120**  Labetolol 10-20 mg IV OR May repeat or double every 10 min to max dose 300 mg. Alternative: Nicardipine 5 mg/hr, up to 15 mg/hr Aim for 10% to 20% reduction in DBP.
3. **SBP < 220, DBP < 120**  Observe unless other end-organs are involved (aortic dissection, acute myocardial infarction, severe congestive heart failure, or hypertensive encephalopathy.)

**Thrombolytic candidates**

**Pretreatment:**
- **SBP > 185 or DBP > 110**  1 to 2 inches of nitropasteur or Labetolol 10-20 mg IV

**During/after therapy:**

1. **Monitor BP**
   - Q 15 min for 2 hr
   - Q 30 min for 6 hr
   - Q 1 hour for 16 hr
2. **DBP > 140 mm Hg**  Nitroprusside 0.5 μg/kg/min, titrate prn
3. **SBP > 230 or DBP > 120**  Labetolol 10-20 mg IV May repeat or double every 10 min to max dose 300 mg. May start 2-8 mg/min drip after initial dose. Alternative: Nicardipine 5 mg/hr, up to 15 mg/hr If not effective: Nitroprusside
4. **>180/105 but <230/120**  Labetolol, dose above

BP Control: Intraparenchymal Hemorrhage (HMC guidelines)

**Goal:** 180/105

1. **SBP > 230 or DBP > 120**  Labetolol 20 mg IV, then 40mg, then 60 mg to max of 300 mg. Alternative, for HR<55: Hydralazine 10 mg IV q hr If not effective: Nicardipine 5 mg/hr, up to 15 mg/hr
2. **>180/105 but <230/120**  Labetolol, dose above
Selected Drugs continued

<table>
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<th>Intubation</th>
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| **Etomidate**  
Induction sedation | 20 mg IV (0.3 mg/kg) |
| **Succinylcholine***  
Induction paralysis | 1-2 mg/kg IV, may repeat x 1  
2-4 mg/kg IM |
| **Rocuronium****  
Alternative paralysis | 100 mg IV (1.0-1.2 mg/kg) once  
10-20 mg IV (0.2 mg/kg) every 10 min prn |
| **Fentanyl**  
Sedation/pain once intubated | 50-100 mcg IV prn |
| **Midazolam**  
Sedation/amnesia once intubated | 1-4 mg IV prn |
| **Propofol**  
Sedation/amnesia | 0.5 mg/kg IV bolus  
0.02 mg/kg/min starting, titrate to effect  
Max 0.1 mg/kg/min |

* Onset of action 1 minute.  
Duration of action 5-10 minutes.  
Contraindications: Renal failure, burns, neuromuscular disease, cardiac disease, ↑K+  
** Onset of action 1-6 minutes.  
Duration of action 12-15 minutes.

Necrotizing Soft Tissue Infections. Consider this diagnosis in patients with cellulitis or abscesses who have pain out of proportion to findings, tense edema, purpuric or necrotic areas, gas on plain film, rapid progression, WBC <5 or >15, Na <135, diabetes, or sepsis. Use the Code Sepsis orders to guide antibiotic therapy and consult general surgery immediately.

Pneumonia. Patients with pneumonia who need admission must get 2 sets of blood cultures followed by antibiotics within 4 hours of ED arrival. Keep an eye on their LOS on FirstNet, since ED arrival is often long before they get to a bed. PO antibiotics are fine, and should be given right away if IV access is a problem. If there is a delay in diagnosis, document that clearly, i.e. “diagnosis of pneumonia delayed because patient was cognitively impaired and complained of headache, not respiratory symptoms. Pneumonia found incidentally on CXR.” Draw a lactate level if there are 2 or more SIRS criteria (see Code Sepsis above.)

Admissions
Let the charge nurse know as soon as you decide that a patient will be admitted. Important info is admitting service, diagnosis, type of bed (tele, ICU, stroke unit, etc.), and diet. Note “Madison Clinic” for anyone with HIV and “isolation” if you suspect TB, meningitis, MRSA, and so on. Enter the admitting service into FirstNet as soon as possible.

If the admitting team is delayed, you can write holding orders to get the patient to the floor. The admitting team must agree to this and you will need to find out the name of the admitting attending.

Alcohol withdrawal admissions alternate between medicine and neurology.

Overdose admissions can go to neurology or medicine, but medicine admits overdoses of aspirin, Tylenol, insulin, digoxin, and other cardiac meds.

CNS infections can be admitted to neuro or med; give neuro the choice.

Cardiology admits:  
Rule out MI/ACS patients on telemetry  
Acute coronary syndromes  
New-onset atrial fibrillation/arrhythmias (Not a result of a medical process, e.g., pneumonia, alcohol, etc.)  
Congestive heart failure exacerbations or new onset  
Symptomatic valvular disorders  
High-risk, proven endocarditis  
Syncope with high likelihood of cardiac etiology
Ortho patients. Ortho should admit patients to their service if the patient’s chronic medical problems are stable, the standard being that you would discharge the patient if they didn’t have a fracture. If not, then a medicine admission is appropriate. Medicine consults and/or geriatrics should follow patients with medical problems who are admitted to ortho, and it is appropriate for you to call that service for ortho if you evaluated the patient.

Medical Clearance for Surgery: during normal work hours, Medicine Consult Service; at night or on weekends, Anesthesia.

Discharges
For all discharging patients, use FirstNet to generate a discharge form for them to sign and prescriptions.

Whenever possible, insert discharge instructions (pencil icon next to “patient education.”) If there is no appropriate instruction in FirstNet, look for some in Micromedex Aftercare instructions (link from Healthlinks) or patient education sections of MD Consult or UpToDate.

All discharges need some follow-up. Document which clinic you recommend in FirstNet using the pencil icon next to “follow-up.” Primary Care Provider is best if they have one. Aftercare Clinic is appropriate for acute needs (suture removal, lab re-checks, specific radiology studies, severe hypertension, or new-onset diabetes) for patients WITHOUT an established primary care clinic. Registration staff at the Back Desk schedule Aftercare appointments. There is a list of community clinics in FirstNet that should be given to all patients without an established PCP. Make sure the follow-up in FirstNet matches what you document in your note.

Specialty clinic referrals: Fill out the “UW Medicine referral request” form for all clinic referrals except for Aftercare and primary care. It should be placed in the basket in the ED near the pharmacist’s computer. Please also give the patient the clinic phone number in the discharge instructions.

Transfers to other hospitals: To transfer a patient to another facility there must be a MD-to-MD conversation. Fill out a COBRA/EMTALA form, including the NAME of the physician accepting the patient. The ED Attending must sign the EMTALA form. Make copies of our ED notes, labs and ask radiology for a disk with the images if transferring outside our system.

ED follow up: If you send tests that need follow up after the patient leaves the ED (i.e. HIV testing, STD testing, urine cultures, wound cultures), you will need to flag our follow up nurse Val in the discharge process. Positive

<table>
<thead>
<tr>
<th>Drug</th>
<th>Indication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epinephrine Bolus</td>
<td>VF/pulseless VT PEA/Asystole</td>
<td>1 mg IV or IO (10 mL of 1:10,000 solution) Repeat every 3-5 minutes</td>
</tr>
<tr>
<td>Vasopressin</td>
<td>VF/pulseless VT PEA/Asystole</td>
<td>40 units IV or IO Replaces first or second dose of epi Epi 1 mg every 3-5 minutes after vasopressin</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>VF/pulseless VT</td>
<td>300 mg IV/O May repeat 150 mg IV in 3-5 minutes Once resuscitated, 1 mg/min infusion X 6 hrs</td>
</tr>
<tr>
<td>Magnesium</td>
<td>Torsades de pointes VF/VT and suspected ↓</td>
<td>1-2 gm IV Once resuscitated, 0.5-1 gm/hr infusion</td>
</tr>
</tbody>
</table>

ACLS: Full Cardiac Arrest

<table>
<thead>
<tr>
<th>Drug</th>
<th>Indication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atropine</td>
<td>Symptomatic bradycardia</td>
<td>0.5-1 mg IV, repeat every 3-5 minutes to 3 mg</td>
</tr>
<tr>
<td>Dopamine</td>
<td>Symptomatic bradycardia</td>
<td>2-20 mcg/kg/min</td>
</tr>
<tr>
<td>Epinephrine Drip</td>
<td>Symptomatic bradycardia</td>
<td>2-10 mcg/min</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>Stable VT A Fib with WPW</td>
<td>150 mg IV over 10 minutes Repeat every 10 minutes as needed Max dose 2.2 gm/day</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>Stable VT with preserved LV function</td>
<td>100 mg (1-1.5 mg/kg) IV or IO May repeat ½ above dose in 3-5 minutes Once resuscitated, 1-4 mg/min infusion</td>
</tr>
<tr>
<td>Procaainamide</td>
<td>Stable WCT Re-entrant SVT (after adenosine) A fib + WPW</td>
<td>20-50 mg/min until arrhythmia is suppressed OR hypotension OR QRS increases &gt;50% Max dose 17 mg/kg 1-4 mg/min maintenance infusion</td>
</tr>
<tr>
<td>Adenosine</td>
<td>Stable SVT Stable monomorphic WCT</td>
<td>6 mg RAPID IV push 12 mg RAPD IV push</td>
</tr>
<tr>
<td>Diltiazem</td>
<td>Rate control for SVTs</td>
<td>15-20 mg IV over 2 minutes 20-25 mg IV after 15 minutes 5-15 mg/hr infusion, titrate to rate</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>Rate control for SVTs</td>
<td>5 mg IV, repeat every 5 minutes x 3</td>
</tr>
</tbody>
</table>
year for very dirty wounds.) Visit the Resident Orientation website for information on work-up of trauma patients.

**Vaginal Bleed**
Quantify the number of pads/tampons per hour the patient is bleeding, and for how long. Draw an initial CBC, β-HCG, and Rh factor. Consider coags. If bleeding is very heavy or patient is hypotensive, send a type and cross, place large bore IVs, and spin serial hemoglobins. If the patient is pregnant, vaginal bleeding represents ectopic pregnancy or miscarriage. If ectopic is a consideration, the patient must have a transvaginal ultrasound. If the β-HCG is > 1,500 yet no pregnancy is visible on transvaginal ultrasound, ectopic is likely. At lower β-HCG levels, ectopic is possible but may not be confirmed by ultrasound because an intrauterine pregnancy may not be visible either. β-HCG >50,000 means the pregnancy is advanced enough that ectopic is unlikely but not impossible.

Miscarriage may be threatened (os is closed), inevitable (os is open), or compete (os is closed and β-HCG is dropping.) Miscarrying patients without significant blood loss or pain can be discharged with a Gyn follow-up appointment in 48 hours. Rh(-) pregnant women need Rhogam during each episode of vaginal bleeding.

Blood cultures are automatically called back to Val but urine cultures are not and need to be put in for review. In First Net, under "ED disposition" go to "ED review needed" and select "yes" which will give you a text box for details on what needs follow up.

**Vital signs:** Any abnormal vital signs must be re-checked and documented prior to discharge. You also need to document resolution of signs or symptoms that may prevent a safe discharge (i.e. ataxia, delirium, N/V, dyspnea, etc.)

**Nursing:** Inform the nurse when the patient is ready for discharge. Nursing will discharge the patient after you have had a final conversation with the patient discussing plan of care and test results.

Patients discharged to the Jail, or SNFs require a copy of their note to go with them. Other patients may NOT get a copy even if they ask; they must call medical records for a copy. Jail patients should be told a specific follow-up date – recommend a particular clinic only, and the staff at jail will schedule.

**AMA discharges:** patients who are alert, oriented, and logical may sign out AMA. Keep your discussion with them non-confrontational and focus on their well-being. Have them sign the AMA form and invite them to return at any time. Patients who are intoxicated with drugs or alcohol, disoriented, suicidal, or on legal or psychiatric holds may not refuse care. Use restraints and/or sedation as needed to facilitate medical treatment. Discuss all AMA discharges with the attending prior to discharge. Inform the attending of all patients trying to elope.

**Discharge Meds:** From 0830-1930 weekdays, 0900-1800 Saturdays, the patient can take their prescriptions to outpatient pharmacy. After hours, if they want to leave with meds in hand, tube or fax the prescription to the inpatient pharmacy and hand write on the rx “send to ED”. This process sometimes takes several hours. A list of 24-hour pharmacies is available. There are bottles of acetaminophen and ibuprofen available in the ED to hand out to patients who would have difficulty buying a bottle (homeless patients, elderly with limited mobility). Medical Detox has their own Pyxis and should be able to handle withdrawal meds on-site, but any other meds a patient might need at detox (i.e. antibiotics or antihypertensives) should be sent with the patient. Jail patients do not need meds or prescriptions – just document what they should get in the “plan” part of your note.

**Social Work:** for patients who need referrals for shelters, drug and alcohol treatment, medical respite beds, or taxis. Consult them for ALL patients who have been physically assaulted. Get social work involved early since
their dispositions can take a long time. Taxis are reserved for people who have a legitimate medical problem preventing them from using the bus and no friends or family who can get them or to women leaving alone after dark. Bus vouchers and clothing may be available if needed. Do not promise the patient any specific services or benefits.

**Minors:** Patients less than 18 years who are not emancipated cannot be discharged or sign out AMA unless a parent or guardian is present. Notify social work if none is available.

**SPECIFIC MEDICAL PROBLEMS**

**Abdominal Pain**
Most life-threatening and easily missed diagnoses are AAA, ischemic bowel, and ruptured ectopic. Female patients with abdominal pain below the umbilicus need a pelvic. ED east is where we do pelvic exams as they are private rooms. Usual lab panel includes CBC, Chem 7, lipase, LFTs, and UA. Get β-HCG for all women ages 10-50. If suspicious for acute abdomen or appendicitis, consult general surgery. Pain above the umbilicus should be thought of as possible chest pain. The Acute Abdominal Series is over-used and rarely needed except to look for free air or obstruction.

**Abscesses and Cellulitis**
Small, superficial abscesses are drained in the ER. Remember to give IV pain meds if needed, culture the abscess, irrigate, pack it with iodoform gauze, and arrange for daily dressing/packing changes. Give tetanus if not documented within 5 years. If there is adjacent cellulitis, give antibiotics to cover MRSA. Larger, deeper abscesses and patients who appear seriously ill should be seen by surgery for possible operative drainage. Also see Necrotizing Soft Tissue Infections above.

**The Intoxicated patient**
We estimate that blood alcohol falls by 30-50 mg/dl an hour. Patients who are a danger to themselves or others due to aggressive or out-of-control behavior need 4-point restraints. Patients who are too intoxicated to walk safely, and too intoxicated to remember to stay in bed, get 2-point restraints. Patients who are able to ambulate safely and are not physically aggressive do not require restraints.

Most intoxicated patients get a blood alcohol level and consider giving Thiamine 100 mg PO, IV, or IM. AOB patients with a medical or surgical problem must be sober (i.e., BAL < 100) before they can be discharged so that they can understand their discharge instructions. Head bleeds and other serious problems sometimes masquerade as intoxication. Make sure to do serial neuro exams in patients who are wet prep. Don’t swab the os if the patient has rapid bleeding or advanced pregnancy.

Once the pelvic is done, take your gram stain and stain it using instructions posted in the lab. Examine with the microscope’s condenser up and diaphragm open. Go up to 100x. Do not put 40x lens in oil. If you see > 10 PMNs per oil immersion field, diagnose cervicitis. Cervicitis plus cervical motion tenderness, uterine tenderness, or adnexal tenderness defines PID.

If there is vaginal discharge, make a wet prep of the vaginal fluid. Use a cover slip and examine up to 40x. Examine with the microscope’s condenser down and diaphragm nearly closed. You are looking for signs of vaginitis caused by trichomonas, bacterial vaginosis, and yeast.

For men, you can use a thin swab to make a gram stain; > 10 PMNs per oil immersion field equals urethritis.

For men and women, send first-void urine for gonorrhea and chlamydia. Alternatively, one cervical or urethral swab can be sent for testing. Swab anus and/or pharynx for gonorrhea if needed. Assume anyone with cervicitis or urethritis has both organisms and treat presumptively with azithro 1 gm PO + ceftriaxone 250 mg IV/IM one time dose. Treat PID with ceftriaxone 250 mg IM/IV + doxy 100 mg PO bid x 14 days + metronidazole 500 mg PO bid x 14 days.

Consider sending RPR, particularly for MSM. Follow up with their primary care provider, no intercourse until all partners are seen by medical providers. Screening HIV tests can be done in the ED—Val will follow-up. (You flag this in FirstNet under “ED disposition” ➔ Follow-up needed ➔ “yes.”).

**TB**
If “r/o TB” is the patient’s main issue, they will go directly to an isolation room. It is fine to order a CXR before you see the patient – write “portable” and “r/o TB” on the request. If the film is ok, let the nurses know isolation is not needed and then see the patient. If TB remains a possibility, wear a PAPR hood during your exam.

Medical students should not see patients until TB has been ruled out.

**Trauma**
Medicine residents are encouraged to assist with major traumas and to pick up minor trauma patients if workload allows. Remember that all patients with skin breaks receive tetanus unless they have had it within 5 years (1
naproxen PO if no evidence of tamponade is present. Check for *pulse paradoxus*.

**Pharyngitis**
Rapid strep tests come back in an hour. If you diagnose strep, benzathine PCN 1.2 million units IM x 1 is preferable to oral antibiotics—excellent adherence and doesn’t hurt to swallow. Bilateral swollen tonsils may be viral—check monospot. Unilateral swelling or soft palate swelling is worrisome for peritonsilar abscess and should be seen by ENT. Remember A, B, C’s.

**Pneumonia**
See “Time Sensitive Events” above.

**Seizures**
Give IV Valium or Ativan. Do not paralyze a seizing patient. CT without contrast is indicated for new onset seizures; the patient will need a contrast CT or MRI later. Consider BAL, u tox, and consult neurology.

For patients with known seizures on anti-epileptics, check levels of Dilantin, phenobarbital, Tegretol, or valproate; no levels needed for gabapentin (Neurontin,) clonazepam (Klonopin,) or lamictal. If Dilantin level is low, re-load with fosphenytoin IV, or Dilantin 500 mg PO X 2 one hour apart. Consider CT without contrast for a change in seizure pattern or possible trauma sustained during seizure. If there is enough trauma for a head CT, consider the need for c-collar and c-spine films. Three seizures in a day or significant change in seizure pattern warrants neurology consult. They will decide whether to admit.

Withdrawal seizures: See Alcohol Withdrawal.

**Sexual Assaults**
Address only medical concerns (such as altered mental status) or possible injuries. A full history of the sexual assault, the genital exam, evidence collection, and prophylaxis for pregnancy and STD will be done by others. Keep SW informed about how long you think medical treatment will take.

**Sickle Cell Crisis**
Oxygen, fluids, and pain control are the keys to treatment for sickle cell crisis. Check CBC with differential and CXR if needed. Many patients have an ORCA care plan by their hematologist—check the chart.

**STDs**
A gram stain from the *cervical os* will help diagnose cervicitis. Swab the os and roll the swab on a glass slide right at the bedside. If there is a *vaginal pool*, sample this with a separate swab and put it in saline for your

stuporous or comatose, and make sure alcohol level is consistent with their level of consciousness.

**Disposition:** If patients are still intoxicated after medical treatment is completed and agree to go, they can be sent to the Sobering Center, AKA “sleep-off.” Patients with mild alcohol withdrawal can be discharged to Medical Detox if a bed is available. To access the Sobering Center, print out your discharge papers and ask social work to call the detox van to get the patient. At Medical Detox, patients get oral benzos and/or phenobarbital for alcohol withdrawal (or multiple symptomatic meds for heroin withdrawal); social work will call the center to see if space is available and if your particular patient is welcome there. Some “chronic inebriate” patients live at the 1811 Eastlake Project and can be safely discharged there. Check with social work. Patients known to the ER can be discharged to the street when they can walk and talk, even if the alcohol level is still high—a clinical diagnosis of sobriety is sufficient, and avoids alcohol withdrawal.

**Charting:** Document that the patient can ambulate without assistance and that the mental status has improved before discharge.

**Alcohol Withdrawal**
Alcohol withdrawal can be mild or severe. Mild withdrawal presents with tremulousness, hyperreflexia, and agitation. Severe withdrawal presents with sympathetic overload including hypertension, tachycardia, and seizure. Treatment of choice is benzodiazepines. If symptoms are controlled with a small amount of benzodiazepines, dispo home or to the street can be considered. If more benzos are needed, dispo should be admission to neurology or medicine, or medical detox. Abnormal mental status, seizures, or hallucinations mandate admission to the hospital. Jail handles withdrawal with oral benzos; if they send in a patient for withdrawal, it means this treatment has failed and we should admit the patient. Most patients who are withdrawing need repletion of electrolytes and thiamine. Check EtOH level on withdrawing patients, as some may be intoxicated but feign withdrawal symptoms.

**Anaphylaxis**
Remember A, B, C’s. If the patient has stridor or other symptoms of airway compromise, intubate early. Give epinephrine 0.3-0.5 ml 1:1,000 IM, diphenhydramine 50 mg IV, and methylprednisolone 125 mg IV. Watch blood pressure; epinephrine drip is appropriate for shock. For skin reactions without airway involvement, give diphenhydramine 25-50 mg PO/IV and consider steroids.

**Barochamber (at Virginia Mason, 583-6433)**
--Bends without trauma or drowning: route medics directly to VM.
Diving accidents when the patient is intubated, possibly drowned, or possible trauma: evaluate at HMC and consider transferring to VM for diving when stable.

Smoke inhalation or CO poisoning: get ABG with a carboxyhemoglobin level. Hyperbaric treatment should be considered for CO > 20% or any signs/symptoms of CO toxicity, including unconsciousness at the scene even if mental status is now normal. Neuro deficits, chest pain, and EKG changes also justify consideration of diving. Metabolic acidosis may be a manifestation of CO poisoning. Have a lower threshold to dive if the patient is pregnant or a child. Call the hyperbaric medicine doctor at VM to discuss these patients.

Since going to VM is a transfer, you will need to fill out a “Certification for patient transfer” (EMTALA/COBRA) form. The patient may be discharged from VM or, if admission is required, transferred back to HMC. Intubated or hypotensive patients need an arterial line prior to transfer – confirm this with the accepting physician at VM.

COPD/Asthma Exacerbation
Document peak flows. Treat aggressively with nebulizers (Albuterol and Ipratropium). There is an order set with respiratory therapy that may be appropriate for more severe exacerbations. Patients should receive at least three nebs before admission decision is made. Solumedrol 125 mg IV bolus followed by prednisone taper may keep the patient out of the hospital.

CVA
See Code Stroke under “Time Sensitive Events” above. Consult the UW Stroke Algorithm for management details. Remember to check bedside glucose and EKG; keep patient NPO. Avoid Foley and central lines if possible. BP control and TPA guidelines are at back of booklet

Domestic Violence, Elder Abuse, Child Abuse
In cases where you suspect domestic violence, or where the patient’s history does not match the physical exam, contact the social workers. If you suspect child abuse, the pediatric attending should be notified. Also, do not forget about elder abuse. Failure to thrive may be a presentation for elder abuse. Ask the patient if they have ever been hit, shaken, or yelled at. Contact the social worker if abuse is suggested. Consider photographs to document trauma.

Drowning
Scuba diving accidents should go to VM dive chamber as soon as possible (see Barochamber). Other near-drowning care is supportive. Intubated victims may need diuresis if unable to oxygenate adequately. Patients may have hemolysis, DIC, hypothermia. For possible trauma, discuss with the

150mg/kg IV loading dose. Use NAC for patients with 4-hour acetaminophen levels above the 'treatment line' on the nomogram, or for any patient with evidence of hepatic injury. Consider starting NAC before levels come back if the time since ingestion approaches 8 hours. The use of activated charcoal has been shown to decrease the need for NAC treatment in acetaminophen overdose.

Salicylate OD: These patients frequently present with a respiratory alkalosis and anion gap metabolic acidosis. Check a VBG or ABG if the anion gap is elevated or the level is toxic. Patients with acute overdose and levels approaching 100 mg/dL, or patients with significant toxicity (altered mental status, unstable vital signs, pulmonary edema) will require emergent hemodialysis. Get the Nephrology team involved early if the dose ingested predicts such a high level. Less severe ingestions may respond to urinary alkalization. Patients will compensate for metabolic acidosis with profound hyperventilation. Try to avoid intubation with salicylate toxicity, but if it becomes necessary, attempt to match the patient's prior minute ventilation after airway control.

Call the WA Poison Center (1-800-222-1222 or 1-800-709-0911) for any serious overdose or to discuss any case. The nurses and pharmacists there will offer consultation with the on-call toxicologist and will have updated information on therapy and potential antidotes. They also serve an important role in gathering and reporting epidemiologic data.

If the patient's mental status is normal, laboratory values are without significant abnormalities, and an appropriate time has passed since the ingestion, the patient may be "cleared" and moved to the PES. Certain delayed-release and long-acting medications (like Wellbutrin XL & Methadone) require a long period of observation (up to 24 hours) before patients can be considered "medically cleared." The PES requires a doc-to-doc discussion and complete note before they will take the patient.

Pain Control
Toradol 30 mg IV or 60 mg IM is an excellent alternative to opiates. Do NOT use it if the patient reports aspirin-induced asthma or has renal failure. Bottles of ibuprofen and Tylenol are available to give upon discharge to homeless patients or the elderly with limited mobility (and limited ability to get to a store to buy these meds); anything else needs a prescription. Be conservative in prescribing opiates upon discharge.

Pericarditis
Chest pain which is associated with changes in position, respirations, and diffuse ST segment elevations (and occasionally with PR depression) may be treated as an outpatient with Toradol IV in the ED followed by
for seizures. Ensure the airway is protected or controlled before & during GI decontamination. Activated charcoal should not be used for corrosive ingestions & is not effective for small molecules (alcohols) and inorganic ions (lithium, heavy metals). Whole bowel irrigation may be useful for patients who have ingested sustained-release medications or lead pellets/bullets. Gastric lavage is almost never indicated given a total lack of evidence that it provides any clinical benefit.

**Laboratories:** Most overdose patients can be managed without checking special laboratories. Useful studies include glucose, electrolytes, renal function, acetaminophen, salicylate, and ethanol levels. If the toxic agent is not apparent from the history, available bottles, vital signs, physical examination, & baseline laboratories, specific laboratories that are occasionally helpful include lithium level, digoxin level, phenytoin level, toxic alcohol screen, and comprehensive drug screen. Check the patient’s medical record for other possible ingestions and for other medications that may need levels measured. Check HCG if appropriate. When appropriate, use the acetaminophen nomogram (single ingestion with a known time of ingestion). Consider re-checking an acetaminophen or salicylate level in cases when co-ingestions may produce delayed absorption. While widely utilized, remember the limitations of the urine tox screen: it will only reliably detect naturally-occurring opiates (morphine, codeine, +/- heroin) and benzodiazepines metabolized to oxazepam (diazepam, lorazepam); it frequently fails to detect ‘designer’ drugs, especially amphetamines (e.g. MDMA, bath salts); and it should only be considered a marker of exposure, not of clinical toxicity.

All patients with a potentially serious overdose should have an EKG and cardiac monitoring. Measure the QRS & QTc intervals. Compare this to the chart in back of booklet. If the QRS is widened, give Sodium Bicarbonate 2 amps (1-2meq/kg) IV and consider starting a drip to prevent arrhythmia. If the QTc is extremely long, consider Magnesium Sulfate 2 grams to prevent the development of torsades. Use benzodiazepines to control seizures; standard antiepileptics (e.g. phenytoin) are often ineffective at controlling toxic-induced seizures. Check the pH with an ABG or VBG.

**Wide Anion gap:** Consider a toxic alcohol ingestion (methanol or ethylene glycol), cyanide, iron, salicylate, & lactic acidosis. Metformin can cause a progressive & severe lactic acidosis. If you are considering a toxic alcohol, remember that an elevated osmol gap is present early but may normalize once the parent compound is metabolized (i.e. a normal osmol gap does not ‘rule out’ a toxic alcohol ingestion, especially if the patient has an anion gap acidosis). Check the pH & PCO2 with a VBG or ABG.

**Acetaminophen OD:** N-Acetyl Cysteine (NAC) 140 mg/kg PO or N-Acetyl Cysteine (NAC) 140 mg/kg PO or

**Trauma Doc.** For awake and alert, unintubated, normal-looking patients, consider the potential for delayed pulmonary edema.

**Epistaxis**
Most bleeding will stop with gentle pressure while positioning the head in the “sniffing” position. Control hypertension. Consider serial spun hemoglobins for very brisk bleeding. Check for coagulopathy. You may need to use Oxymetolazone spray (Afrin), silver nitrate cautery or packing. If these measures fail, call ENT.

**Exposures: Blood/Body Fluid, Sexual Assault, Sexual Exposure to HIV**
These are handled in ED Blue by the mid-level providers. There are specific protocols so please don’t try to do it alone.

**GI Bleed**
Patients should have two large bore IVs. Usual labs include CBC, Chem 7, coags, type and cross, and serial hemoglobins (these are done in the ED, not the lab.) For active GI bleeding or report of hematemesis, consider NG lavage. If negative for blood, the tube can be removed. Call the MICU resident early and notify the GI Fellow and/or the Surgery R3 for unstable patients. Uncrossmatched blood is available STAT from transfusion support services if necessary (O neg if reproductive potential female, O pos otherwise). Consider Pantoprazole 80 mg IV bolus, 8 mg/hr gtt and Octreotide 50 microg IV bolus, 50 microg/hr gtt (if you are worried about variceal bleeding).

**Headache**
First line drugs include Compazine 10 mg IV and Toradol 60 mg IM/30 mg IV. Do not give Toradol if you are concerned about subarachnoid hemorrhage. Consider Imitrex for true migraines and 100% O2 for cluster. Document a complete neuro exam. A history consistent with a sentinel bleed requires a CT then LP (check coags early). If you are highly suspicious for meningitis, give dexamethasone 0.15mg/kg, then ceftriaxone and vancomycin while arranging CT and LP. Meningococcus is contagious – isolate patient during the work-up. Headache plus altered mental status may be encephalitis, without fever.

**Hypothermia**
\(<30^\circ C\). Call surgery to initiate invasive re-warming (bypass) and/or active internal re-warming such as peritoneal lavage or lavage with chest tubes. If in cardiac arrest, do usual ACLS keeping in mind that cardiac drugs may not have effect at low temperatures. Warm to \(>32^\circ\) before ending code unless there is strong evidence of death. If ROSC is achieved, warm to goal of \(32^\circ-34^\circ\). \(30^\circ-34^\circ\), use active external re-warming: warm oxygen, warm fluids, Bair Hugger. Standard ACLS.
Intracranial Hemorrhage
Most intracranial hemorrhage patients arrive as transfers from other facilities, via AirIift or ACLS ground transport. Spontaneous bleeds are handled by Medic 1 Doc and evaluated by Neurology, who calls neurosurgery at their discretion. Traumatic bleeds are handled by Trauma Doc and evaluated by Neurosurgery. Images usually arrive before the patient. Patients who arrive by Medic, and some Airlift patients, are coming directly from home with suspected ICH/ ischemic CVA. When you hear of these patients, inform radiology so they can be prepared to scan right away.

Elevate the patient’s head and give oxygen. Keep NPO. Check EKG, labs including emergency hemorrhage panel, type and cross, CXR (to check tube placement if they are intubated) and a brief neuro exam. Ask if the patient has taken aspirin, Plavix, NSAIDs, or warfarin in the last 7 days. If so, refer to Stroke Algorithm for reversal. Send for a head CT without contrast ASAP to confirm the diagnosis, or to check progression in transferred patients. Subarachnoid hemorrhages and most intraparenchymal hemorrhages will then need a CT Angio to look for aneurysm or AVM – confer with the radiologist and neurology.

Consider CT c-spine if the patient fell before/during the bleed.

If there are clinical or radiographic signs of herniation, call the “Type A Herniation Phone” at 910-2743. This is a direct line to Neurosurgery, for pre-arrivals or arrived patients. For pre-arrivals with signs of herniation, suggest Mannitol 1 gm/kg IV to referring providers.

BP control and reversal of anticoagulation guides are at back of booklet.

Medical Clearance for Psychiatry
Patients who arrive for “medical clearance” who are already involuntarily detained to a specific psych facility do not need to be seen in the PES. They need history, physical, and review of medical records. Labs and films are at your discretion, although some facilities (such as Navos) require every patient to have CBC, comprehensive chemistry, EtOH, UA, Utox. Once you are satisfied that the patient’s medical needs are addressed, and that their psych symptoms are not due to medical illness, contact Social Work. They will help arrange transportation. You may need to have MD-to-MD communication with the receiving facility. Social work will guide you on this. Detained patients should be in restraints while in the ED.

MI
See STEMI above under “Time Sensitive Events.” Remember ASA, nitro, morphine, and oxygen. Order the CXR portably using your radio so the patient stays on the monitor. Don’t forget the possibility of a PE or aortic dissection. Check a right-sided EKG if you see acute inferior EKG changes and posterior EKG if you see lateral changes.

Opiate OD
Suspected opiate ODs usually get 0.8 mg IV Narcan in the field. If the patient has decreased respiration while in the ER, additional Narcan may be needed. Remember to follow respiratory rate, not sats. If sats are low even with adequate respiratory drive, the patient may have aspirated. Patients should be observed for at least 90 minutes after the last Narcan dose. Labs and tox are not needed for straightforward opiate OD.

Altered mental status after Narcan is not expected; consider co-ingestion with another drug, or other medical problems causing altered mental status.

Methadone, Oxycontin, and MSContin overdoses require more time for the patient to recover. If Narcan is needed more than twice, consider admitting for a Narcan drip.

Opiate Withdrawal
Abdominal pain, nausea, vomiting, diarrhea, and anxiety are common manifestations of opiate withdrawal. Rhinorrhea, piloerection, and involuntary muscle jerks can confirm the diagnosis. IV fluids are not usually necessary. Compazine or Phenergan, robaxin and ibuprofen can be useful. Clonidine 0.1 mg PO can be used in the ER, but do not prescribe it for outpatient use. Medical detox will accept heroin withdrawal patients if they have space. Otherwise, offer treatment referrals from SW. Work up all fevers: fever is not a manifestation of opiate withdrawal.

Overdose
Remember the AB Cs. Check for a gag & the ability to protect the airway. If needed, intubate. If not ventilating, place an oropharyngeal or nasopharyngeal airway and do bag-valve-mask ventilation with 100% O2 while preparing to intubate.

If the overdose was within 1-2 hours and is suspected to have included a large ingestion of a medication with life-threatening toxicity (TCAs, beta blockers, calcium channel blockers, aspirin, methadone) consider decontaminating the GI tract. Also consider GI decontamination for sustained-release agents beyond the 1-2 hour limit. Activated charcoal, whole-bowel irrigation, and gastric lavage can be used. GI decontamination should be avoided in any patient with a depressed or altered mental status, hypotension or unstable vital signs, or patients at risk