# General Internal Medicine Review Course

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# HDU/ICU Basics

BAH HDU/ICU admissions

Stroke, Myocardial infarction, HTN emergency, DKA/HONK, Meningitis, GI bleed, Shock/sepsis/complicated malaria

Indications

Nursing care (hourly intervention)

Cardiac monitoring

Inability to protect airway

Monitoring after high risk procedures or major trauma

Organ failure or impending organ failure

Instability or shock

Reasonable chance of improvement (? Better served by palliative care)

# HDU/ICU Basics

- Be prepared – sometimes 5 minutes means LIFE versus DEATH
- Know how to recognize and stabilize / temporize a critically ill patient
  - Airway/breathing/oxygenation
  - Circulation/MAP/brain perfusion
- How many hours on average to stabilize a septic shock patient?
  - 1-hr and 6-hr sepsis bundle
  - Initial fluid management requires frequent reassessment
- Be gently honest with patients/families
  - ICU mortality world-wide 15-30%
  - Gauge patient and family capacity to discuss prognosis
  - Transfer to higher level of care might cause more harm than good
  - Medical futility

# HDU/ICU basics - expectations

- Round at least twice daily
- Update family every time you round
- Give each patient as much time as required by their illness
- All complex patients should be assessed by ORGAN SYSTEM approach
- Document dates for all key medications (cefriaxone day #3/7)
- Review **ALL** the data; review **SOURCE** data when possible
- Treat the whole patient not just the labs
- “Trust, but verify”
- Go to the bedside for any major change in clinical status
- Write drug titrations in mg/hr, concentration, and ml/hr

# HDU/ICU basics – hemodynamic stability

Step 1 – RAPID ASSESSMENT

- Blood pressure (palpable, manual, automatic, arterial line)
- Perfusion (brain, kidneys, peripherals, HR, Hgb, lactic acid, heart rhythm)
- Oxygenation (RR, work of breathing, 02 sat, oxygen requirement)

STEP 2 – RAPID FIRST INTERVENTION

- Rapid IV fluid boluses, Pressors (bolus versus drip)
- Oxygen: NC, NRB, CPAP, intubation and mechanical ventilation
- IV access for treatments: 3 lines minimum; prefer central line also

# HDU/ICU basics – underlying pathology

Step 3 – RAPID SECOND INTERVENTION

Identify and correct underlying driving pathology

- Hypovolemia -> replace fluid loss
- Hemorrhage -> blood transfusion
- Sepsis -> appropriate antibiotic
- Hypertensive emergency –> correct BP by 20% to safe levels
- Myocardial infarction -> reestablish coronary blood flow
- Arrhythmia -> rate control or cardiovert or pace
- Hypoxia -> oxygenate, open airways, treat pulmonary edema

# HDU/ICU basics – underlying pathology

Step 4 – REASSES RESPONSE TO INITIAL TREATMENT (before 6 hours)

Review source data

Review vital signs including urine output

Repeat targeted physical exam

Order repeat key labs (timing….order 2 sets of labs?)

Quick update note in the file

Working diagnosis, prognosis, response to initial treatment, plan

# HDU / ICU care

Working diagnosis: Acute MI

Interval history: now chest pain free after thrombolytics, ECG shows improving ST elevation, not in cardiogenic shock, mild pulmonary edema, no significant arrhythmia

Labs: troponin 13 -> 23, Cr 1.3, WBC 11

Exam: unchanged; saturations > 95% on 2L NC

Plan:

1) trend troponin q8h until it peaks
2) RBS q4h, lipogram and U&Es and HgbA1c in the morning
3) Liquid diet for today then advance as tolerated
4) Continue cardiac monitor/ICU level of care
5) Continue enoxaparin, clopidogrel, asa, rosuvastatin, carvedilol

# HDU/ICU basics – underlying pathology

Step 5 – REASSES RESPONSE TO TREATMENT (12 hours)

- Review source data
- Review vital signs including urine output
- Repeat full physical exam
- IS THERE IMPROVEMENT? SAME WORKING DIAGNOSIS?
- Organ system based note for complex patients
- Note: working diagnosis, response to treatment, prognosis
- Update family on progress / prognosis / expectation

# HDU/ICU basics – talking to patients/family

- Working diagnosis versus final diagnosis
  - Empiric treatments
  - Modifly as results come in
  - Modify based on observed response to treatment
- Response to initial treatment versus overall prognosis
- On-going treatments and tests
- Medical prognostic signs and hope for recovery
- Allow for unknowns in a treatment context
- Allow for time to determine prognosis and response

# HDU / ICU basics

- Mortality – 20% to 30% acceptable for ICUs
- Mortality – Less than 20% for HDUs
- Dealing with highly morbid or highly lethal medical conditions
- Coordination of “higher” level of care
  - Transfers are dangerous – even for CT scans
  - Air lift may not alter long-term prognosis
  - Important if a key test or treatment that is **expected to significantly improve** morbidity or mortality (stent, dialysis, radiation, lung biopsy, rehab)

# HDU / ICU basics - tips

- Do the best you can
- Get help … 2 brains are better than 1 brain
- Check back frequently until stable
- If not improving -> back to the beginning, assess each organ again, use mindfulness and rational decision making pathway, look for co-morbidities you may have missed, look for foreign objects, treatments ordered but not done
- KNOW the timeline of expected improvement for each diagnosis
- Written handoff