Medical Documentation

History and Physical Examination

Identifying Data: Patient's name; age, race, sex. List the patient's significant medical problems. Name of informant (patient, relative).

Chief Complaint: Reason given by patient for seeking medical care and the duration of the symptom. List all of the patient's medical problems.

History of Present Illness (HPI): Describe the course of the patient's illness, including when it began, character of the symptoms, location where the symptoms began; aggravating or alleviating factors; pertinent positives and negatives. Describe past illnesses or surgeries, and past diagnostic testing.

Past Medical History (PMH): Past diseases, surgeries, hospitalizations; medical problems; history of diabetes, hypertension, peptic ulcer disease, asthma, myocardial infarction, cancer. In children include birth history, prenatal history, immunizations, and type of feedings.

Medications:

Allergies: Penicillin, codeine?

Family History: Medical problems in family, including the patient's disorder. Asthma, coronary artery disease, heart failure, cancer, tuberculosis.

Social History: Alcohol, smoking, drug usage. Marital status, employment situation. Level of education.

Review of Systems (ROS):

General: Weight gain or loss, loss of appetite, fever, chills, fatigue, night sweats.
Skin: Rashes, skin discolorations.
Head: Headaches, dizziness, masses, seizures.
Eyes: Visual changes, eye pain.
Ears: Tinnitus, vertigo, hearing loss.
Nose: Nose bleeds, discharge, sinus diseases.
Mouth and Throat: Dental disease, hoarseness, throat pain.
Respiratory: Cough, shortness of breath, sputum (color).
Cardiovascular: Chest pain, orthopnea, paroxysmal nocturnal dyspnea; dyspnea on exertion, claudication, edema, valvular disease.
Gastrointestinal: Dysphagia, abdominal pain, nausea, vomiting, hematemesis, diarrhea, constipation, melena (black tarry stools), hematochezia (bright red blood per rectum).
Genitourinary: Dysuria, frequency, hesitancy, hematuria, discharge.
Gynecological: Gravida/para, abortions, last menstrual period (frequency, duration), age of menarche, menopause; dysmenorrhea, contraception, vaginal bleeding, breast masses.
Endocrine: Polyuria, polydipsia, skin or hair changes, heat intolerance.
Musculoskeletal: Joint pain or swelling, arthritis, myalgias.
Skin and Lymphatics: Easy bruising, lymphadenopathy.
Neuropsychiatric: Weakness, seizures, memory changes, depression.

Physical Examination

General appearance: Note whether the patient appears ill, well, or malnourished.
Vital Signs: Temperature, heart rate, respirations, blood pressure.
Skin: Rashes, scars, moles, capillary refill (in seconds).
Lymph Nodes: Cervical, supraclavicular, axillary, inguinal nodes; size, tenderness.
Head: Bruising, masses. Check fontanelles in pediatric patients.
Eyes: Pupils equal round and react to light and accommodation (PERRLA); extra ocular movements intact (EOMI), and visual fields. Funduscopy (papilledema, arteriovenous nicking, hemorrhages, exudates); scleral icterus, ptosis.

Ears: Acuity, tympanic membranes (dull, shiny, intact, injected, bulging).

Mouth and Throat: Mucus membrane color and moisture; oral lesions, dentition, pharynx, tonsils.

Neck: Jugulovenous distention (JVD) at a 45 degree incline, thyromegaly, lymphadenopathy, masses, bruits, abdominomjugular reflex.

Chest: Equal expansion, tactile fremitus, percussion, auscultation, rhonchi, crackles, rubs, breath sounds, egophony, whispered pectoriloquy.

Heart: Point of maximal impulse (PMI), thrills (palpable turbulence); regular rate and rhythm (RRR), first and second heart sounds (S1, S2); gallops (S3, S4), murmurs (grade 1-6), pulses (graded 0-2+).

Breast: Dimpling, tenderness, masses, nipple discharge; axillary masses.

Abdomen: Contour (flat, scaphoid, obese, distended); scars, bowel sounds, bruits, tenderness, masses, liver span by percussion; hepatomegaly, splenomegaly; guarding, rebound, percussion note (tympanic), costovertebral angle tenderness (CVAT), suprapubic tenderness.

Genitourinary: Inguinal masses, hernias, scrotum, testicles, varicoceles.

Pelvic Examination: Vaginal mucosa, cervical discharge, uterine size, masses, adnexal masses, ovaries.

Extremities: Joint swelling, range of motion, edema (grade 1-4+); cyanosis, clubbing, edema (CCE); pulses (radial, ulnar, femoral, popliteal, posterior tibial, dorsalis pedis; simultaneous palpation of radial and femoral pulses).

Rectal Examination: Sphincter tone, masses, fissures; test for occult blood, prostate (nodules, tenderness, size).

Neurological: Mental status and affect; gait, strength (graded 0-5); touch sensation, pressure, pain, position and vibration; deep tendon reflexes (biceps, triceps, patellar, ankle; graded 0-4+); Romberg test (ability to stand erect with arms outstretched and eyes closed).

Cranial Nerve Examination:

I: Smell
II: Vision and visual fields
III, IV, VI: Pupil responses to light, extraocular eye movements, ptosis
V: Facial sensation, ability to open jaw against resistance, corneal reflex.
VII: Close eyes tightly, smile, show teeth
VIII: Hears watch tic; Weber test (lateralization of sound when tuning fork is placed on top of head); Rinne test (air conduction last longer than bone conduction when tuning fork is placed on mastoid process)
IX, X: Palette moves in midline when patient says “ah,” speech
XI: Shoulder shrug and turns head against resistance
XII: Stick out tongue in midline

Labs: Electrolytes (sodium, potassium, bicarbonate, chloride, BUN, creatinine), CBC (hemoglobin, hematocrit, WBC count, platelets, differential), X-rays, ECG, urine analysis (UA), liver function tests (LFTs).

Assessment (Impression): Assign a number to each problem and discuss separately. Discuss differential diagnosis and give reasons that support the working diagnosis; give reasons for excluding other diagnoses.

Plan: Describe therapeutic plan for each numbered problem, including testing, laboratory studies, medications, and antibiotics.

Admission Check List

1. Call and request old chart, ECG, and X-rays.
2. Stat labs: CBC, Chem 7, cardiac enzymes (myoglobin, troponin, CPK), INR, PT, C&S, ABG, UA.
3. Labs: Toxicology screens and drug levels.
4. Cultures: Blood culture x 2, urine and sputum culture (before initiating antibiotics), sputum Gram stain, urinalysis.
5. CXR, ECG, diagnostic studies.
6. Discuss case with resident, attending, and family.

Progress Notes

Daily progress notes should summarize developments in a patient's hospital course, problems that remain active, plans to treat those problems, and arrangements for discharge. Progress notes should address every element of the problem list.
**Subjective:** Any problems and symptoms of the patient should be charted. Appetite, pain, headaches or insomnia may be included.

**Objective:**
- General appearance.
- Vitals, including highest temperature over past 24 hours. Fluid I/O (inputs and outputs), including oral, parenteral, urine, and stool volumes.
- Physical exam, including chest and abdomen, with particular attention to active problems. Emphasize changes from previous physical exams.
- Labs: Include new test results and circle abnormal values.
- **Current medications:** List all medications and dosages.
- **Assessment and Plan:** This section should be organized by problem. A separate assessment and plan should be written for each problem.

**Procedure Note**
A procedure note should be written in the chart when a procedure is performed. Procedure notes are brief operative notes.

**Procedure Note**
- **Date and time:**
- **Procedure:**
- **Indications:**
- **Patient Consent:** Document that the indications and risks were explained to the patient and that the patient consented: “The patient understands the risks of the procedure and consents in writing.”
- **Lab tests:** Relevant labs, such as the INR and CBC, chemistry.
- **Anesthesia:** Local with 2% lidocaine.
- **Description of Procedure:** Briefly describe the procedure, including sterile prep, anesthesia method, patient position, devices used, anatomic location of procedure, and outcome.
- **Complications and Estimated Blood Loss (EBL):**
- **Disposition:** Describe how the patient tolerated the procedure.
- **Specimens:** Describe any specimens obtained and labs tests which were ordered.

**Discharge Note**
The discharge note should be written in the patient’s chart prior to discharge.

**Discharge Note**
- **Date/time:**
- **Diagnoses:**
- **Treatment:** Briefly describe treatment provided during hospitalization, including surgical procedures and antibiotic therapy.
- **Studies Performed:** Electrocardiograms, CT scans.
- **Discharge Medications:**
- **Follow-up Arrangements:**

**Discharge Summary**
- **Patient's Name and Medical Record Number:**
- **Date of Admission:**
- **Date of Discharge:**
- **Admitting Diagnosis:**
- **Discharge Diagnosis:**
- **Attending or Ward Team Responsible for Patient:**
- **Surgical Procedures, Diagnostic Tests, Invasive Procedures:**
- **Brief History, Pertinent Physical Examination, and Laboratory Data:** Describe the course of the patient’s disease up until the time that the patient came to the hospital, including physical exam and laboratory data.
- **Hospital Course:** Describe the course of the patient’s illness while in the hospital, including evaluation, treatment, medications, and outcome of treatment.
- **Discharged Condition:** Describe improvement or deterioration in the patient's condition, and describe present status of the patient.
- **Disposition:** Describe the situation to which the patient will be discharged (home, nursing home), and indicate who will take care of patient.
- **Discharged Medications:** List medications and instructions for patient on taking the medications.
- **Discharged Instructions and Follow-up Care:** Date of return for follow-up care at clinic; diet, exercise.
- **Problem List:** List all active and past problems.
- **Copies:** Send copies to attending, clinic, consultants.
Prescription Writing

- Patient's name:
- Date:
- Drug name, dosage form, dose, route, frequency (include concentration for oral liquids or mg strength for oral solids): Amoxicillin 125mg/5mL 5 mL PO tid
- Quantity to dispense: mL for oral liquids, # of oral solids
- Refills: If appropriate
- Signature

Cardiovascular Disorders

ST-Segment Elevation Myocardial Infarction

1. Admit to: Coronary care unit
2. Diagnosis: Rule out myocardial infarction
3. Condition:
4. Vital Signs: q1h. Call physician if pulse >90, <60; BP >150/90, <90/60; R>25, <12; T >38.5°C.
5. Activity: Bed rest with bedside commode.
6. Nursing: Guaiac stools. If patient has chest pain, obtain 12-lead ECG and call physician.
7. Diet: Cardiac diet, 1-2 gm sodium, low-fat, low-cholesterol diet. No caffeine or temperature extremes.
8. IV Fluids: D5W at TKO
9. Special Medications:
   - Oxygen 2-4 L/min by NC.
   - Aspirin 325 mg PO, chew and swallow immediately, then aspirin EC 162 mg PO qd OR Clopidogrel (Plavix) 75 mg PO qd (if allergic to aspirin).
   - Nitroglycerin 10 mcg/min infusion (50 mg in 250-500 mL D5W, 100-200 mcg/mL). Titrate to control symptoms in 5-10 mcg/min steps, up to 1-3 mcg/kg/min; maintain systolic BP >90 OR
   - Nitroglycerin SL, 0.4 mg (0.15-0.6 mg) SL qmin until pain free (up to 3 tabs) OR
   - Nitroglycerin spray (0.4 mg/aerosol spray) 1-2 sprays under the tongue q5min; may repeat x 2.
   - Heparin 60 U/kg IV (max 4000 U) push, then 12 U/kg/hr (max 1000 U/hr) by continuous IV infusion for 48 hours to maintain aPTT of 50-70 seconds. Check aPTT q6h x 4, then qd. Repeat aPTT 6 hours after each heparin dosage change.
   - Beta-Blockers (within the first 12 hours of onset of chest pain): Contraindicated in cardiogenic shock.
     - Metoprolol (Lopressor) 5 mg IV q2-5min x 3 doses; then 25 mg PO q6h for 48h, then 100 mg PO q12h; hold if heart rate <60/min or systolic BP <100 mm Hg OR
     - Atenolol (Tenormin), 5 mg IV, repeated in 5 minutes, followed by 50-100 mg PO qd OR
     - Esmolol (Brevibloc) 500 mcg/kg IV over 1 min, then 50 mcg/kg/min IV infusion, titrated to heart rate >60 bpm (max 300 mcg/kg/min).
   - Angiotensin Converting Enzyme Inhibitor (within the first 24 hours of onset of chest pain):
     - Lisinopril (Zestril, Prinivil) 2.5-5 mg PO qd; titrate to 10-20 mg qd.
   - Long-Acting Nitrates:
     - Nitroglycerin patch 0.2 mcg/hr qd. Allow for nitrate-free period to prevent tachyphylaxis.
     - Isosorbide dinitrate (Isordil) 10-60 mg PO tid [5,10,20,
30,40 mg OR

-Isosorbide mononitrate (Indur) 30-60 mg PO qd.

pFOX (partial fatty acid oxidation) inhibitors

-Runalazine (Ranexa) 500 mg twice daily, which can be increased to a maximum of 1000 mg twice daily as needed; contraindicated in hepatic impairment or pre-existing QT prolongation.

Aldosterone Receptor Blocker if EF <40%:

- Eplerenone (Inspra) 24 mg PO qd
- Spironolactone (Aldactone) 25 mg PO qd

Statins:

- Rosuvastatin (Crestor) 10 mg PO qhs
- Atorvastatin (Lipitor) 10 mg PO qhs
- Pravastatin (Pravachol) 40 mg PO qhs OR
- Simvastatin (Zocor) 40 mg PO qhs OR
- Lovastatin (Mevacor) 20 mg PO qhs
- Fluvastatin (Lescol) 10-20 mg PO qhs

Symptomatic Medications:

- Morphine sulfate 2-4 mg IV push prn chest pain
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache
- Lorazepam (Ativan) 1-2 mg PO tid-qid prn anxiety
- Ondansetron (Zofran) 2-4 mg IV q4h prn nausea or vomiting
- Famotidine (Pepcid) 20 mg IV/PO bid
- Lansoprazole (Prevacid) 30 mg qd

Extras:

- ECG stat and in 12h and in AM, portable CXR, impedance cardiography, echocardiogram
- Cardiology consult

Labs:

- SMA7 and 12, magnesium
- Cardiac enzymes: CPK, CPK-MB, troponin I, myoglobin STAT and q8h
- CBC, INR/PTT, UA

11. Symptomatic Medications:

- Morphine sulfate 2-4 mg IV push prn chest pain
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache
- Lorazepam (Ativan) 1-2 mg PO tid-qid prn anxiety
- Ondansetron (Zofran) 2-4 mg IV q4h prn nausea or vomiting
- Famotidine (Pepcid) 20 mg IV/PO bid
- Lansoprazole (Prevacid) 30 mg qd

12. Extras:

- ECG stat and in 12h and in AM, portable CXR, impedance cardiography, echocardiogram
- Cardiology consult

13. Labs:

- SMA7 and 12, magnesium
- Cardiac enzymes: CPK, CPK-MB, troponin I, myoglobin STAT and q8h

Non-ST Segment Elevation Myocardial Infarction (NSTEMI) and Unstable Angina

1. Admit to: Coronary care unit
2. Diagnosis: Acute coronary syndrome
3. Condition:
4. Vital Signs: q1h. Call physician if pulse >90,<60; BP >150/90, <90/80; R>25, <12; T >38.5°C.
5. Activity: Bed rest with bedside commode.
6. Nursing: Guaiac stools. If patient has chest pain, obtain 12-lead ECG and call physician.
7. Diet: Cardiac diet, 1-2 gm sodium, low fat, low cholesterol. No caffeine or temperature extremes.
8. IV Fluids: D5W at TKO
9. Special Medications:
- Oxygen 2-4 L/min by NC.
- Aspirin 325 mg PO, chew and swallow immediately, then aspirin EC 162 mg PO qd OR
- Clopidogrel (Plavix) 75 mg PO qd (if allergic to aspirin)
- Nitroglycerin infusion 10 mcg/min infusion (50 mg in 250-500 mL D5W, 100-200 mcg/mL). Titrate to control symptoms in 5-10 mcg/min steps, up to 1-3 mcg/kg/min; maintain systolic BP >90 OR
- Nitroglycerin SL 0.4 mg SL q6min until pain-free (up to 3 tabs) OR
- Nitroglycerin spray (0.4 mg/aerosol spray) 1-2 sprays under the tongue q 5min; may repeat 2 times.
- Heparin 60 UI/kg IV push, then 15 UI/kg/hr by continuous IV infusion for 48 hours to maintain aPTT of 50-70 seconds. Check aPTTq6h x 4, then qd. Repeat aPTT 6 hours after each dosage change.

10. Glycoprotein IIb/IIIa Blockers in High-Risk Patients and Those with Planned Percutaneous Coronary Intervention (PCI):
- Eptifibatide (Integrilin) 180 mcg/kg IVP, then 2 mcg/kg/min for 48-72 hours OR
- Tirofiban (Aggrastat) 0.4 mcg/kg/min for 30 min, then 0.1 mcg/kg/min for 48-198 hours.

11. Glycoprotein IIb/IIIa Blockers for Use During PCI:
- Abciximab (ReoPro) 0.25 mg/kg IVP, then 0.125 mcg/kg/min IV infusion for 12 hours OR
- Eptifibatide (Integrilin) 180 mcg/kg IVP, then 2 mcg/kg/min for 18-24 hours.

- Metoprolol (Lopressor) 5 mg IV q2-5min x 3 doses; then 25 mg PO q6h for 48h, then 100 mg PO q12h; keep HR <60/min, hold if systolic BP <100 mm Hg OR
- Atenolol (Tenormin), 5 mg IV, repeated in 5 minutes, followed by 50-100 mg PO qd OR
- Esmolol (Brevibloc) 50 mcg/kg/IV over 1 min, then 50 mcg/kg/min IV infusion, titrated to heart rate >60 bpm (max 300 mcg/kg/min).

13. Angiotensin Converting Enzyme Inhibitors:
- Lisinopril (Zestril, Prinivil) 2.5-5 mg PO qd; titrate to 10-20 mg qd
- Benazepril (Lotensin) 10 mg qd OR
- Ramipril (Altace) 5-10 mg qd OR
- Perindopril (Aceon) 4-8 mg qd

14. Long-Acting Nitrates:
- Nitroglycerin patch 0.2 mg/hr qd. Allow for nitrate-free period to prevent tachyphylaxis.
- Nitrargyl (Isordil) 10-60 mg PO bd [5,10,20, 30,40 mg] OR
Isosorbide mononitrate (Imdur) 30-60 mg PO qd.

Statins:
- Rosuvastatin (Crestor) 10 mg PO qd OR
- Atorvastatin (Lipitor) 10 mg PO qhs OR
- Pravastatin (Pravachol) 40 mg PO qhs OR
- Simvastatin (Zocor) 40 mg PO qhs OR
- Lovastatin (Mevacor) 20 mg PO qhs OR
- Fluvastatin (Lescol) 10-20 mg PO qhs.

11. Symptomatic Medications:
- Morphine sulfate 2-4 mg IV push prn chest pain.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
- Lorazepam (Ativan) 1-2 mg PO tid-qid prn anxiety.
- Zolpidem (Ambien) 5-10 mg PO qhs prn insomnia.
- Docusate (Colace) 100 mg PO bid.
- Ondansetron (Zofran) 2-4 mg IV q4h prn N/V.
- Famotidine (Pepcid) 20 mg IV/PO bid OR
- Lansoprazole (Prevacid) 30 mg qd.

12. Extras: ECG stat and in 12h and in AM, portable CXR, impedance cardiography, echocardiogram. Cardiology consult.

13. Labs: SMA7 and 12, magnesium. Cardiac enzymes: CPK, CPK-MB, troponin T, myoglobin STAT and q6h for 24h. CBC, INR/PTT, UA.

### Congestive Heart Failure

1. Admit to:
2. Diagnosis: Congestive Heart Failure
3. Condition:
4. Vital Signs: q1h. Call physician if P >120; BP >150/100 <80/60; T >38.5°C; R >25, <10.
5. Activity: Bed rest with bedside commode.
8. IV Fluids: Heparin lock with flush q shift.

### Diuretics:
- Furosemide (Lasix) 10-160 mg IV qd-bid or 20-80 mg PO qAM-bid [20, 40, 80 mg] or 10-40 mg/hr IV infusion OR
- Torsemide (Demadex) 10-40 mg IV or PO qd; max 200 mg/day [5, 10, 20, 100 mg] OR
- Bumetanide (Bumex) 0.5-1.0 mg IV q2-3h until response; then 0.5-1.0 mg IV q8-24h (max 10 mg/d); or 0.5-2.0 mg PO qAM.
- Metolazone (Zaroxolyn) 2.5-10 mg PO qd, max 20 mg/d; 30 min before loop diuretic [2.5, 5, 10 mg].

### ACE Inhibitors:
- Quinapril (Accupril) 5-10 mg PO qd x 1 dose, then 20-80 mg PO qd in 1 to 2 divided doses [5, 10, 20, 40 mg] OR
- Lisinopril (Zestril, Prinivil) 5-40 mg PO qd [5, 10, 20, 40 mg] OR
- Benazepril (Lotensin) 10-20 mg PO qd-bid, max 80 mg/d [5, 10, 20, 40 mg] OR
- Foosinopril (Monopril) 10-40 mg PO qd, max 80 mg/d [10, 20 mg] OR
- Ramipril (Altace) 2.5-10 mg PO qd, max 20 mg/d [2.5, 5, 10 mg].
- Captopril (Capoten) 6.25-50 mg PO q8h [12.5, 25, 50, 100 mg] OR
- Enalapril (Vasotec) 1.25-5 mg slow IV push q8h or 2.5-20 mg PO bid [5, 10, 20 mg] OR
- Loxapril (Univasc) 7.5 mg PO qd x 1 dose, then 7.5-15 mg PO qd-bid [7.5, 15, 15 mg tabs] OR
- Trandolapril (Mavik) 1 mg qd x 1 dose, then 2-4 mg qd [1, 2, 4 mg tabs].

### Angiotensin-II Receptor Blockers:
- Irbesartan (Avapro) 150 mg qd, max 300 mg qd [75, 150, 300 mg].
- Losartan (Cozaar) 25-50 mg bid [25, 50 mg].
- Valsartan (Diovan) 80 mg qd; max 320 mg qd [80, 160 mg].
- Candesartan (Atacand) 8-16 mg qd-bid [4, 8, 16, 32 mg].
- Telmisartan (Micardis) 40-80 mg qd [40, 80 mg].

### Adosterone Receptor Blockers:
- Spironolactone (Aldactone) 25 mg PO qd.
- Eplerenone (Inspra) 25 mg PO qd.

### Beta-Blockers:
- Carvedilol (Coreg) 1.625-3.125 mg PO bid, then slowly increase the dose every 2 weeks to target dose of 25-50 mg bid [tab 3.125, 6.25, 12.5, 25 mg] OR
- Metoprolol (Lopressor) start at 12.5 mg bid, then slowly increase to target dose of 100 mg bid [50, 100 mg] OR
- Bisoprolol (Zebeta) start at 1.25 mg qd, then slowly increase to target of 10 mg bid (5.10 mg) OR
- Metoprolol XL (Toprol XL) 50-100 mg PO qd.

### Diuretics:
- Spironolactone (Aldactone) 25 mg PO qd.
- Eplerenone (Inspra) 25 mg PO qd.

### Beta-Blockers:
- Carvedilol (Coreg) 1.625-3.125 mg PO bid, then slowly increase the dose every 2 weeks to target dose of 25-50 mg bid [tab 3.125, 6.25, 12.5, 25 mg] OR
- Metoprolol (Lopressor) start at 12.5 mg bid, then slowly increase to target dose of 100 mg bid [50, 100 mg] OR
- Bisoprolol (Zebeta) start at 1.25 mg qd, then slowly increase to target of 10 mg bid (5, 10 mg) OR
- Metoprolol XL (Toprol XL) 50-100 mg PO qd.

### Digoxin (Lanoxin) 0.125-0.25 mg PO or IV qd [0.125, 0.25, 0.5 mg].

### Inotropic Agents:
- Dobutamine (Dobutrex) 2.5-10 mcg/kg/min IV, max of 14 mcg/kg/min (500 mg in 250 mL DSW, 2 mcg/mL) OR
- Dopamine (Intropin) 3-15 mcg/kg/min IV (400 mg in 250 cc DSW, 1600 mcg/mL), titrate to CO >4, CI >2; systolic >90 OR
- Milrinone (Primacor) 0.375 mcg/kg/min IV infusion (40 mg in 200 mL NS, 0.2 mg/mL), titrate to 0.75 mcg/kg/min, arrhythmogenic; may cause hypotension.

### Vasodilators:
Nitroglycerin 5 mcg/min IV infusion (50 mg in 250 mL D5W). Titrate in increments of 5 mcg/min to control symptoms and maintain systolic BP >90 mmHg.

Nesiritide (Natrecor) 2 mcg/kg IV load over 1 min, then 0.010 mcg/kg/min IV infusion. Titrate in increments of 0.005 mcg/kg/min q3h to max 0.03 mcg/kg/min IV infusion.

-Isosorbide dinitrate/hydralazine (BiDil), 20 mg/37.5 mg tabs, 1-2 tabs tid; shown to decrease mortality in black patients with heart failure when added to standard treatment.

Potassium:
-KCL (Micro-K) 20-60 mEq PO qd if the patient is taking loop diuretics.

Pacing:
-Synchronized biventricular pacing if ejection fraction <40% and QRS duration >135 msec.

10. Symptomatic Medications:
-Morphine sulfate 2-4 mg IV push pm dyspnea or anxiety.
-Heparin 5000 U SQ q12h or enoxaparin (Lovenox) 1 mg/kg SC q12h.
-Docusate (Colace) 100-200 mg PO qhs.
-Famotidine (Pepcid) 20 mg IV/PO q12h OR
-Lansoprazole (Prevacid) 30 mg qd.

11. Extras: CXR PA and LAT, ECG now and repeat if chest pain or palpitations, impedance cardiography, echocardiogram.

12. Labs: SMA 7&12, CBC; B-type natriuretic peptide (BNP), cardiac enzymes: CPK, CPK-MB, troponin T, myoglobin STAT and q6h for 24h. Repeat SMA 7 in AM. UA.

Supraventricular Tachycardia

1. Admit to:
2. Diagnosis: PSVT
3. Condition:
4. Vital Signs: q1h. Call physician if BP >160/90, <90-60; apical pulse >130, <50; R >25, <10; T >38.5°C
5. Activity: Bedrest with bedside commode.
6. Nursing:
7. Diet: Low fat, low cholesterol, no caffeine.
8. IV Fluids: D5W at TKO.

Pharmacologic Therapy of Supraventricular Tachycardia:
-Adenosine (Adenocard) 6 mg rapid IV over 1-2 sec, followed by saline flush, may repeat 12 mg IV after 2-3 min, up to max of 30 mg total OR
-Verapamil (Isoptin) 2.5-5 mg IV over 2-3 min (may give calcium gluconate 1 gm IV over 3-6 min prior to verapamil); then 40-125 mg PO q8h [40, 80, 120 mg] or verapamil SR 120-240 mg PO qd [120, 180, 240 mg] OR
-Esmolol(Brevibloc) 500 mcg/kg IV over 1 min, then 50 mcg/kg/min IV infusion, titrated to HR of <80 (max of 300 mcg/kg/min) OR
-Diltiazem (Cardizem) 0.25 mg/kg IV over 2-5 minutes, followed by 5 mg/h IV Infusion. Titrate to max 15 mg/h; then diltiazem-CD (Cardizem-CD) 120-240 mg PO qd OR
-Metoprolol (Lopressor) 5 mg IVP q4-6h; then 50-100 mg PO bid, or metoprolol XL (Toprol-XL) 50-100 mg PO qd OR
-Digoxin (Lanoxin) 0.25 mg q4h as needed: up to 1.0-1.5 mg; then 0.125-0.25 mg PO qd.

10. Symptomatic Medications:
-Lorazepam (Ativan) 1-2 mg PO tid pm anxiety.
12. Labs: CBC, SMA 7 & 12, Mg, thyroid panel. UA.

Ventricular Arrhythmias

1. Ventricular Fibrillation and Tachycardia:
-If unstable (see ACLS protocol): Defibrillate with unsynchronized 200 J, then 360 J.
- Oxygen 100% by mask.
- Lidocaine (Xylocaine) loading dose 75-100 mg IV, then 2.4 mg/min IV OR
- Amiodarone (Cordarone) 300 mg in 100 mL of D5W, IV infusion over 10 min, then 900 mg in 500 mL of D5W, at 1 mg/min for 6 hrs, then at 0.5 mg/min thereafter; or 400 mg PO q8h x 14 days, then 200-400 mg qd.
- Also see “other antiarrhythmics” below.

2. Torsades de Pointes Ventricular Tachycardia:
-Correct underlying causes, including hypomagnesemia, and hypokalemia, and consider discontinuing quinidine, procainamide, disopyramide, moricizine, amiodarone, sotalol, ibutilide, phenothiazine, haloperidol, tricyclic and tetracyclic antidepressants, ketoconazole, itraconazole,
bepridil.
- Magnesium sulfate 1-4 gm in IV bolus over 5-15 min, or infuse 3-20 mg/min for 7-48h until QTc interval <440 msec.
- Isoproterenol (Isuprel), 2-20 mcg/min (2 mg in 500 mL D5W, 4 mcg/mL).
- Consider ventricular pacing and/or cardioversion.

3. Other Antiarrhythmics:
Class I:
- Moricizine (Ethmozine) 200-300 mg PO q8h, max 900 mg/d [200, 250, 300 mg].
Class Ib:
- Quinidine gluconate (Quinaglute) 324-648 mg PO q8-12h [324 mg].
- Procainamide (Procan, Procanbid) IV: 15 mg/kg IV loading dose at 20 mg/min, followed by 2-4 mg/min continuous IV infusion. PO: 500 mg (unsustained release) PO q2h x 2 doses, then Procanbid 1-2 gm PO q12h [500, 1000 mg].
- Disopyramide (Norpace, Norpace CR) 100-300 mg PO q6-8h [100, 150, 200 mg] or disopyramide CR 100-150 mg PO bid [100, 150 mg].
Class Ic:
- Flecainide (Tambocor) 50-100 mg PO q12h, max 400 mg/d [50, 100, 150 mg].
- Propafenone (Rythmol) 150-300 mg PO q8h, max 1200 mg/d [150, 200, 250 mg].

4. Extras:
- CXR, ECG, Holter monitor, signal averaged ECG, cardiology consult.

5. Labs:
- SMA 7&12, Mg, calcium, CBC, drug levels. UA.

Hypertensive Emergencies

1. Admit to:
2. Diagnosis: Hypertensive emergencies
3. Condition:
4. Vital Signs: q30min until BP controlled, then q4h.
5. Activity: Bed rest
8. IV Fluids: D5W at TKO.
9. Special Medications:
- Nitroprusside sodium 0.25-10 mcg/kg/min IV (50 mcg in 250 mL of DSW), titrate to desired BP
- Labetalol (Trandate, Normodyne) 20 mg IV bolus (0.25 mg/kg), then 20-80 mg boluses IV q10-15min, titrate to desired BP or continuous IV infusion of 1.0-2.0 mcg/min, titrate to desired BP. Ideal in patients with thoracic or aortic abdominal aneurysm.
- Enalaprilat (Vasotec IV) 1.25-5.0 mg IV q6h. Do not use in presence of acute myocardial infarction or bilateral renal stenosis.
- Esmolol (Brevibloc) 500 mcg/kg/min IV infusion for 1 minute, then 50 mcg/kg/min; titrate by 50 mcg/kg/min increments to 300 mcg/kg/min (2.5 gm in D5W 250 mL).
- Tolazoline (Betapace) 40-80 mg PO q6h; max 320 mg/d in 2-3 divided doses [80, 160 mg].
- Metoprolol (Toprol-XL) 50-200 mg PO qd [50, 100, 200 mg].

4. Extra:
- Amiodarone (Cordarone), PO loading 400-1200 mg/d in divided doses for 2-4 weeks, then 200-400 mg PO qd (5-10 mg/kg) [200 mg] or amiodarone (Cordarone) 300 mg in 100 mL of DSW, IV infusion over 10-20 min, then 900 mg in 500 mL of DSW, at 1 mg/min for 6 hrs, then at 0.5 mg/min thereafter.
- Phentolamine (pneochromocytoma), 5-10 mg IV, repeated as needed up to 20 mg.
- Trimethaphan (Arfonad [dissecting aneurysm]) 2-4
10. Symptomatic Medications:
- Acetaminophen (Tylenol) 500 mg PO q4-6h prn headache.
- Zolpidem (Ambien) 5-10 mg qhs prn insomnia.
- Docusate sodium (Colace) 100-200 mg PO qhs.

11. Extras: Portable CXR, ECG, impedance cardiography, echocardiogram.


Hypertension

I. Initial Diagnostic Evaluation of Hypertension
A. 15-Lead electrocardiography may document evidence of ischemic heart disease, rhythm and conduction disturbances, or left ventricular hypertrophy.
B. Screening labs. Complete blood count, glucose, potassium, calcium, creatinine, BUN, uric acid, and fasting lipid panel.
C. Urinalysis. Glucose, protein, and hemoglobin.
D. Selected patients may require plasma renin activity, 24 hour urine catecholamines.

II. Antihypertensive Drugs
A. Thiazide Diuretics
1. Hydrochlorothiazide (HCTZ, HydroDiuril), 12.5-25 mg qd [25 mg].
2. Chlorothiazide (Diuril) 250 mg qd [250, 500 mg].
3. Thiazide/Potassium Sparing Diuretic Combinations
   a. Maxzide (hydrochlorothiazide 50/triamterene 75 mg) 1 tab qd.
   b. Moduretic (hydrochlorothiazide 50 mg/amiloride 5 mg) 1 tab qd.
   c. Dyazide (hydrochlorothiazide 25 mg/triamterene 37.5) 1 cap qd.
B. Beta-Adrenergic Blockers
1. Cardioselective Beta-Blockers
   a. Atenolol (Tenormin) initial dose 50 mg qd, then 50-100 mg qd, max 200 mg/d [25, 50, 100 mg].
   b. Metoprolol XL (Toprol XL) 100-200 mg qd [50, 100, 200 mg tab ER].
   c. Bisoprolol (Zebeta) 2.5-10 mg qd; max 20 mg qd [5,10 mg].
2. Non-Cardioselective Beta-Blockers
   a. Propranolol LA (Inderal LA), 80-160 mg qd [60, 80, 120, 160 mg].
   b. Nadolol (Corgard) 40-80 mg qd, max 320 mg/d [20, 40, 80, 120, 160 mg].
   c. Pindolol (Visken) 5-20 mg qd, max 60 mg/d [5, 10 mg].
   d. Carteolol (Cartrol) 2.5-10 mg qd [2.5, 5 mg].
C. Angiotensin-Converting Enzyme (ACE) Inhibitors
1. Ramipril (Altace) 2.5-10 mg qd, max 20 mg/day [1.25, 2.5, 5, 10 mg].
2. Quinapril (Accupril) 20-80 mg qd [5, 10, 20, 40 mg].
3. Lisinopril (Zestril, Prinivil) 10-40 mg qd [2.5, 5, 10, 20, 40 mg].
4. Benazepril (Lotensin) 10-40 mg qd, max 80 mg/day [5, 10, 20, 40 mg].
5. Fosinopril (Monopril) 10-40 mg qd [10, 20 mg].
6. Enalapril ( Vasotec) 5-40 mg qd, max 40 mg/day [2.5, 5, 10, 20 mg].
7. Moexipril (Univasc) 7.5-15 mg qd [7.5 mg].
D. Angiotensin Receptor Blockers
1. Losartan (Cozaar) 25-50 mg bid [25, 50 mg].
2. Valsartan ( Diovan) 80-160 mg qd; max 320 mg qd [30, 80, 160 mg].
3. Irbesartan (Avapro) 150 mg qd; max 300 mg qd [75, 150, 300 mg].
4. Candesartan (Atacand) 8-16 mg qd-bid [4, 8, 16, 32 mg].
5. Telmisartan (Micardis) 40-80 mg qd [40, 80 mg].
E. Calcium Entry Blockers
1. Diltiazem SR (Cardizem SR) 60-120 mg bid [60, 90, 120 mg] or Cardizem CD 180-360 mg qd [120, 180, 240, 300 mg].
2. Nifedipine XL (Procardia-XL, Adalat-CC) 30-90 mg qd [30, 60, 90 mg].
3. Verapamil SR (Calan SR, Covera-HS) 120-240 mg qd [120, 180, 240 mg].
4. Amlodipine (Norvasc) 2.5-10 mg qd [2.5, 5, 10 mg].
5. Felodipine (Plendil) 5-10 mg qd [2.5, 5, 10 mg].

Syncope

1. Admit to: Monitored ward
2. Diagnosis: Syncope
3. Condition:
4. Vital Signs: q1h, postural BP and pulse q12h. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10
5. Activity: Bed rest.
7. Diet: Regular
8. IV Fluids: Normal saline at TKO.
9. Special medications:
   High-Grade AV Block with Syncope:
   - Atropine 1 mg IV x 2.
   - Isoproterenol 0.5-1 mcg/min initially, then slowly titrate to 10 mcg/min IV infusion (1 mg in 250 mL NS).
   - Transthoracic pacing.
Drug-Induced Syncope:
   - Discontinue vasodilators, centrally acting hypotensive agents, tranquilizers, antidepressants, and alcohol use.
Vasovagal Syncope:
   - Scopolamine 1.5 mg transdermal patch q3 days.
Postural Syncope:
   - Midodrine (ProAmatine) 2.5 mg PO tid, then increase to 5-10 mg PO tid [2.5, 5 mg]; contraindicated in coronary artery disease.
   - Fludrocortisone 0.1-1.0 mg PO qd.
10. Symptomatic Medications:
   - Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
   - Docusate sodium (Colace) 100-200 mg PO qhs.
11. Extras:
   - CXR, ECG, 24h Holter monitor, electrophysiologic study, tilt test, CT/MRI, EEG, impedance cardiography, echocardiogram.
12. Labs:
   - CBC, SMA 7&12, CPK, CK-MB, troponin T, myoglobin, Mg, calcium, drug levels. UA, urine drug screen.

Pulmonary Disorders

Asthma

1. Admit to: Exacerbation of asthma
2. Diagnosis: Exacerbation of asthma
3. Condition:
4. Vital Signs: q6h. Call physician if P >140; R >30, <10, T >38.5°C; pulse oximeter <90%
5. Activity: Up as tolerated.
6. Nursing: Pulse oximeter, bedside peak flow rate before and after bronchodilator treatments.
7. Diet: Regular, no caffeine.
8. IV Fluids: D5 ½ NS at 125 cc/h.
9. Special Medications:
   - Oxygen 2 L/min by NC. Keep O2 sat >90%.
   - Beta-Agonists, Acute Treatment:
     - Albuterol (Ventolin) 0.5 mg and ipratropium (Atrovent) 0.5 mg in 2.5 mL NS q1-2h until peak flow meter >200-250 L/min and sat >90%, then q4h OR
     - Levalbuterol (Xopenex) 0.63-1.25 mg by nebulization q6-8h prn.
       - Albuterol (Ventolin) MDI 3-8 puffs, then 2 puffs q3-6h prn, or powder 200 mcg/capsule inhaled qid.
       - Albuterol/ipratropium (Combivent) 2-4 puffs qid.
   - Systemic Corticosteroids:
     - Methylprednisolone (Solu-Medrol) 60-125 mg IV q6h; then 30-60 mg PO qd. OR
     - Prednisone 20-60 mg PO QAM.
   - Aminophylline and Theophylline (second-line therapy):
     - Aminophylline load dose: 5.6 mg/kg total body weight in 100 mL D5W IV over 20 min. Maintenance of 0.5-0.6 mg/kg ideal body weight/hr (500 mg in 250 mL D5W); reduce if elderly, heart/liver failure (0.2-0.4 mg/kg/hr). Reduce load 50-75% if taking theophylline (1 mg/kg of aminophylline will raise levels 2 mcg/mL) OR
     - Theophylline IV solution loading dose 4.5 mg/kg total body weight, then 0.4-0.5 mg/kg ideal body weight/hr.
     - Theophylline (Theo-Dur) 100-400 mg PO bid (3 mg/kg q8h); 80% of total daily IV aminophylline in 2-3 doses.
   - Maintenance Inhaled Corticosteroids (adjunct therapy):
     - Advair Diskus (fluticasone/salmeterol) one puff bid [doses of 100/50 mcg, 250/50 mcg, and 500/50 mcg]. Not appropriate for acute attacks.
     - Beclomethasone (Beclovent) MDI 4-8 puffs bid, with spacer 5 min after bronchodilator, followed by gargling with water.
     - Triamcinolone (Azmacort) MDI 2 puffs tid-qid or 4 puffs bid.
     - Flunisolide (AeroBid) MDI 2-4 puffs bid.
     - Fluticasone (Flovent) 2-4 puffs bid (44 or 110 mcg/puff).
   - Maintenance Treatment:
     - Salmeterol (Serevent) 2 puffs bid; not effective for acute asthma because of delayed onset of action.
     - Pirbuterol (Maxair) MDI 2 puffs q4-6h prn.
     - Bitolterol (Tornalate) MDI 2-3 puffs q1-3min, then 2-3 puffs q4-8h prn.
     - Fenoterol (Berotec) MDI 3 puffs, then 2 bid-qid.
     - Ipratropium (Atrovent) MDI 2-3 puffs tid-qid.
   - Prevention and Prophylaxis:
     - Cromolyn (Intal) 2-4 puffs tid-qid.
     - Nedocromil (Tilade) 2-4 puffs bid-qid.
     - Montelukast (Singulair) 10 mg PO qd.
     - Zafirlukast (Accolate) 20 mg PO bid.
Zileuton (Zyflo) 600 mg PO qid.

Acute Bronchitis
- Amoxicillin/sulbactam (Unasyn) 1.5 gm IV q6h OR
- Cefuroxime (Zinacef) 750 mg IV q6h OR
- Cefuroxime axetil (Ceftin) 250-500 mg PO bid OR
- Trimethoprim/sulfamethoxazole (Bactrim DS), 1 tab PO bid OR
- Levofloxacin (Levaquin) 500 mg PO/IV PO qd [250, 500 mg]
- Amoxicillin 875 mg/clavulanate 125 mg (Augmentin 875) 1 tab PO bid.

10. Symptomatic Medications:
- Docusate sodium (Colace) 100 mg PO qhs.
- Famotidine (Pepcid) 20 mg IV/PO q12h OR
- Lansoprazole (Prevacid) 30 mg qd.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
- Zolpidem (Ambien) 5-10 mg qhs prn insomnia.

11. Extras:
- Portable CXR, ECG, pulmonary function tests before and after bronchodilators; pulmonary rehabilitation; impedance cardiography, echocardiogram.

12. Labs:
- ABG, CBC with eosinophil count, SMA7, B-type natriuretic peptide (BNP). Theophylline level stat and after 24h of infusion. Sputum Gram stain, C&S.

Chronic Obstructive Pulmonary Disease

1. Admit to:
2. Diagnosis: Exacerbation of COPD
3. Condition:
4. Vital Signs: q4h. Call physician if P >130; R >30, <10; T >38.5°C; O2 saturation <90%.
5. Activity: Up as tolerated; bedside commode.
8. IV Fluids: D5/2 NS with 20 mEq KCL/L at 125 cc/h.
9. Special Medications:
- Oxygen 1-2 L/min by NC or 24-35% by Venturi mask, keep O2 saturation 90-91%.

Beta-Agonists, Acute Treatment:
- Albuterol (Ventolin) 0.5 mg and ipratropium (Atrovent) 0.5 mg in 2.5 mL NS q1-2h until peak flow meter $\geq 200-250$ L/min, then q4h pm OR
- Levalbuterol (Xopenex) 0.63-1.25 mg by nebulization q6-8h prn OR
- Albuterol (Ventolin) MDI 2-4 puffs q4-6h.
- Albuterol/Ipratropium (Combivent) 2-4 puffs qid.

Maintenance Corticosteroids and Anticholinergics:
- Methylprednisolone (Solu-Medrol) 60-125 mg IV q6h or 30-60 mg PO qd. Followed by:
  - Prednisone 20-60 mg PO qd.
  - Triamcinolone (Azmacort) MDI 2 puffs qid or 4 puffs bid.
  - Beclomethasone (Beclovent) MDI 4-8 puffs bid with spacer, followed by gargling with water OR
  - Flunisolide (AeroBid) MDI 2-4 puffs bid OR
  - Ipratropium (Atrovent) MDI 2 puffs bid-qid OR
  - Fluticasone (Flovent) 2-4 puffs (44 or 110 mcg/puff).

Aminophylline and Theophylline (second line therapy):
- Aminophylline loading dose, 5.6 mg/kg total body weight over 20 min (if not already on theophylline); then 0.5-0.6 mg/kg ideal body weight/hr (500 mg in 250 mL of D5W); reduce if elderly, or heart or liver disease (0.2-0.4 mg/kg/hr). Reduce loading to 50-75% if already taking theophylline (1 mg/kg of aminophylline will raise levels by 2 mcg/mL) OR
- Theophylline IV solution loading dose, 4.5 mg/kg total body weight, then 0.4-0.5 mg/kg ideal body weight/hr.
- Theophylline long acting (Theo-Dur) 100-400 mg PO bid (3 mg/kg qhs); 80% of daily IV aminophylline in 2-3 doses.

Acute Bronchitis
- Trimethoprim/sulfamethoxazole (Septra DS) 160/800 mg PO bid or 160/800 mg IV q12h (10-15 mL in 100 cc D5W bid) OR
- Cefuroxime (Zinacef) 750 mg IV q6h OR
- Amoxicillin/sulbactam (Unasyn) 1.5 gm IV q6h OR
- Doxycycline (Vibra-tabs) 100 mg PO/IV bid OR
- Azithromycin (Zithromax) 500 mg x 1, then 250 mg PO qd x 4 or 500 mg IV q24h OR
- Clarithromycin (Biaxin) 250-500 mg PO bid OR
- Levофloxacin (Levaquin) 550 mg PO/IV qd [250, 500 mg].

10. Symptomatic Medications:
- Docusate sodium (Colace) 100 mg PO qhs.
- Famotidine (Pepcid) 20 mg IV/PO bid OR
- Lansoprazole (Prevacid) 30 mg qd.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
- Zolpidem (Ambien) 5-10 mg qhs prn insomnia.

11. Extras:
- Portable CXR, PFTs with bronchodilators, ECG, impedance cardiography, echocardiogram.

12. Labs:
- ABG, CBC, SMA7, UA. Theophylline level stat and after 12-24h of infusion. Sputum Gram stain and C&S, alpha 1 antitrypsin level.
Hemoptysis

1. Admit to: Intensive care unit
2. Diagnosis: Hemoptysis
3. Condition:
4. Vital Signs: q1-6h. Orthostatic BP and pulse bid. Call physician if BP >160/90, <90/60; P >130, <50; R>25, <10; T >38.5°C; O₂ sat <90%.
7. Diet: NPO
8. IV Fluids: 1 L of NS wide open (-6 gauge), then transfuse PRBC. Then infuse D5 ½ NS at 125 c.c/h.
9. Special Medications:
   - Transfuse 2-4 U PRBC wide open.
   - Promethazine/codeine (Phenergan with codeine) 5 cc PO q4-6h pm cough. Contraindicated in massive hemoptysis.
   - Initiate empiric antibiotics if bronchitis or infection is present.
10. Extras: CXR PA, LAT, ECG, VO scan, contrast CT, bronchoscopy, PPD, pulmonary and thoracic surgery consults.
11. Labs: Type and cross 2-4 U PRBC. ABG, CBC, platelets, SMA7 and 12, ESR. Anti-glomerular basement antibody, rheumatoid factor, complement, anti-nuclear cytoplasmic antibody. Sputum Gram stain, CSF, AFB, fungal culture, and cytology qAM for 3 days. UA, INR/PTT, von Willebrand Factor. Repeat CBC q6h.

Anaphylaxis

1. Admit to:
2. Diagnosis: Anaphylaxis
3. Condition:
4. Vital Signs: q1-4h; call physician if BP systolic >160, <90; diastolic >90, <60; P >120, <50; R>25, <10; T >38.5°C
5. Activity: Bedrest
6. Nursing: O₂ at 6 L/min by NC or mask. Keep patient in Trendelenburg's position, No. 4 or 5 endotracheal tube at bedside. Foley to closed drainage.
7. Diet: NPO
8. IV Fluids: 2 IV lines. Normal saline or LR 1 L over 1-2h, then D5 ½ NS at 125 c.c/h.
9. Special Medications:
   - Gastrointestinal Decontamination: Gastric lavage with normal saline until clear fluid if indicated for recent oral ingestion. Activated charcoal 50-100 gm, followed by magnesium citrate 6% solution 150-300 mL PO.
   - Bronchodilators: Epinephrine (1:1000) 0.3-0.5 mL SQ or IM q10min or 1-4 mcg/min IV OR in severe life-threatening reactions, give 0.5 mg (5.0 mL of 1: 10,000 solution) IV q5-10min pm. Epinephrine, 0.3 mg of 1:1000 solution, may be injected SQ at site of allergen injection OR Albuterol (Ventolin) 0.5%, 0.5 mL in 2.5 mL NS q30min by nebulizer pm OR Aerosolized 2% racemic epinephrine, 0.5-0.75 mL in 2-3 mL saline nebulized q1-6h.
   - Corticosteroids: Methylprednisolone (Solu-Medrol) 250 mg IV x 1, then 125 mg IV q6h OR Hydrocortisone sodium succinate 200 mg IV x 1, then 100 mg q6h, followed by oral prednisone 60 mg PO qd. tapered over 5 days.
   - Antihistamines: Diphenhydramine (Benadryl) 25-50 mg PO/IV q4-6h OR Hydroxyzine (Vistaril) 25-50 mg IM or PO q2-4h. Cetirizine (Zyrtec) 5-10 mg PO qd. Cimetidine (Tagamet) 300 mg PO/IV q6-8h.
   - Pressors and Other Agents: Norepinephrine (Levophed) 8-12 mcg/min IV, titrate to systolic 100 mm Hg (8 mg in 500 mL D5W) OR Dopamine (Intropin) 5-20 mcg/kg/min IV.
10. Extras: Portable CXR, ECG, allergy consult.
11. Labs: CBC, SMA 7&12.

Pleural Effusion

1. Admit to:
2. Diagnosis: Pleural effusion
3. Condition:
4. Vital Signs: q shift. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C
5. Activity: Regular
6. Diet: Regular
7. IV Fluids: D5W at TKO
8. Extras: CXR PA and LAT, repeat after thoracentesis; left and right lateral decubitus x-rays, ECG, ultrasound, PPD: pulmonary consult.
9. Labs: CBC, SMA 7&12, protein, albumin, amylase, ANA, ESR, INR/PTT, UA. Cryptococcal antigen,
Histoplasma antigen, fungal culture.

Thoracentesis:
- Tube 1: LDH, protein, amylase, triglyceride, glucose (10 mL).
- Tube 2: Gram stain, C&S, AFB, fungal C&S (20-60 mL, heparinized).
- Tube 3: Cell count and differential (5-10 mL, EDTA).
- Syringe: pH (2 mL collected anaerobically, heparinized on ice).

Bag or Bottle: Cytology.

Hematologic Disorders

Anticoagulant Overdose

Unfractionated Heparin Overdose:
1. Discontinue heparin infusion.
2. Protamine sulfate, 1 mg IV for every 100 units of heparin infused in preceding hour, dilute in 25 mL fluid, and give IV over 10 min (max 50 mg in 10 min period).

Low-Molecular-Weight Heparin (Enoxaparin) Overdose:
- Protamine sulfate 1 mg IV for each 1 mg of enoxaparin given. Repeat protamine 0.5 mg IV for each 1 mg of enoxaparin, if bleeding continues after 2-4 hours. Measure factor Xa.

Partial Reversal:
- Vitamin K (Phytonadione). 0.5-1.0 mg IV/SQ.
- Check INR in 24 hours, and repeat vitamin K dose if INR remains elevated.

Minor Bleeds:
- Vitamin K (Phytonadione). 5-10 mg IV/SQ q12h, titrated to desired INR.

Serious Bleeds:
- Vitamin K (Phytonadione). 10-20 mg in 50-100 mL fluid IV over 30-60 min (check INR q6h until corrected) AND
  - Fresh frozen plasma 2-4 units x 1.
  - Type and cross match for 2 units of PRBC, and transfuse wide open.
  - Cryoprecipitate 10 U x 1 if fibrinogen is less than 100 mg/dL.

Labs: CBC, platelets, PTT, INR.

Deep Venous Thrombosis

1. Admit to:
2. Diagnosis: Deep vein thrombosis
3. Condition:
4. Vital Signs: q shift. Call physician if BP systolic >160, <90 diastolic, >90, <60; P >120, <50; R>25, <10; T >38.5°C.
5. Activity: Bed rest with legs elevated; bedside commode.
6. Nursing: Guaiac stools, warm packs to leg prn; measure calf and thigh circumference qd; no intramuscular injections.
7. Diet: Regular
8. IV Fluids: D5W at TKO
9. Special Medications:
   Anticoagulation:
   - Heparin (unfractionated) 80 U/kg IVP, then 18 U/kg/hr IV infusion. Check PTT 6 hours after initial bolus; adjust q6h until PTT 1.5-2.0 times control (50-80 sec). Overlap heparin and warfarin (Coumadin) for at least 4 days and discontinue heparin when INR has been 2.0-3.0 for two consecutive days OR
   - Enoxaparin (Lovenox) outpatient: 1 mg/kg SQ q12h for DVT without pulmonary embolism. Overlap enoxaparin and warfarin for 4-5 days until INR is 2-3.
   - Enoxaparin (Lovenox) inpatient: 1 mg/kg SQ q12h or 1.5 mg/kg SQ q24 h for DVT with or without pulmonary embolism. Overlap enoxaparin and warfarin (Coumadin) for at least 4 days and discontinue heparin when INR has been 2.0-3.0 for two consecutive days.
   - Warfarin (Coumadin) 5-10 mg PO qd x 2-3 d; maintain INR 2.0-3.0. Coumadin is initiated on the first or second day only if the PTT is 1.5-2.0 times control [tab 1, 2, 2.5, 3, 4, 5, 6, 7.5, 10 mg].
10. Symptomatic Medications:
   - Propoxyphene/acetaminophen (Darvocet N100) 1-2 tab PO q3-4h prn pain OR
   - Hydrocodone/acetaminophen (Vicodin), 1-2 tab q4-6h PO prn pain
   - Docusate sodium (Colace) 100 mg PO qhs.
   - Famotidine (Pepcid) 20 mg IV/PO q12h OR
   - Lansoprazole (Prevacid) 30 mg qd.
   - Zolpidem (Ambien) 5-10 mg qhs pm insomnia.
11. Extras: CXR PA and LAT, ECG; Doppler scan of legs, V/Q scan, chest CT scan.
12. Labs: CBC, INR/PTT, SMA 7, Protein C, protein S, antithrombin III, anticardiolipin antibody. UA with
Pulmonary Embolism

1. Admit to: Pulmonary embolism
2. Diagnosis: Pulmonary embolism
3. Condition:
4. Vital Signs: q1-4h. Call physician if BP >160/90, <90/60, P >120, <50; R >30, <10; T >38.5°C; O₂ sat < 90%
5. Activity: Bedrest with bedside commode
7. Diet: Regular
8. IV Fluids: D5W at TKO.
9. Special Medications:
   Anticoagulation:
   - Heparin IV bolus 5000-10,000 Units (100 U/kg) IVP, then 1000-1500 U/h IV infusion (20 U/kg/h) [25,000 U in 500 mL D5W (50 U/mL)]. Check PTT 6 hours after initial bolus, adjust q6h until PTT 1.5-2 times control (60-80 sec). Overlap heparin and Coumadin for at least 4 days and discontinue heparin when INR has been 2.0-3.0 for two consecutive days.
   - Enoxaparin (Lovenox) 1 mg/kg SQ q12h for 5 days for uncomplicated pulmonary embolism. Overlap warfarin as outlined above.
   - Warfarin (Coumadin) 5-10 mg PO qd for 2-3 d, then 2-5 mg PO qd. Maintain INR of 2.0-3.0. Coumadin is initiated on second day if the PTT is 1.5-2.0 times control. Check INR at initiation of warfarin and qd [tab 1, 2, 2.5, 3, 4, 5, 6, 7.5, 10 mg].
   Thrombolytics (indicated for hemodynamic compromise):
   Baseline Labs: CBC, INR/PTT, fibrinogen q6h.
   Alteplase (recombinant tissue plasminogen activator, Activase): 100 mg IV infusion over 2 hours, followed by heparin infusion at 15 U/kg/h to maintain PTT 1.5-2.5 x control OR
   Streptokinasé (Streptase): Pretreat with methylprednisolone 250 mg IV push and diphenhydramine (Benadryl) 50 mg IV push. Then give streptokinasé, 250,000 units IV over 30 min, then 100,000 units/h for 24-72 hours. Initiate heparin infusion at 10 U/kg/hour; maintain PTT 1.5-2.5 x control.
10. Symptomatic Medications:
   - Meperidine (Demerol) 25-100 mg IV prn pain.
   - Docusate sodium (Colace) 100 mg PO qhs.
   - Famotidine (Pepcid) 20 mg IV/PO q12h OR
   - Lansoprazole (Prevacid) 30 mg qd.
11. Extras: CXR PA and LAT, ECG, VQ scan; chest CT scan, pulmonary angiography; Doppler scan of lower extremities, impedance cardiography.
12. Labs: CBC, INR/PTT, SMA7, ABG, cardiac enzymes. Protein C, protein S, antithrombin III, anticardiolipin antibody. UA. PTT 6 hours after bolus and q4-6h. INR now and qd.

Sickle Cell Crisis

1. Admit to: Sickle Cell Crisis
2. Diagnosis: Sickle Cell Crisis
3. Condition:
5. Activity: Bedrest with bathroom privileges.
6. Nursing:
7. Diet: Regular diet, push oral fluids.
8. IV Fluids: D5 ½ NS at 100-125 mL/h.
9. Special Medications:
   - Oxygen 2 L/min by NC or 30-100% by mask.
   - Meperidine (Demerol) 50-150 mg IM/IV q4-6h pm pain.
   - Hydroxyzine (Vistaril) 25-100 mg IM/IV q3-4h pm pain.
   - Morphine sulfate 10 mg IV/IM/SC q2-4h pm pain OR
   - Ketorolac (Toradol) 30-60 mg IV/IM, then 15-30 mg IV/IM q6h pm pain (maximum of 3 days).
   - Acetaminophen/codeine (Tylenol 3) 1-2 tabs PO q4-6h pm.
   - Folic acid 1 mg PO qd.
   - Penicillin V (prophylaxis), 250 mg PO qid [tabs 125,250,500 mg].
   - Ondansetron (Zofran) 4 mg PO/IV q3-4h pm nausea or vomiting.
10. Symptomatic Medications:
   - Zolpidem (Ambien) 5-10 mg qhs prn insomnia.
   - Docusate sodium (Colace) 100-200 mg PO qhs.
11. Vaccination:
   - Pneumovax before discharge 0.5 cc IM x 1 dose.
   - Influenza vaccine (Fluogen) 0.5 cc IM once a year in the Fall.
12. Extras: CXR
13. Labs: CBC, SMA 7, blood C&S, reticulocyte count, blood type and screen, parvovirus titers. UA.
Infectious Diseases

Meningitis

1. Admit to: 
2. Diagnosis: Meningitis.
3. Condition: 
4. Vital Signs: q1h. Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >39°C or less than 36°C
5. Activity: Bed rest with bedside commode.
6. Nursing: Respiratory isolation, inputs and outputs, lumbar puncture tray at bedside.
7. Diet: NPO
8. IV Fluids: D5 ½ NS at 125 cc/h with KCL 20 mEq/L.
9. Special Medications:
   - Empiric Therapy 15-50 years old:
     - Vancomycin 1 gm IV q12h AND EITHER
       - Ceftriaxone (Rocephin) 2 gm IV q12h (max 4 gm/d)
       OR
       - Cefotaxime (Clasforan) 2 gm IV q4h.
   - Empiric Therapy >50 years old, Alcoholics, Corticosteroids or Hematologic Malignancy or other Debilitating Condition:
     - Ampicillin 2 gm IV q4h AND EITHER
       - Cefotaxime (Clasforan) 2 gm IV q6h OR
       - Ceftriaxone (Rocephin) 2 gm IV q12h.
     - Use Vancomycin 1 gm IV q12h in place of ampicillin if drug-resistant pneumococcus is suspected.
10. Symptomatic Medications:
    - Dexamethasone (Decadron) 0.4 mg/kg IV q12h x 2 days to commence with first dose of antibiotic.
    - Heparin 5000 U SC q12h or pneumatic compression stockings.
    - Famotidine (Pepcid) 20 mg IV PO q12h.
    - Acetaminophen (Tylenol) 650 mg PO/PR q4-6h prn temp >39°C.
    - Docusate sodium 100-200 mg PO qhs.
11. Extras: CXR, ECG, PPD, CT scan.
12. Labs: CBC, SMA 7&12, Blood C&S x 2. UA with micro, urine C&S. Antibiotic levels peak and trough after 3rd dose, VDRL.

Lumbar Puncture:
- CSF Tube 1: Gram stain, C&S for bacteria (1-4 mL).
- CSF Tube 2: Glucose, protein (1-2 mL).
- CSF Tube 3: Cell count and differential (1-2 mL).
- CSF Tube 4: Latex agglutination or counterimmunoelctrophoresis antigen tests for S. pneumoniae, H. influenzae (type B), N. meningitides, E. coli, group B strep, VDRL, cryptococcal antigen, toxoplasma titers. India ink, fungal cultures, AFB (8-10 mL).

Infective Endocarditis

1. Admit to: 
2. Diagnosis: Infective endocarditis
3. Condition: 
4. Vital Signs: q4h. Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C
5. Activity: Up ad lib, bathroom privileges.
6. Diet: Regular
7. IV Fluids: Heparin lock with flush q shift.
8. Special Medications:
   - Subacute Bacterial Endocarditis Empiric Therapy:
     - Penicillin G 3-5 million U IV q4h or ampicillin 2 gm IV q4h AND Gentamicin 1-1.5 mg/kg IV q8h.
   - Acute Bacterial Endocarditis Empiric Therapy:
     - Gentamicin 2 mg/kg IV; then 1-1.5 mg/kg IV q8h
     - Nafcillin or Oxacillin 2 gm IV q4h OR
     - Vancomycin 1 gm IV q12h (1 gm in 250 mL of D5W over 1h).
   - Streptococci viridans/bovis: 
     - Penicillin G 3-5 million U IV q4h for 4 weeks OR
     - Vancomycin 1 gm IV q12h for 4 weeks AND Gentamicin 1 mg/kg q8h for first 2 weeks.
   - Enterococcus: 
     - Gentamicin 1 mg/kg IV q8h for 4-6 weeks AND
     - Ampicillin 2 gm IV q4h for 4-6 weeks OR
     - Vancomycin 1 gm IV q12h for 4-6 weeks.
   - Staphylococcus aureus (methicillin sensitive, native valve): 
     - Nafcillin or Oxacillin 2 gm IV q4h for 4-6 weeks OR
     - Vancomycin 1 gm IV q12h for 4-6 weeks AND Gentamicin 1 mg/kg IV q8h for first 3-5 days.
   - Methicillin-resistant Staphylococcus aureus (native valve): 
     - Vancomycin 1 gm IV q12h (1 gm in 250 mL D5W over 1h) for 4-6 weeks AND
     - Gentamicin 1 mg/kg IV q8h for 3-5 days.
   - Methicillin-resistant Staph aureus or epidermidis (prosthetic valve):
     - Vancomycin 1 gm IV q12h for 6 weeks AND
     - Rifampin 600 mg PO q8h for 6 weeks AND
     - Gentamicin 1 mg/kg IV q8h for 2 weeks.
   - Culture Negative Endocarditis:
     - Penicillin G 3-5 million U IV q4h for 4-6 weeks OR
     - Ampicillin 2 gm IV q4h for 4-6 weeks AND
     - Gentamicin 1.5 mg/kg q8h for 2 weeks (or nafcillin, 2 gm IV q4h, and gentamicin if Staph aureus suspected in drug abuser or prostatic valve).
Fungal Endocarditis:
- Amphotericin B 0.5 mg/kg/d IV plus flucytosine (5-FC) 150 mg/kg/d PO.

9. Symptomatic Medications:
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn temp >39°C.
- Docusate sodium 100-200 mg PO qhs.

10. Extras: CXR PA and LAT, echocardiogram, ECG.
11. Labs: CBC with differential, SMA 7&12. Blood C&S x 3-4 over 24h, serum cidal titters, minimum inhibitory concentration, minimum bactericidal concentration. Repeat C&S in 48h, then once a week. Antibiotic levels peak and trough at 3rd dose. UA, urine C&S.

Pneumonia

1. Admit to:
2. Diagnosis: Pneumonia
3. Condition:
4. Vital Signs: q4-8h. Call physician if BP >160/90, <90/60; P >120, <50; R >25, <10; T >38.5°C or O₂ saturation <90%.
5. Activity: Up ad lib, bathroom privileges.
7. Diet: Regular
8. IV Fluids: IV D5 ½ NS at 125 cc/hr.
9. Special Medications:
- Oxygen by NC at 2-4 L/min, or 24-50% by Ventimask, or 100% by non-rebreather (reservoir) to maintain O₂ saturation >90%.
Moderately Ill Patients Without Underlying Lung Disease From the Community:
- Cefuroxime (Zinacef) 0.75-1.5 gm IV q8h OR Ampicillin/subactam (Unasyn) 1.5 gm IV q6h AND EITHER
- Erythromycin 500 mg IV/PO q6h OR Clarithromycin (Biaxin) 500 mg PO bid OR Azithromycin (Zithromax) 500 mg PO x 1, then 250 mg PO qd x 4 OR Doxycycline (Vibramycin) 100 mg IV/PO q12h.

Moderately Ill Patients With Recent Hospitalization or Debilitated Nursing Home Patient:
- Ceftazidime (Fortaz) 1-2 gm IV q8h OR Cefepime (Maxipime) 1-2 gm IV q12h AND EITHER Gentamicin 1.5-2 mg/kg IV, then 1.0-1.5 mg/kg IV q6h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h OR Ciprofloxacin (Cipro) 400 mg IV q12h or 500 mg PO q12h.

Critically Ill Patients:
- Initial treatment should consist of a macrolide with 2 antipseudomonal agents for synergistic activity:
- Erythromycin 0.5-1.0 gm IV q6h AND EITHER
- Cefepime (Maxipime) 20 mg IV q12h OR Piperacillin/tazobactam (Zosyn) 3.75-4.50 gm IV q6h OR Ticarcillin/clavulanate (Timentin) 3.1 gm IV q6h OR Imipenem/clastatin (Primaxin) 0.5-1.0 gm IV q6h AND EITHER
- Levofoxicin (Levaquin) 500 mg IV q24h OR Ciprofloxacin (Cipro) 400 mg IV q12h OR Tobramycin 2.0 mg/kg IV, then 1.5 mg/kg IV q6h or 7 mg/kg IV q24h.

Aspiration Pneumonia (community acquired):
- Clindamycin (Cleocin) 600-900 mg IV q6h (with gentamicin or 3rd gen cephalosporin) OR
- Ampicillin/subactam (Unasyn) 1.5-3 gm IV q6h (with gentamicin or 3rd gen cephalosporin)

Aspiration Pneumonia (nosocomial):
- Tobramycin 2 mg/kg IV then 1.5 mg/kg IV q6h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h OR Ceftazidime (Fortaz) 1-2 gm IV q6h AND EITHER
- Clindamycin (Cleocin) 600-900 mg IV q6h OR Ampicillin/subactam or ticarcillin/clavulanate, or piperacillin/tazobactam or imipenem/clastatin (see above) OR Metronidazole (Flagyl) 500 mg IV q6h.

10. Symptomatic Medications:
- Acetaminophen (Tylenol) 650 mg 2 tab PO q4-6h prn temp >38°C or pain.
- Docusate sodium (Colace) 100 mg PO qhs.
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Heparin 5000 U SQ q12h or pneumatic compression stockings.

11. Extras: CXR PA and LAT, ECG, PPD.
Specific Therapy for Pneumonia

Pneumococcus:
- Ceftriaxone (Rocephin) 2 gm IV q12h OR
- Cefotaxime (Claforan) 2 gm IV q8h OR
- Erythromycin 500 mg IV q6h OR
- Levofloxacin (Levaquin) 500 mg IV q24h OR
- Vancomycin 1 gm IV q12h if drug resistance.

Staphylococcus aureus:
- Nafcillin 2 gm IV q4h OR
- Oxacillin 2 gm IV q4h.

Klebsiella pneumoniae:
- Gentamicin 1.5-2 mg/kg IV, then 1.0-1.5 mg/kg IV q8h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h OR
- Ceftizoxime (Cefizox) 1-2 gm IV q8h OR
- Cefotaxime (Claforan) 1-2 gm IV q8h.

Methicillin-resistant staphylococcus aureus (MRSA):
- Vancomycin 1 gm IV q12h.

Vancomycin-Resistant Enterococcus:
- Linezolid (Zyvox) 600 mg IV/PO q12h; active against MRSA as well OR
- Quinupristin/dalfopristin (Synercid) 7.5 mg/kg IV q8h (does not cover E. faecalis).

Haemophilus influenzae:
- Ampicillin 1-2 gm IV q6h (beta-lactamase negative) OR
- Ampicillin/subactam (Unasyn) 1.5-3.0 gm IV q6h OR
- Cefuroxime (Zinacef) 1.5 gm IV q8h (beta-lactamase pos) OR
- Ceftizoxime (Cefizox) 1-2 gm IV q8h OR
- Ciprofloxacin (Cipro) 400 mg IV q12h OR
- Levofloxacin (Levaquin) 500 mg IV q24h.

Pseudomonas aeruginosa:
- Tobramycin 1.5-2.0 mg/kg IV, then 1.5-2.0 mg/kg IV q8h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h AND EITHER
- Piperacillin, ticarcillin, mezlocillin or azlocillin 3 gm IV q4h OR
- Cefepime (Maxipime) 2 gm IV q12h.

Legionella pneumoniae:
- Erythromycin 1.0 gm IV q6h OR
- Levofloxacin (Levaquin) 500 mg PO/IV q24h.
- Rifampin 600 mg PO qd may be added to erythromycin or levofloxacin.

Moraxella catarrhalis:
- Trimethoprim/sulfamethoxazole (Bactrim, Septra) one DS tab PO bid or 10 mL IV q12h OR
- Amoxicillin/subactam (Unasyn) 1.5-3 gm IV q6h OR
- Cefuroxime (Zinacef) 0.75-1.5 gm IV q8h OR
- Erythromycin 500 mg IV q6h OR
- Levofloxacin (Levaquin) 500 mg PO/IV q24h.

Anaerobic Pneumonia:
- Penicillin G 2 MU IV q4h OR
- Metronidazole (Flagyl) 500 mg IV q8h.

Pneumocystis Carinii Pneumonia and HIV

1. Admit to:
2. Diagnosis: PCP pneumonia
3. Condition: PCP pneumonia
4. Vital Signs: q2-6h. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; O2 sat <90%
5. Activity: Bedrest, bedside commode.
7. Diet: Regular, encourage fluids.
8. IV Fluids: D5 ½ NS at 125 cc/h.
9. Special Medications:

Pneumocystis Carinii Pneumonia:
- Oxygen at 2-4 L/min by NC or by mask.
- Trimethoprim/sulfamethoxazole (Bactrim, Septra) 15 mg of TMP/kg/day (20 mL in 250 mL of D5W IVB q8h) for 21 days [inj: 80/400 mg per 5 mL].
- If severe PCP (PaO2 <70 mm Hg); add prednisone 40 mg PO bid for 5 days, then 40 mg qd for 5 days, then 20 mg qd for 11 days OR Methylprednisolone (Solu-Medrol) 30 mg IV q12h for 5 days, then 30 mg IV qd for 5 days, then 15 mg IV qd for 11 days.
- Pentamidine (Pentam) 4 mg/kg IV qd for 21 days, with prednisone as above. Pentamidine is an alternative if inadequate response or intolerant to TMP-SMX.
Pneumocystis Carinii Prophylaxis (previous PCP or CD4 <200, or constitutional symptoms):
- Trimethoprim/SMX DS (160/800 mg) PO qd OR
- Pentamidine, 300 mg in 6 mL sterile water via Respirgard II nebulizer over 20-30 min q4 weeks OR
- Dapsone (DDS) 50 mg PO bid or 100 mg twice a week; contraindicated in G-6-PD deficiency.

Antiretroviral Therapy:
A. Combination therapy with 3 agents (two nucleoside analogs and a protease inhibitor) is recommended as initial therapy. Nucleotide analogs are similar to nucleosides and may be used interchangeably. Combination of atazanavir plus tenofovir or lamivudine plus abacavir plus tenofovir should be avoided because of the risk of treatment failure.

B. Nucleoside Analogs
1. Abacavir (Ziagen) 300 mg PO bid [300 mg, 20 mg/mL]
2. Didanosine (Videx, ddI) 200 mg bid for patients >60 kg; or 125 mg bid for patients <60 kg. [chewable tabs: 25, 50, 100, 150 mg; pwd 100, 167, 250 mg packets]
3. Emtricitabine (Emtriva) 200 mg PO qd.
4. Lamivudine (Epivir, 3TC) 150 mg twice daily [150 mg].
5. Stavudine (Zent, D4T) 40 mg bid [15 mg, 20 mg, 30 mg and 40 mg capsules].
6. Zalcitabine (Hivid, ddC) 0.75 mg tid [0.375, 0.75].
7. Zidovudine (Retrovir, AZT) 200 mg tid (100, 200 mg caps, 50 mg/5 mL syrup).

C. Protease Inhibitors
1. Amprenavir (Agenerase) 1200 mg bid [50, 150 mg].
2. Atazanavir (Reyataz) 400 mg PO qd.
3. Indinavir (Crixivan) 800 mg tid [200, 400 mg].
4. Lopinavir/ritonavir (Kaletra) 400 mg/100 mg PO bid.
5. Nelfinavir (Viracept) 750 mg PO tid [250 mg].
6. Ritonavir (Norvir) 600 mg bid [100 mg, 80 mg/dL].
7. Saquinavir (Invirase) 600 mg tid with a meal [cap 200 mg].

D. Non-Nucleoside Reverse Transcriptase Inhibitors
1. Delavirdine (U-90) 400 mg tid.
2. Efavirenz (Sustiva) 600 mg PO qd [50, 100, 200 mg].
3. Nevirapine (Viramune) 200 mg qd for 2 weeks, then bid [200 mg].

E. Nucleotide Analogs
1. Tenofovir (Viread) 300 mg PO qd with food.

Postexposure HIV Prophylaxis

A. The injury should be immediately washed and scrubbed with soap and water.
B. Zidovudine 200 mg PO tid and lamivudine (3TC) 150 mg PO bid, plus indinavir (Crixivan) 800 mg PO tid for highest risk exposures. Treatment is continued for one month.

Zidovudine-Induced Neutropenia/Ganciclovir-Induced Leucopenia
- Recombinant human granulocyte colony-stimulating factor (G-CSF, Filgrastim, Neupogen) 1-2 mcg/kg SQ qd until absolute neutrophil count 500-1000; indicated only if endogenous erythropoietin level is low.

10. Symptomatic Medications:
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache or fever.
- Docusate sodium 100-200 mg PO qhs.

10. Extras: CXR PA and LAT.


Opportunistic Infections in HIV-Infected Patients

Oral Candidiasis:
- Fluconazole (Diflucan) 100-200 mg PO qd OR
- Ketoconazole (Nizoral) 400 mg PO qd OR
- Itraconazole (Sporanox) 200 mg PO qd OR
- Clotrimazole (Mycelex) troches 10 mg dissolved slowly in mouth 5 times/d.

Candida Esophagitis:
- Fluconazole (Diflucan) 200-400 mg PO qd for 14-21 days OR
- Ketoconazole (Nizoral) 200 mg PO bid OR
- Itraconazole (Sporanox) 200 mg PO qd for 2 weeks.
- Caspofungin (Cancidas) 50 mg IV qd x 2 weeks.

Primary or Recurrent Mucocutaneous HSV
- Acyclovir (Zovirax), 200-400 mg PO 5 times a day for 10 days, or 5 mg/kg IV q8h OR in cases of acyclovir resistance, foscarnet, 40 mg/kg IV q8h for 21 days.

Herpes Simplex Encephalitis (or visceral disease):
- Acyclovir (Zovirax) 10 mg/kg IV q8h for 10-21 days.

Herpes Varicella Zoster
- Acyclovir (Zovirax) 10 mg/kg IV 60 min q8h for 7-14 days OR 800 mg PO 5 times/d for 7-10 days OR
- Famiciclovir (Famvir) 500 mg PO q8h for 7 days 500
Valacyclovir (Valtrex) 1000 mg PO q8h for 7 days OR
-Foscarnet (Foscavir) 40 mg/kg IV q8h.

Cytomegalovirus Retinitis:
-Ganciclovir (Cytovene) 5 mg/kg IV (dilute in 100 mL DSW over 60 min) q12h for 14-21 days OR
-Foscarnet (Foscavir) 60 mg/kg IV q8h for 2-3 weeks OR
-Cidofovir (Vistide) 5 mg/kg IV over 60 min q week for 2 weeks. Administer probenecid, 2 g PO 3 hours prior to cidofovir, 1 g PO 2 hours after, and 1 g PO 8 hours after.

Suppressive Treatment for Cytomegalovirus Retinitis:
-Ganciclovir (Cytovene) 5 mg/kg qd.
-Foscarnet (Foscavir) 90-120 mg IV qd OR
-Cidofovir (Vistide) 5 mg/kg IV over 60 min every 2 weeks with probenecid.

Acute Toxoplasmosis:
-Pyrimethamine 200 mg, then 50-75 mg qd, plus sulfadiazine 1.0-1.5 gm PO q6h, plus folic acid 10 mg PO qd OR
-Atovalaquone (Mepron) 750 mg PO qd.

Suppressive Treatment for Toxoplasmosis:
-Pyrimethamine 25-50 mg PO qd plus sulfadiazine 0.5-1.0 gm PO q6h plus folic acid 5 mg PO qd OR
-Pyrimethamine 50 mg PO qd, plus clindamycin 300 mg PO qd, plus folic acid 5 mg PO qd.

Cryptococcus Neoformans Meningitis:
-Amphotericin B 0.7-1.0 mg/kg/d IV; total dosage of 2 g, with or without 5-flucytosine 100 mg/kg PO qd in divided doses, followed by fluconazole (Diflucan) 400 mg PO qd or itraconazole (Sporanox) 200 mg PO bid 6-8 weeks OR
-Amphotericin B liposomal (Abelcet) 5 mg/kg IV q24h OR
-Fluconazole (Diflucan) 400-800 mg PO qd for 8-12 weeks

Suppressive Treatment of Cryptococcus:
-Fluconazole (Diflucan) 200 mg PO qd indefinitely.

Active Tuberculosis:
-Isoniazid (INH) 300 mg PO qd; and rifampin 600 mg PO qd; and pyrazinamide 15-25 mg/kg PO qd (500 mg bid-tid); and ethambutol 15-25 mg/kg PO qd (400 mg bid-tid).
-All four drugs are continued for 2 months; isoniazid and rifampin are continued for a period of at least 9 months and at least 6 months after the last negative cultures.
-Pyridoxine (Vitamin B6) 50 mg PO qd concurrent with INH.

Prophylaxis for Inactive Tuberculosis:
-Isoniazid 300 mg PO qd, and pyridoxine 50 mg PO qd for 12 months.

Disseminated Mycobacterium Avium Complex (MAC):
-Clarithromycin (Biaxin) 500 mg PO bid AND
-Ethambutol 800-1000 mg qd; with or without rifabutin 450 mg qd.

Prophylaxis against Mycobacterium Avium Complex:
-Azithromycin (Zithromax) 1200 mg once a week.

Disseminated Cocccidioidomycosis:
-Amphotericin (Fungizone) B 0.5-0.8 mg/kg IV qd, to a total dose 2.0 gm OR
-Amphotericin B liposomal (Abelcet) 5 mg/kg IV q24h OR
-Fluconazole (Diflucan) 400-800 mg PO or IV qd.

Disseminated Histoplasmosis:
-Amphotericin B (Fungizone) 0.5-0.8 mg/kg IV qd, to a total dose 15 mg/kg OR
-Amphotericin B liposomal (Abelcet) 5 mg/kg IV q24h OR
-Fluconazole (Diflucan) 400 mg PO qd OR
-Itraconazole (Sporanox) 300 mg PO bid for 3 days, then 200 mg PO bid.

Suppressive Treatment for Histoplasmosis:
-Fluconazole (Diflucan) 400 mg PO qd OR
-Itraconazole (Sporanox) 200 mg PO bid.

Septic Arthritis

1. Admit to: [196x776]
2. Diagnosis: Septic arthritis
3. Condition: [196x776]
4. Vital Signs: q shift
7. Diet: Regular diet.
8. IV Fluids: Heparin lock
9. Special Medications: [196x776]

Empiric Therapy for Adults without Gonorrhea
-Contact:
-Nafcillin or oxacillin 2 gm IV q4h AND
-Ceftizoxime (Cefizox) 1 gm IV q8h or ceftazidime 1 gm IV q6h or ciprofloxacin 400 mg IV q12h if Gram stain indicates presence of Gram negative organisms.

Empiric Therapy for Adults with Gonorrhea:
-Ceftriaxone (Rocephin) 1 gm IV q12h OR
-Ceftizoxime (Cefizox) 1 gm IV q8h OR
-Ciprofloxacin (Cipro) 400 mg IV q12h.
-Complete course of therapy with cefuroxime axetil (Ceftin) 400 mg PO bid.
10. Symptomatic Medications:
- Acetaminophen and codeine (Tylenol 3) 1-2 PO q4-6h prn pain.
- Heparin 5000 U SQ bid.
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Zolpidem (Ambien) 5-10 mg qhs prn insomnia.
- Docusate sodium 100-200 mg PO qhs.
11. Extras:
X-ray views of joint (AP and lateral), CXR.
Synovial fluid culture. Physical therapy consult for exercise program.
12. Labs:
CBC, SMA 7&12, blood C&S x 2, VDRL, UA.
Gonorrhea cultures of urethra, cervix. Antibiotic levels.
Blood cultures x 2 for gonorrhea.

Septic Shock
1. Admit to:
2. Diagnosis: Sepsis
3. Condition:
4. Vital Signs: q1h; Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; urine output < 25 ccfhr for 4h, O2 saturation <90%.
5. Activity: Bed rest.
7. Diet: NPO
8. IV Fluids: 1 liter of normal saline wide open, then D5½ NS at 125 cc/h
9. Special Medications:
-Oxygen at 2-5 L/min by NC or mask.

Antibiotic Therapy
A. Initial treatment of life-threatening sepsis should include a third-generation cephalosporin (cefepime, ceftazidime, cefotaxime, ceftizoxime or ceftriaxone), or piperacillin/tazobactam, or ticarcillin/clavulanic acid or imipenem, each with an aminoglycoside (gentamicin, tobramycin or amikacin). If Enterobacter aerogenes or cloacae is suspected, treatment should begin with meropenem or imipenem with an aminoglycoside.
B. Intra-abdominal or pelvic infections, likely to involve anaerobes, should be treated with ampicillin, gentamicin and metronidazole; or either ticarcillin/clavulanic acid, ampicillin/sulbactam, piperacillin/tazobactam, imipenem, cefotixin or cefotetan, each with an aminoglycoside.
C. Febrile neutropenic patients with neutrophil counts <500/mm³ should be treated with vancomycin and ceftazidime, or piperacillin/tazobactam and tobramycin or imipenem and tobramycin.
D. Dosages for Antibiotics Used in Sepsis
-Ampicillin 1-2 gm IV q4h.
-Cefepime (Maxipime) 2 gm IV q12h.
-Cefotaxime (Claforan) 2 gm q4-6h.
-Ceftizoxime (Cefizox) 1-2 gm IV q8h.
-Ceftriaxone (Rocephin) 1-2 gm IV q12h (max 4 gm/d).
-Cefoxitin (Mefoxin) 1-2 gm q8h.
-Cefotetan (Cefotan) 1-2 gm IV q12h.
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q4-6h (200-300 mg/kg/d).
- Ampicillin/sulbactam (Unasyn) 1.5-3.0 gm IV q6h.
- Piperacillin/tazobactam (Zosyn) 3.375-4.5 gm IV q8h.
- Piperacillin or ticarcillin 3 gm IV q4-6h.
- Imipenem/cilastatin (Primaxin) 1.0 gm IV q6h.
- Meropenem (Merrem) 0.5-1.0 gm IV q6h.
- Gentamicin, tobramycin 100-120 mg (1.5 mg/kg) IV, then 80 mg IV q8h (1 mg/kg) or 7 mg/kg in 50 mL of DSW over 60 min IV q24h.
- Amikacin (Amikin) 7.5 mg/kg IV loading dose, then 5 mg/kg IV q8h.
- Vancomycin 1 gm IV q12h.
- Metronidazole (Flagyl) 500 mg (7.5 mg/kg) IV q6-8h.
- Clindamycin (Cleocin) 900 mg IV q8h.
- Aztreonam (Azactam) 1.2 gm IV q6-8h; max 8 g/day.

Nosocomial sepsis with IV catheter or IV drug abuse
-Nafcillin or oxacillin 2 gm IV q4h OR
-Vancomycin 1 gm q12h (1 gm in 250 cc DSW over 60 min) AND
Gentamicin or tobramycin as above AND EITHER
Cefazodime (Fortaz) or ceftizoxime (Cefizox) 1-2 gm IV q8h OR
Piperacillin, ticarcillin or mezlocillin 3 gm IV q4-6h.
Recombinant human activated protein C
-Drotrecogin alfa, (Xigris), 24 mg/kg/h IV infusion for 96 hours.
Blood Pressure Support
-Dopamine 4-20 mcg/kg/min (400 mg in 250 cc DSW, 1600 mcg/mL)
-Norepinephrine 2-8 mcg/min IV infusion (8 mg in 250 mL D5W).
-Albumin 25 gm IV (100 mL of 25% solution) OR
10. Symptomatic Medications:
- Hetastarch (Hespan) 500-1000 cc over 30-60 min (max 1500 cc/d).
- Dobutamine 5 mcg/kg/min, and titrate blood pressure to keep systolic BP >90 mm Hg; max 10 mcg/kg/min.

11. Extras: CXR, KUB, ECG. Ultrasound, lumbar puncture.

12. Labs: CBC with differential, SMA 7 & 12, blood C&S x 3, T & C for 3-6 units PRBC, INR/PTT, drug levels peak and trough at 3rd dose. UA. Cultures of urine, sputum, wound, IV catheters, decubitus ulcers, pleural fluid.

**Peritonitis**

1. Admit to:
2. Diagnosis: Peritonitis
3. Condition:
4. Vital Signs: q1-6h. Call physician if BP >160/90, <90-80; P >120, <50; R>25, <10; T >38.5°C.
5. Activity: Bed rest.
7. Diet: NPO
8. IV Fluids: D5 ½ NS at 125 cc/h.
9. Special Medications:

**Primary Bacterial Peritonitis - Spontaneous:**

**Option 1:**
- Ampicillin 1-2 gm IV q 4-6h (vancomycin 1 gm IV q12h if penicillin allergic) AND EITHER
  - Cefotaxime (Claforan) 1-2 gm IV q6h OR
  - Ceftriaxone (Claforan) 1-2 gm IV q6h OR
- Gentamicin or tobramycin 1.5 mg/kg IV, then 1 mg/kg q8h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h.

**Option 2:**
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q6h OR
- Piperacillin/tazobactam (Zosyn) 3.375 gm IV q8h OR
- Imipenem/clastatin (Primaxin) 0.5-1.0 gm IV q8h OR
- Meropenem (Merrrem) 500-1000 mg IV q8h.

**Secondary Bacterial Peritonitis – Abdominal Perforation or Rupture:**

**Option 1:**
- Ampicillin 1-2 gm IV q4-6h AND
- Gentamicin or tobramycin as above AND
  - Metronidazole (Flagyl) 500 mg IV q6h OR
  - Cefoxitin (Mefoxin) 1-2 gm IV q6h OR
- Cefotetan (Cefotan) 1-2 gm IV q12h.

**Option 2:**
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q4-6h (200-300 mg/kg/d) with an aminoglycoside as above OR
- Piperaclillin/tazobactam (Zosyn) 3.375 gm IV q6h with an aminoglycoside as above OR
- Ampicillin/subactam (Unasyn) 1.5-3.0 gm IV q6h with an aminoglycoside as above OR
- Imipenem/clastatin (Primaxin) 0.5-1.0 gm IV q6-8h OR
- Meropenem (Merrrem) 500-1000 mg IV q8h.

**Fungal Peritonitis:**
- Amphotericin B peritoneal dialysis, 2 mg/L of dialysis fluid over the first 24 hours, then 1.5 mg in each liter OR
- Fluconazole (Diflucan) 200 mg IV x 1, then 100 mg IV qd.
- Caspofungin (Candidas) 70 mg IV x 1, then 50 mg IV qd.

10. Symptomatic Medications:
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Acetaminophen (Tylenol) 325 mg PO/PR q4-6h prn temp >38.5°C.
- Heparin 5000 U SQ q12h.

11. Extras: Plain film, upright abdomen, lateral decubitus, CXR PA and LAT; surgery consult, EGG, abdominal ultrasound, CT scan.

12. Labs: CBC with differential, SMA 7 & 12, amylase, lactate, INR/PTT, UA with micro, C&S, drug levels peak and trough 3rd dose.

**Peritoneal Tube 1:** Cell count and differential (1-2 mL, EDTA purple top tube).
**Tube 2:** Gram stain of sediment; inject 10-20 mL into anaerobic and aerobic culture bottle; AFB, fungal C&S (3-4 mL).

**Syringe:** pH, lactate (3 mL).

**Diverticulitis**

1. Admit to:
2. Diagnosis: Diverticulitis
3. Condition:
4. Vital Signs: qid. Call physician if BP systolic >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C.
7. Diet: NPO. Advance to clear liquids as tolerated.
8. IV Fluids: 0.5-2 L NS over 1-2 hr then, DS ½ NS at 125 cch/hr. NG tube at low intermittent suction (if obstructed).

9. Special Medications:

Regimen 1:
- Gentamicin or tobramycin 100-120 mg IV (1.5-2 mg/kg), then 80 mg IV q8h (5 mg/kg/d) or 7 mg/kg in 50 mL of D5W over 60 min IV q24h AND EITHER
Cefoxitin (Mefoxin) 2 gm IV q6-8h OR
Clindamycin (Cleocin) 600-900 mg IV q8h.

Regimen 2:
- Metronidazole (Flagyl) 500 mg q8h AND
Ciprofloxacin (Cipro) 250-500 mg PO bid or 200-300 mg IV q12h.

Outpatient Regimen:
- Metronidazole (Flagyl) 500 mg PO q6h AND EITHER
Ciprofloxacin (Cipro) 500 mg PO bid OR
Trimethoprim/SMX (Bactrim) 1 DS tab PO bid.

10. Symptomatic Medications:
- Meperidine (Demerol) 50-100 mg IM or IV q3-4h prn pain.
- Zolpidem (Ambien) 5-10 mg qhs PO prn insomnia.

11. Extras:
- Acute abdomen series, CXR PA and LAT, ECG, CT scan of abdomen, ultrasound, surgery and GI consults.

12. Labs:
- CBC with differential, SMA 7&12, amylase, lipase, blood cultures x 2, drug levels peak and trough 3rd dose. UA, C&S.

Lower Urinary Tract Infection

1. Admit to:
2. Diagnosis: UTI.
3. Condition:
4. Vital Signs: q shift. Call physician if BP <90/60; >160-190; R >30, <10; P >120, <50; T >38.5°C.
5. Activity: Up ad lib
6. Nursing:
7. Diet: Regular
8. IV Fluids:
9. Special Medications:

Lower Urinary Tract Infection (treat for 3-7 days):
- Trimethoprim-sulfamethoxazole (Septra) 1 double strength tab (160/800 mg) PO bid.
- Norfloxacin (Noroxin) 400 mg PO bid.
- Ciprofloxacin (Cipro) 250 mg PO bid.
- Levofoxacin (Levaquin) 500 mg IV/PO q24h.
- Lomefloxacin (Maxaquin) 400 mg PO qd.
- Enoxacin (Penetrex) 200-400 mg PO q12h; 1h before or 2h after meals.
- Cefpodoxime (Vantin) 100 mg PO bid.
- Cephalexin (Keflex) 500 mg PO q8h.
- Cefixime (Suprax) 200 mg PO q12h or 400 mg PO qd.
- Cefazolin (Ancef) 1-2 gm IV q8h.

Complicated or Catheter-Associated Urinary Tract Infection:
- Ceftizoxime (Cefizox) 1 gm IV q8h.
- Gentamicin 2 mg/kg, then 1.5/kg q8h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h.
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q4-6h.
- Ciprofloxacin (Cipro) 500 mg PO bid.
- Levofoxacin (Levaquin) 500 mg IV/PO q24h.

Prophylaxis (≥3 episodes/yr):
- Trimethoprim/SMX single strength tab PO qhs.

Candida Cystitis
- Fluconazole (Diflucan) 100 mg PO or IV x 1 dose, then 50 mg PO or IV qd for 5 days OR
- Amphotericin B continuous bladder irrigation, 50 mg/1000 mL sterile water via 3-way Foley catheter at 1 L/d for 5 days.

10. Symptomatic Medications:
- Phenazopyridine (Pyridium) 100 mg PO tid.
- Docusate sodium (Colace) 100 mg PO qhs.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn temp >39°C.
- Zolpidem (Ambien) 5-10 mg qhs pm insomnia.

12. Labs: CBC, SMA 7. UA with micro, urine Gram stain, C&S.

Pyelonephritis

1. Admit to:
2. Diagnosis: Pyelonephritis
3. Condition:
4. Vital Signs: tid. Call physician if BP <90/60; >160/90; R >30, <10; P >120, <50; T >38.5°C.
5. Activity:
7. Diet: Regular
8. IV Fluids: DS ½ NS at 125 cch.
9. Special Medications:

- Trimethoprim-sulfamethoxazole (Septra) 160/800 mg (10 mL in 100 mL D5W IV over 2 hours) q12h or 1 double strength tab PO bid.
- Ciprofloxacin (Cipro) 500 mg PO bid or 400 mg IV q12h.
- Norfloxacin (Noroxin) 400 mg PO bid.
- Ofloxacin (Floxin) 400 mg PO or IV bid.
- Levofoxacin (Levaquin) 500 mg PO/IV q24h.
- In more severely ill patients, treatment with an IV
third-generation cephalosporin, or ticarcillin/clavulanate acid, or piperacillin/tazobactam or imipenem is recommended with an aminoglycoside.

- Ceftizoxime (Cefizox) 1 gm IV q8h.
- Ceftazidime (Fortaz) 1 gm IV q8h.
- Ticarcillin/clavulanate (Timentin) 3.1 gm IV q6h.
- Piperacillin/tazobactam (Zosyn) 3.375 gm IV/PB q6h.
- Imipenem/cilastatin (Primaxin) 0.5-1.0 gm IV q6-8h.
- Gentamicin or tobramycin, 2 mg/kg IV, then 1.5 mg/kg q8h or 7 mg/kg in 50 mL of D5W over 60 min IV q24h.

10. Symptomatic Medications:
- Phena-zopyridine (Pyridium) 100 mg PO tid.
- Meperidine (Demerol) 50-100 mg IM q4-6h prn pain.
- Docusate sodium (Colace) 100 mg PO qhs.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn temp >39°C.
- Zolpidem (Ambien) 5-10 mg qhs prn insomnia.

11. Extras: Renal ultrasound, KUB.


**Osteomyelitis**

1. Admit to:
2. Diagnosis: Osteomyelitis
3. Condition:
4. Vital Signs: qid. Call physician if BP <90/60; T >38.5°C.
5. Activity: Bed rest with bathroom privileges.
7. Diet: Regular, high fiber.
8. IV Fluids: Heparin lock with flush q shift.

9. Special Medications:

Adult Empiric Therapy:
- Nafcillin or oxacillin 2 gm IV q4h OR
- Cefazolin (Ancef) 1-2 gm IV q6h OR
- Vancomycin 1 gm IV q12h (1 gm in 250 cc D5W over 1h).
- Add 3rd generation cephalosporin if gram negative bacilli on Gram stain. Treat for 4-6 weeks.

Post-Operative or Post-Trauma:
- Vancomycin 1 gm IV q12h AND ceftazidime (Fortaz) 1-2 gm IV q6h.
- Imipenem/cilastatin (Primaxin) single-drug treatment 0.5-1.0 gm IV q6-8h.
- Ticarcillin/clavulanate (Timentin) single-drug treatment 3.1 gm IV q4-6h.
- Ciprofloxacin (Cipro) 500-750 mg PO bid or 400 mg IV q12h AND
- Rifampin 600 mg PO qd.

Osteomyelitis with Decubitus Ulcer:
- Cefoxitin (Mefoxin), 2 gm IV q6-8h.
- Ciprofloxacin (Cipro) and metronidazole 500 mg IV q6h.
- Imipenem/cilastatin (Primaxin), 0.5-1.0 gm IV q6-8h.
- Nafcillin, gentamicin and clindamycin; see dosage above.

10. Symptomatic Medications:
- Meperidine (Demerol) 50-100 mg IM q3-4h prn pain.
- Docusate (Colace) 100 mg PO qhs.
- Heparin 5000 U SQ bid.

11. Extras: Technetium/gallium bone scans, multiple X-ray views, CT/MRI.


**Active Pulmonary Tuberculosis**

1. Admit to:
2. Diagnosis: Active Pulmonary Tuberculosis
3. Condition:
4. Vital Signs: q shift
5. Activity: Up ad lib in room.
7. Diet: Regular
8. Special Medications:
-isoniazid 300 mg PO qd (5 mg/kg/d, max 300 mg/d) AND
- Rifampin 600 mg PO qd (10 mg/kg/d, 600 mg/d max)
- Pyrazinamide 500 mg PO bid-tid (15-30 mg/kg/d, max 2.5 gm) AND
- Ethambutol 400 mg PO bid-tid (15-25 mg/kg/d, 2.5 gm/d max).
- Empiric treatment consists of a 4-drug combination of isoniazid (INH), rifampin, pyrazinamide (PZA), and either ethambutol or streptomycin. A modified regimen is recommended for patients known to have INH-resistant TB. Treat for 8 weeks with the four-drug regimen, followed by 18 weeks of INH and rifampin.
- Pyridoxine 50 mg PO qd with INH.

**Prophylaxis**
-isoniazid 300 mg PO qd (5 mg/kg/d) x 6-9 months.

9. Extras: CXR PA, LAT, ECG.
10. Labs: CBC with differential, SMA7 and 12, LFTs, HIV serology. First AM sputum for AFB x 3 samples.
Cellulitis

1. Admit to:
2. Diagnosis: Cellulitis
3. Condition:
4. Vital Signs: td. Call physician if BP <90/60; T >38.5°C
6. Nursing: Keep affected extremity elevated; warm compresses prn.
7. Diet: Regular, encourage fluids.
8. IV Fluids: Heparin lock with flush q shift.
9. Special Medications:

Empiric Therapy Cellulitis
- Nafcillin or oxacillin 1-2 gm IV q4-6h OR
- Cefazolin (Ancef) 1-2 gm IV q6h OR
- Vancomycin 1 gm q12h (1 gm in 250 cc D5W over 1h) OR
- Erythromycin 500 IV/PO q6h OR
- Dicloxacillin 500 mg PO qid; may add penicillin VK, 500 mg PO qid, to increase coverage for streptococcus OR
- Cephalexin (Keflex) 500 mg PO qid.

Immunosuppressed, Diabetic Patients, or Ulcerated Lesions:
- Nafcillin or cefazolin and gentamicin or aztreonam.
  - Add clindamycin or metronidazole if septic.
- Cefazolin (Ancef) 1-2 gm IV q8h.
- Cefoxitin (Mefoxin) 1-2 gm IV q6-8h.
- Gentamicin 2 mg/kg, then 1.5 mg/kg IV q8h or 7 mg/kg in 50 mL of DSW over 60 min IV q24h OR
  - Aztreonam (Azactam) 1-2 gm IV q8h PLUS
- Metronidazole (Flagyl) 500 mg IV q8h or clindamycin 900 mg IV q8h.
- Ticarcillin/clavulanate (Timentin) (single-drug treatment) 3.1 gm IV q4-6h.
- Ampicillin/Subactam (Unasyn) (single-drug therapy) 1.5-3.0 gm IV q6h.
- Imipenem/cilastatin (Primaxin) (single-drug therapy) 0.5-1 mg IV q6-8h.

10. Symptomatic Medications:
- Acetaminophen/codeine (Tylenol #3) 1-2 PO q4-6h pm pain.
- Docusate (Colace) 100 mg PO qhs.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h pm temp >39°C.
- Zolpidem (Ambien) 5-10 mg qhs pm insomnia.

11. Labs: Techetium/Gallium scans.


Pelvic Inflammatory Disease

1. Admit to:
2. Diagnosis: Pelvic Inflammatory Disease
3. Condition:
4. Vital Signs: q8h. Call physician if BP >160/90, <90/60; P >100, <50; R>25, <10; T >38.5°C
7. Diet: Regular
8. IV Fluids: D5 ½ NS at 100-125 cc/hr.
9. Special Medications:
- Cefotetan (Cefotan), 2 g IV q12h, or cefoxitin (Mefoxin, 2 g IV q6h) plus doxycycline (100 mg IV or PO q12h) OR
- Clindamycin (Cleocin), 900 mg IV q6h, plus gentamicin (1-1.5 mg/kg IV q8h).
- Ampicillin-subactam (Unasyn), 3 g IV q6h plus doxycycline (100 mg IV or PO Q12h).
- Parenteral administration of antibiotics should be continued for 24 hours after clinical response, followed by doxycycline (100 mg PO BID) or clindamycin (Cleocin, 450 mg PO QID) for a total of 14 days.
- Levofloxacin (Levaquin), 500 mg IV q24h, plus metronidazole (Flagyl, 500 mg IV q8h). With this regimen, azithromycin (Zithromax, 1 g PO once) should be given as soon as the patient is tolerating oral intake.

10. Symptomatic Medications:
- Acetaminophen (Tylenol) 1-2 tabs PO q4-6h pm pain or temperature >38.5°C.
- Meperidine (Demerol) 25-100 mg IM q4-6h pm pain.
- Zolpidem (Ambien) 10 mg PO qhs pm insomnia.

11. Labs: beta-HCG pregnancy test, CBC, SMA 7&12, ESF, GC culture, chlamydia direct fluorescent antibody stain. UA with micro, C&S, VDRL, HIV, blood cultures x 2. Pelvic ultrasound.
Gastrointestinal Disorders

Gastroesophageal Reflux Disease

1. Admit to: Gastroesophageal reflux disease.
2. Diagnosis: Gastroesophageal reflux disease.
3. Condition: 
4. Vital Signs: q4h. Call physician if BP >160/90, <90/60; P >120, <50; T >38.5°C. 
5. Activity: Up ad lib. Elevate the head of the bed by 6 to 8 inches. 
7. Diet: Low-fat diet; no cola, citrus juices, or tomato products; avoid the supine position after meals; no eating within 3 hours of bedtime. 
8. IV Fluids: D5 ½ NS with 20 mEq KCL at TKO. 
9. Special Medications: 
   - Pantoprazole (Protonix) 40 mg PO/IV q24h OR 
   - Nizatidine (Axid) 300 mg PO qhs OR 
   - Omeprazole (Prilosec) 20 mg PO bid (30 minutes prior to meals) OR 
   - Lansoprazole (Prevacid) 15-30 mg PO qd [15, 30 mg caps] OR 
   - Esomeprazole (Nexium) 20 or 40 mg PO qd OR 
   - Ranitidine (Zantac) 50 mg IV bolus, then continuous infusion at 12.5 mg/h (300 mg in 250 mL DSW at 11 mL/h over 24h) or 50 mg IV q8h OR 
   - Cimetidine (Tagamet) 300 mg IV bolus, then continuous infusion at 50 mg/h (1200 mg in 250 mL DSW over 24h) or 300 mg IV q6-8h OR 
   - Famotidine (Pepcid) 20 mg IV q12h. 
10. Symptomatic Medications: 
   - Mylanta Plus or Maalox Plus 30 mg PO q2h prn. 
   - Trimethobenzamide (Tigan) 100-250 mg PO or 100-200 mg IM/PR q6h prn nausea OR 
   - Prochlorperazine (Compazine) 5-10 mg IM/IV/PO q4-6h or 25 mg PR q4-6h prn nausea. 
12. Labs: CBC, SMA 7&12, amylase, lipase, LDH. UA.

Peptic Ulcer Disease

1. Admit to: Peptic ulcer disease. 
2. Diagnosis: Peptic ulcer disease. 
3. Condition: 
4. Vital Signs: q4h. Call physician if BP >160/90, <90/60; P >120, <50; T >38.5°C. 
7. Diet: NPO 48h, then regular diet, no caffeine. 
8. IV Fluids: D5 ½ NS with 20 mEq KCL at 125 cc/h. NG tube at low intermittent suction (if obstructed). 
9. Special Medications: 
   - Ranitidine (Zantac) 50 mg IV bolus, then continuous infusion at 12.5 mg/h (300 mg in 250 mL DSW at 11 mL/h over 24h) or 50 mg IV q8h OR 
   - Cimetidine (Tagamet) 300 mg IV bolus, then continuous infusion at 50 mg/h (1200 mg in 250 mL DSW over 24h) or 300 mg IV q6-8h OR 
   - Famotidine (Pepcid) 20 mg IV q12h OR 
   - Pantoprazole (Protonix) 40 mg PO/IV q24h OR 
   - Nizatidine (Axid) 300 mg PO qhs OR 
   - Omeprazole (Prilosec) 20 mg PO bid (30 minutes prior to meals) OR 
   - Lansoprazole (Prevacid) 15-30 mg PO qd prior to breakfast [15, 30 mg caps]. 

Eradication of Helicobacter pylori

A. Bismuth, Metronidazole, Tetracycline, Ranitidine
   1. 14 day therapy.
   2. Bismuth (Pepto Bismol) 2 tablets PO qid.
   3. Metronidazole (Flagyl) 250 mg PO qid (tid if cannot tolerate the qid dosing).
   4. Tetracycline 500 mg PO qid.
   5. Ranitidine (Zantac) 150 mg PO bid.
   6. Efficacy is greater than 90%.
B. Amoxicillin, Omeprazole, Clarithromycin (AOC)
   1. 10 days of therapy.
   2. Amoxicillin 1 gm PO bid.
   3. Omeprazole (Prilosec) 20 mg PO bid.
   4. Clarithromycin (Biaxin) 500 mg PO bid.
C. Metronidazole, Omeprazole, Clarithromycin (MOC)
   1. 10 days of therapy.
   2. Metronidazole 500 mg PO bid.
   3. Omeprazole (Prilosec) 20 mg PO bid.
   4. Clarithromycin (Biaxin) 500 mg PO bid.
D. Omeprazole, Clarithromycin (OC)
   1. 14 days of therapy.
   2. Omeprazole (Prilosec) 40 mg PO qd for 14 days, then 20 mg qd for an additional 14 days of therapy.
   3. Clarithromycin (Biaxin) 500 mg PO bid.
E. Ranitidine-Bismuth-Citrate, Clarithromycin (RBC-C)
   1. 28 days of therapy.
   2. Ranitidine-bismuth-citrate (Tritec) 400 mg PO bid for 28 days.
3. Clarithromycin (Biaxin) 500 mg PO tid for 14 days.
4. Efficacy is 70-80%; expensive.

10. Symptomatic Medications:
- Mylanta Plus or Maalox Plus 30 mg PO q2h pm
- Trimethobenzamide (Tigan) 100-250 mg PO or 100-200 mg IM/PR q6h pm nausea OR
- Prochlorperazine (Compazine) 5-10 mg IM/IV/PO q4-6h or 25 mg PR q4-6h pm nausea.

12. Labs: CBC, SMA 7&12, amylase, lipase, LDH, UA, Helicobacter pylori serology. Fasting serum gastrin qAM for 3 days. Urea breath test for H pylori.

### Gastrointestinal Bleeding

1. Admit to:
2. Diagnosis: Upper/lower GI bleed
3. Activity: Bed rest
6. Nursing: Place nasogastric tube, then lavage with 2 L of room temperature normal saline, then connect to low intermittent suction. Repeat lavage q1h. Record volume and character of lavage. Foley to closed drainage; inputs and outputs.
7. Diet: NPO
8. IV Fluids: Two 16 gauge IV lines. 1-2 L NS wide open; transfuse 2-6 units PRBC to run as fast as possible, then repeat CBC.
9. Special Medications:
- Oxygen 2 L by NC.
- Pantoprazole (Protonix) 80 mg IV over 15min, then 8 mg/hr IV infusion OR
  80 mg IV q12h.
- Ranitidine (Zantac) 50 mg IV bolus, then continuous infusion at 12.5 mg/h [500 mg in 250 mL D5W over 24h (11 cch)], or 50 mg IV q6-8h OR
- Famotidine (Pepcid) 20 mg IV q12h.
- Vitamin K (Phytonadione) 10 mg IV/SQ qd for 3 days (if INR is elevated).
10. Extras: Portable CXR, upright abdomen, ECG. Surgery and GI consults.

### Esophageal Variceal Bleeds:
- Somatostatin (Octreotide) 50 mcg IV bolus, followed by 50 mcg/hr IV infusion (1200 mcg in 250 mL of D5W at 11 mL/h).
- Vasopressin Nitroglycerine Paste Therapy:
  - Vasopressin (Pitressin) 20 U IV over 20-30 minutes, then 0.2-0.3 U/min [100 U in 250 mL of D5W (0.4 U/mL)] for 30 min, followed by increases of 0.2 U/min until bleeding stops or max of 0.9 U/min. If bleeding stops, taper over 24-48h AND
  - Nitroglycerine paste 1 inch q6h OR nitroglycerin IV at 10-30 mcg/min continuous infusion (50 mg in 250 mL of D5W).
11. Labs: Repeat hematocrit q2h; CBC with platelets q12-24h. Repeat INR in 6 hours. SMA 7&12, ALT, AST, alkaline phosphatase, INR/PTT, type and cross for 3-6 U PRBC and 2-4 U FFP.

### Cirrhotic Ascites and Edema

1. Admit to:
2. Diagnosis: Cirrhotic ascites and edema
3. Activity: Bed rest with legs elevated.
7. Diet: 2500 calories, 100 gm protein; 500 mg sodium restriction; fluid restriction to 1-1.5 L/d (if hyponatremia, Na <130).
8. IV Fluids: Heparin lock with flush q shift.
9. Special Medications:
- Diurese to reduce weight by 0.5-1 kg/d (if edema) or 0.25 kg/d (if no edema).
- Spironolactone (Aldactone) 25-50 mg PO qid or 200 mg PO qAM, increase by 100 mg/d to max of 400 mg/d.
- Furosemide (Lasix [refractory ascites]) 40-120 mg PO or IV qid-bid. Add KCL 20-40 mEq PO qAM if renal function is normal OR
- Torsemide (Demadex) 20-40 mg PO qid-bid.
- Metolazone (Zaroxolyn) 5-10 mg PO qd (max 20 mg/d).
- Captopril (Capoten) 6.75 mg PO q8h; increase to max 50 mg PO q8h for refractory ascites caused by hyperaldosteronism.
- Famotidine (Pepcid) 20 mg IV/IP q12h.
- Vitamin K 10 mg SQ qd for 3 days.
- Folic acid 1 mg PO qd.
-Thiamine 100 mg PO qd.
-Multivitamin PO qd.

Paracentesis: Remove up to 5 L of ascites if peripheral edema, tense ascites, or decreased diaphragmatic excursion. If large volume paracentesis without peripheral edema or with renal insufficiency, give salt-poor albumin, 12.5 gm for each 2 liters of fluid removed (50 mL of 25% solution); infuse 25 mL before paracentesis and 25 mL 6h after.

10. Symptomatic Medications:
- Docusate (Colace) 100 mg PO qhs.
- Lactulose 30 mL PO bid-qid pm constipation.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.

11. Labs:
Ammonia, CBC, SMA 7&12, LFTs, albumin, amylase, lipase, INR/PTT, Urine creatinine, Na, K, HBsAg, anti-HBs, hepatitis C virus antibody, alpha-1-antitrypsin.

Paracentesis Ascitic Fluid
Tube 1: Protein, albumin, specific gravity, glucose, bilirubin, amylase, lipase, triglyceride, LDH (3-5 mL, red top tube).
Tube 2: Cell count and differential (3-5 mL, purple top tube).
Tube 3: C&S, Gram stain, AFB, fungal (5-20 mL); inject 20 mL into bottle of blood culture at bedside.
Tube 4: Cytology (>20 mL).
Syringe: pH (2 mL).

Viral Hepatitis

1. Admit to:
2. Diagnosis: Hepatitis
3. Condition:
4. Vital Signs: qid. Call physician if BP <90/60; T >38.5°C.
5. Activity:
7. Diet: Clear liquid (if nausea), low fat (if diarrhea).
8. Special Medications:
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Vitamin K 10 mg SQ qd for 3d.
- Multivitamin PO qd.
9. Symptomatic Medications:
- Meperidine (Demerol) 50-100 mg IM q4-6h pm pain.
- Trimethobenzamide (Tigan) 250 mg PO q6-8h pm pruritus or nausea q6-8h pm.
- Hydroxyzine (Vistaril) 25 mg IM/PO q4-6h pm pruritus or nausea.
- Diphenhydramine (Benadryl) 25-50 mg PO/IV q4-6h pm pruritus.
11. Labs: CBC, SMA 7&12, GGT, LDH, amylase, lipase, INR/PTT, IgM anti-HAV, IgM anti-HBc, HBsAg, anti-HCV, alpha-1-antitrypsin, ANA, ferritin, ceruloplasmin, urine copper.

Cholecystitis and Cholangitis

1. Admit to:
2. Diagnosis: Bacterial cholangitis
3. Condition:
4. Vital Signs: q4h. Call physician if BP systolic >160, <90; diastolic: >90, <60; P >120, <50; R >25, <10; T >38.5°C.
5. Activity: Bed rest
6. Nursing: Inputs and outputs
7. Diet: NPO
8. IV Fluids: 0.5-1 L LR over 1h, then D5 ½ NS with 20 mEq KCL/L at 125 cc/h. NG tube at low constant suction. Foley to closed drainage.
9. Special Medications:
- Ticarcillin or piperacillin 3 gm IV q4-6h (single agent).
- Ampicillin 1-2 gm IV q4-6h and gentamicin 100 mg (1.5-2 mg/kg), then 80 mg IV q8h (3-5 mg/kg/d) and metronidazole 500 mg IV q8h.
- Imipenem/cilastatin (Primaxin) 1.0 gm IV q6h (single agent).
- Ampicillin/subactam (Unasyn) 1.5-3.0 gm IV q6h (single agent).
10. Symptomatic Medications:
- Meperidine (Demerol) 50-100 mg IV/IM q4-6h pm pain.
- Hydroxyzine (Vistaril) 25-50 mg IV/IM q4-6h pm with meperidine.
- Omeprazole (Prilosec) 20 mg PO bid.
- Heparin 5000 U SQ q12h.
- Enoxaparin (Lovenox) 30 mg SQ q12h.
11. Extrains: CXR, ECG, RUQ ultrasound, HIDA scan, acute abdomen series. GI consult, surgical consult.
12. Labs: CBC, SMA 7&12, GGT, amylase, lipase, blood C&S x 2. UA, INR/PTT.
Acute Pancreatitis

1. Admit to:
2. Diagnosis: Acute pancreatitis
3. Condition:
4. Vital Signs: q1-4h, call physician if BP >160/90, <90/60; P >120; R>25; >10; T >38.5°C; urine output < 25 cc/hr for more than 4 hours.
5. Activity: Bed rest with bedside commode
7. Diet: NPO
8. IV Fluids: 1-4 L NS over 1-3h, then D5 ½ NS with 20 mEq KCL/L at 125 cc/hr. NG tube at low constant suction (if obstruction).
9. Special Medications:
   - Ranitidine (Zantac) 6.25 mg/h (150 mg in 250 mL D5W at 11 mL/h) IV or 50 mg IV q6-8h OR Famotidine (Pepcid) 20 mg IV q12h.
   - Antibiotics are indicated for infected pancreatic pseudocysts or for abscess. Uncomplicated pancreatitis does not require antibiotics.
     - Ticarcillin/clavulanate (Timentin) 3.1 gm IV, or ampicillin/sulbactam (Unasyn) 3.0 gm IV q6h or imipenem (Primaxin) 0.5-1.0 gm IV q8h.
     - Heparin 5000 U SQ q12h.
   - Total parenteral nutrition should be provided until the amylase and lipase are normal and symptoms have resolved.
10. Symptomatic Medications:
12. Labs: CBC, platelets, SMA 7&12, calcium, triglycerides, amylase, lipase, LDH, AST, ALT, blood C&S x 2, hepatitis B surface antigen, INR/PTT, type and hold 4-6 U PRBC and 2-4 U FFP. UA.

Acute Diarrhea

1. Admit to:
2. Diagnosis: Acute Diarrhea
3. Condition:
4. Vital Signs: q6h; call physician if BP >160/90, <80/60; P >120; R>25; T >38.5°C.
5. Activity: Up ad lib
7. Diet: NPO except ice chips for 24h, then low residual elemental diet; no milk products.
8. IV Fluids: 1-2 L NS over 1-2 hours; then D5 ½ NS with 40 mEq KCL/L at 125 cc/h.
9. Special Medications:
   - Febrile or gross blood in stool or neutrophils on microscopic exam or prior travel:
     - Ciprofloxacin (Cipro) 500 mg PO bid OR
     - Levofloxacin (Levaquin) 500 mg PO qd OR
     - Trimethoprim/SMX (Bactrim DS) (160/800 mg) one DS tab PO bid.
10. Labs: SMA7 and 12, CBC with differential, UA, blood culture x 2.
   - Stool studies: Wright's stain for fecal leukocytes, ova and parasites x 3, clostridium difficile toxin; culture for enteric pathogens, E coli 0157:H7 culture.

Specific Treatment of Acute Diarrhea

Shigella:
- Trimethoprim/SMX, (Bactrim) one DS tab PO bid for 5 days OR
- Ciprofloxacin (Cipro) 500 mg PO bid for 5 days OR
- Azithromycin (Zithromax) 500 mg PO x 1, then 250 mg PO qd x 4.

Salmonella (bacteremia):
- Ofloxacin (Floxin) 400 mg IV/PO q12h for 14 days OR
- Ciprofloxacin (Cipro) 400 mg IV q12h or 750 mg PO q12h for 14 days OR
- Trimethoprim/SMX (Bactrim) one DS tab PO bid for 14 days OR
- Ceftriaxone (Rocephin) 2 gm IV q12h for 14 days.

Campylobacter jejuni:
- Erythromycin 250 mg PO qid for 5-10 days OR
- Azithromycin (Zithromax) 500 mg PO x 1, then 250 mg PO qd x 4 OR
- Ciprofloxacin (Cipro) 500 mg PO bid for 5 days.

Enterotoxic/Enteroinvasive E coli (Travelers Diarrhea):
- Ciprofloxacin (Cipro) 500 mg PO bid for 5-7 days OR
- Trimethoprim/SMX (Bactrim), one DS tab PO bid for 5-7 days.

Antibiotic-Associated and Pseudomembranous Colitis (Clostridium difficile):
- Metronidazole (Flagyl) 250 mg PO or IV qid for 10-14 days OR
- Vancomycin 125 mg PO qid for 10 days (500 mg qid for 10-14 days, if recurrent).

Yersinia Enterocolitica (sepsis):
- Trimethoprim/SMX (Bactrim), one DS tab PO bid for 5-7 days OR
- Ciprofloxacin (Cipro) 500 mg PO bid for 5-7 days OR
-Ofl oxacin (Floxin) 400 mg PO bid OR
- Ceftriaxone (Rocephin) 1 gm IV q12h.

Entamoeba Histolytica (Amebiasis):
Mild to Moderate Intestinal Disease:
- Metronidazole (Flagyl) 750 mg PO tid for 10 days OR
- Tinidazole 2 gm per day PO for 3 days Followed By:
  - Iodoquinol 650 mg PO tid for 20 days OR
  - Paromomycin 25-30 mg/kg/d PO tid for 7 days.
Severe Intestinal Disease:
- Metronidazole (Flagyl) 750 mg PO tid for 10 days OR
- Tinidazole 600 mg PO bid for 5 days Followed By:
  - Iodoquinol 650 mg PO tid for 20 days OR
  - Paromomycin 25-30 mg/kg/d PO tid for 7 days.

Giardia Lamblia:
- Quinacrine 100 mg PO tid for 5d OR
- Metronidazole 250 mg PO tid for 7 days OR
- Nitazoxanide (Alinia) 200 mg PO q12h x 3 days.

Cryptosporidium:
- Paromomycin 500 mg PO qid for 7-10 days [250 mg] OR
- Nitazoxanide (Alinia) 200 mg PO q12h x 3 days.

Crohn’s Disease
1. Admit to:
2. Diagnosis: Crohn’s disease.
3. Condition:
4. Vital Signs: q8h. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C
6. Nursing: Inputs and outputs. NG at low intermittent suction (if obstruction).
7. Diet: NPO except for ice chips and medications for 48h, then low residue or elemental diet, no milk products.
8. IV Fluids: 1-2 L NS over 1-3h, then D5 ½ NS with 40 mEq KCL/L at 125 cc/hr.
9. Special Medications:
- Mesalamine (Asacol) 400-800 mg PO tid or mesalamine (Pentasa) 1000 mg (four 250 mg tabs)
  PO qid OR
- Sulfasalazine (Azulfidine) 0.5-1 gm PO bid; increase over 10 days to 0.5-1 gm PO qid OR
- Olsalazine (Dipentum) 500 mg PO bid.
- Infliximab (Remicade) 5 mg/kg IV over 2 hours; may repeat at 2 and 6 weeks
- Prednisone 40-60 mg PO qd OR
- Hydrocortisone 50-100 mg IV q6h OR
- Methylprednisolone (Solu-Medrol) 10-20 mg IV q6h.
- Metronidazole (Flagyl) 250-500 mg PO q6h.
- Vitamin B12, 100 mcg IM for 5d, then 100-200 mcg IM q month.
- Multivitamin PO qAM or 1 ampule IV qAM.
- Folic acid 1 mg PO qd.
11. Labs: CBC, SMA 7&12, Mg, ionized calcium, blood C&S x 2, stool Wright’s stain, stool culture, C difficile antigen assay, stool ova and parasites x 3.

Ulcerative Colitis
1. Admit to:
2. Diagnosis: Ulcerative colitis
3. Condition:
4. Vital Signs: q4-6h. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C.
5. Activity: Up ad lib in room.
7. Diet: NPO except for ice chips for 48h, then low residue or elemental diet, no milk products.
8. IV Fluids: 1-2 L NS over 1-2h, then D5 ½ NS with 40 mEq KCL/L at 125 cc/hr.
9. Special Medications:
- Mesalamine (Asacol) 400-800 mg PO tid OR
- 5-aminosalicylate (Mesalamine) 400-800 mg PO tid or 1 gm PO qid or enema 4 gm/60 mL PR qhs OR
- Sulfasalazine (Azulfidine) 0.5-1 gm PO bid; increase over 10 days as tolerated to 0.5-1.0 gm PO qid OR
- Olsalazine (Dipentum) 500 mg PO bid OR
- Hydrocortisone retention enema, 100 mg in 120 mL saline bid.
- Methylprednisolone (Solu-Medrol) 10-20 mg IV q6h OR
- Hydrocortisone 100 mg IV q6h OR
- Prednisone 40-60 mg PO qd.
- B12, 100 mcg IM for 5d then 100-200 mcg IM q month.
- Multivitamin PO qAM or 1 ampule IV qAM.
- Folate 1 mg PO qd.
10. Symptomatic Medications:
- Loperamide (Imodium) 2-4 mg PO tid-qid pm, max 16 mg/d OR
- Kaopectate 60-90 mL PO qid pm.
12. Labs: CBC, SMA 7&12, Mg, ionized calcium, liver panel, blood C&S x 2, stool Wright’s stain, stool for ova and parasites x 3, culture for enteric pathogens; Clostridium difficile antigen assay, UA.
Parenteral Nutrition

General Considerations: Daily weights, inputs and outputs. Finger stick glucose q6h.

Central Parenteral Nutrition:
-Infuse 40-50 mL/h of amino acid-dextrose solution in the first 24h; increase daily by 40 mL/hr increments until providing 1.3-2 x basal energy requirement and 1.2-1.7 gm protein/kg/d (see formula page 97).

Standard solution:
Amino acid solution (Aminosyn) 7-10% ........................................... 500 mL
Dextrose 40-70% ............................................................... 500 mL
Sodium ................................................................. 35 mEq
Potassium ......................................................... 36 mEq
Chloride ................................................................. 35 mEq
Calcium ............................................................... 4.5 mEq
Phosphate ......................................................... 9 mmol
Magnesium ............................................................ 8.0 mEq
Acetate ............................................................... 82-104 mEq
Multi-trace element formula ........................................ 1 mL/d
(zinc, copper, manganese, chromium)
Regular insulin (if indicated) ........................................ 10-60 U/L
Multivitamin(12)(2 amp) ............................................. 20 mL/d
Vitamin K (in solution, SQ, IM) ..................................... 10 mg/week
Vitamin B12 ............................................................ 1000 mcg/week
Selenium (after 20 days of continuous TPN) ....................... 80 mcg/d

Intralipid 20%, 500 mL/d IVPB; infuse in parallel with standard solution at 1 mL/min for 15 min; if no adverse reactions, increase to 100 mL/hr once daily or 20 mg/hr continuously. Obtain serum triglyceride 6h after end of infusion (maintain <250 mg/dL).

Cyclic Total Parenteral Nutrition:
-12h night schedule; taper continuous infusion in morning by reducing rate to half of original rate for 1 hour. Further reduce rate by half for an additional hour, then discontinue. Finger stick glucose q4-6h; restart TPN in afternoon. Taper at beginning and end of cycle. Final rate of 185 mL/hr for 9-10 h and 2 hours of taper at each end for total of 2000 mL.

Peripheral Parenteral Supplementation:

Peripheral Parenteral Supplementation:
-3% amino acid solution (ProCalamine) up to 3 L/d at 125 cc/hr
-Combine 500 mL amino acid solution 7% or 10% (Aminosyn) and 500 mL 20% dextrose and electrolyte additive. Infuse at up to 100 cc/hr in parallel with:
-Intralipid 10% or 20% at 1 mL/min for 15 min (test dose); if no adverse reactions, infuse 500 mL/d at 21 mL/h over 24h, or up to 100 mL/h over 5 hours daily.
-Draw triglyceride level 6h after end of Intralipid infusion.

7. Special Medications:
-Famotidine (Pepcid) 20 mg IV q12h or 40 mg/day in TPN OR
-Ranitidine (Zantac) 50 mg IV q8h or 150 mg/day in TPN.


9. Labs:
Daily labs: SMA7, osmolality, CBC, cholesterol, triglyceride, urine glucose and specific gravity.
Twice weekly Labs: Calcium, phosphate, SMA-12, magnesium
Weekly Labs: Serum albumin and protein, pre-albumin, ferritin, INR/PTT, zinc, copper, B12, folate, 24h urine nitrogen and creatinine.

Enteral Nutrition

General Considerations: Daily weights, inputs and outputs, nasoduodenal feeding tube. Head-of-bed at 30° while enteral feeding and 2 hours after completion.

Enteral Bolus Feeding: Give 50-100 mL of enteral solution (Pulmocare, Jevity, Vivonex, Osmolite, Vital HN) q3h. Increase amount in 50 mL steps to max of 250-300 mL q3-4h; 30 kcal of nonprotein calories/kg/d and 1.5 gm protein/kg/d. Before each feeding, measure residual volume, and delay feeding by 1h if >100 mL. Flush tube with 100 cc of water after each bolus.

Continuous enteral infusion: Initial enteral solution (Pulmocare, Jevity, Vivonex, Osmolite) 30 mL/hr. Measure residual volume q1h for 12h then bid; hold feeding for 1h if >100 mL. Increase rate by 25-50 mL/hr at 24 h intervals as tolerated until final rate of 50-100 mL/hr. Three tablespoonsfuls of protein powder
(Promix) may be added to each 500 cc of solution. Flush tube with 100 cc water q8h.

**Special Medications:**
- Metoclopramide (Reglan) 10-20 mg IV/NG OR
- Erythromycin 125 mg IV or via nasogastric tube q8h.
- Famotidine (Pepcid) 20 mg IV/PO q12h OR
- Ranitidine (Zantac) 150 mg NG bid.

**Symptomatic Medications:**
- Loperamide (Imodium) 2-4 mg NG/J-tube q6h prn, max 16 mg/d OR
- Diphenoxylate/atropine (Lomotil) 1-2 tabs or 5-10 mL (2.5 mg/5 mL) PO/J-tube q4-6h pm, max 12 tabs/d OR
- Kaopectate 30 cc NG or in J-tube q8h.

**Extras:**
- CXR, plain abdominal x-ray for tube placement, nutrition consult.

**Labs:**
- **Daily labs:** SMA7, osmolality, CBC, cholesterol, triglyceride, SMA-12
- **Weekly labs when indicated:** Protein, Mg, INR/PTT, 24h urine nitrogen and creatinine, Pre-albumin, retinol-binding protein.

### Hepatic Encephalopathy

1. Admit to:
2. Diagnosis: Hepatic encephalopathy
3. **Condition:**
4. **Vital Signs:** q1-4h, neurochecks q4h. Call physician if BP $>$ 160/90, <90/60; P $>$ 120, <50; R $>$ 25, <10; T $>$ 38.5°C.
5. **Allergies:** Avoid sedatives, NSAIDS or hepatotoxic drugs.
6. **Activity:** Bed rest.
7. **Nursing:** Keep head-of-bed at 40 degrees, guaiac stools; turn patient q2h while awake, chart stools. Seizure precautions, egg crate mattress, soft restraints prn. Record inputs and outputs. Foley to closed drainage.
8. **Diet:** NPO for 8 hours, then low-protein nasogastric enteral feedings (Hepatic-Aid II) at 30 mL/hr. Increase rate by 25-50 mL/hr at 24 hr intervals as tolerated until final rate of 50-100 mL/hr as tolerated.
9. **IV Fluids:** D5W at TKO.
10. **Special Medications:**
- Sorbitol 70% solution, 30-60 gm PO now.
- Lactulose 30-45 mL PO q1h for 3 doses, then 15-45 mL PO bid-qid, titrate to produce 3 soft stools/d OR
- Lactulose enema 300 ml added to 700 ml of tap water; instill 200-250 ml per rectal tube bid-qid AND
- Neomycin 1 gm PO q8h (4-12 gid) OR
- Metronidazole (Flagyl) 250 mg PO q8h.
- Ranitidine (Zantac) 50 mg IV q6h or 150 mg PO bid OR
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Flumazenil (Romazicon) 0.2 mg (2 mL) IV over 30 seconds q1min until a total dose of 3 mg, if a partial response occurs, continue 0.5 mg doses until a total of 5 mg. Flumazenil may help reverse hepatic encephalopathy, irrespective of benzodiazepine use.
- Multivitamin PO qAM or 1 ampule IV qAM.
- Folic acid 1 mg PO/IV qd.
- Thiamine 100 mg PO/IV qd.
- Vitamin K 10 mg SQ qd for 3 days if elevated INR.
11. **Extras:**
- CXR, ECG, GI and dietetics consults.
12. **Labs:** Ammonia, CBC, platelets, SMA 7&12, AST, ALT, GGT, LDH, alkaline phosphatase, protein, albumin, bilirubin, INR/PTT, ABG, blood C&S x 2, hepatitis B surface antibody, UA.

### Alcohol Withdrawal

1. Admit to:
2. Diagnosis: Alcohol withdrawals/delirium tremens.
3. **Condition:**
4. **Vital Signs:** q4-6h. Call physician if BP $>$ 160/90, <90-60; P $>$ 130, <50; R $>$ 25, <10; T $>$ 38.5°C; or increase in agitation.
5. **Activity:**
6. **Nursing:** Seizure precautions. Soft restraints prn.
7. **Diet:** Regular, push fluids.
8. **IV Fluids:** Heparin lock or D5 ½ NS at 100-125 cc/h.
9. **Special Medications:**
- Withdrawal syndrome:
  - Chlorpromazine (Librium) 50-100 mg PO/IV q6h for 3 days OR
  - Lorazepam (Ativan) 1 mg PO tid-qid.
- Delirium tremens:
  - Chlorpromazine (Librium) 100 mg slow IV push or PO, repeat q4-6h pm agitation or tremor for 24h; max 500 mg/d. Then give 50-100 mg PO q6h pm agitation or tremor OR
  - Diazepam (Valium) 5 mg slow IV push, repeat q6h until calm, then 5-10 mg PO q4-6h.

**Seizures:**
- Thiamine 100 mg IV push AND
- Dextrose water 50%, 50 mL IV push.
- Lorazepam (Ativan) 0.1 mg/kg IV at 2 mg/min; may repeat x 1 if seizures continue.

**Wernicke-Korsakoff Syndrome:**
- Thiamine 100 mg IV stat, then 100 mg IV qd.
10. **Symptomatic Medications:**
Toxicology

Poisoning and Drug Overdose

Decontamination:
- Gastric Lavage: Place patient left side down, place nasogastric tube, and check position by injecting air and auscultating. Lavage with normal saline until clear fluid, then leave activated charcoal or other antidote. Gastric lavage is contraindicated for corrosives.
- Cathartics:
  - Magnesium citrate 6% solution 150-300 mL PO
  - Magnesium sulfate 10% solution 150-300 mL PO.
- Activated Charcoal: 50 gm PO (first dose should be given using product containing sorbitol). Repeat q2-6h for large ingestions.
- Hemodialysis should be for isopropanol, methanol, ethylene glycol, severe salicylate intoxication (>100 mg/dL), lithium, or theophylline (if neurotoxicity, seizures, or coma).

Antidotes:
- Narcotic Overdose:
  - Naloxone (Narcan) 0.4 mg IV/ET/IM/SC, may repeat q2min.
- Methanol Ingestion:
  - Ethanol (10% in D5W) 7.5 mL/kg load, then 1.4 mL/kg/hr IV infusion until methanol level <20 mg/dL. Maintain ethanol level of 100-150 mg/100 mL.
- Ethylene Glycol Ingestion:
  - Fomepizole (Antizol) 15 mg/kg IV over 30 min, then 10 mg/kg IV q12h x 4 doses, then 15 mg/kg IV q12h until ethylene glycol level is less than 20 mg/dL AND
  - Pyridoxine 100 mg IV q6h for 2 days and thiamine 100 mg IV q6h for 2 days.
- Carbon Monoxide Intoxication:
  - Hyperbaric oxygen therapy or 100% oxygen by mask if hyperbaric oxygen is not available.
- Tricyclic Antidepressants Overdose:
  - Gastric lavage
  - Magnesium citrate 300 mg PO/NG x1.
  - Activated charcoal premixed with sorbitol 50 gm NG round-the-clock until level is less than the toxic range.
- Benzodiazepine Overdose:
  - Flumazenil (Romazicon) 0.2 mg (2 mL) IV over 30 seconds q1min until a total dose of 3 mg; if a partial response occurs, repeat 0.5 mg doses until a total of 5 mg. If sedation persists, repeat the above regimen or start a continuous IV infusion of 0.1-0.5 mg/h.

Labs: Drug screen (serum, gastric, urine); blood levels, SMA 7, fingerstick glucose, CBC, LFTs, ECG.

Acetaminophen Overdose

1. Admit to: Medical intensive care unit.
2. Diagnosis: Acetaminophen overdose
3. Condition:
4. Vital Signs: q1h with neurochecks. Call physician if BP >160/90, <90/60; P >130, <50; R >25, <10; urine output <20 cc/h for 3 hours.
5. Activity: Bed rest with bedside commode.
6. Nursing: Inputs and outputs, aspiration and seizure precautions. Place large bore (Ewald) NG tube, then lavage with 2 L of NS.
7. Diet: NPO
8. IV Fluids
9. Special Medications:
  - Activated charcoal 30-100 gm doses, remove via nasogastric suction prior to acetylcysteine.
  - Acetylcysteine (Mucomyst, NAC) 5% solution loading dose 140 mg/kg via nasogastric tube, then 70 mg/kg via NG tube q4h x 17 doses OR acetylcysteine 150 mg/kg IV in 200 mL D5W over 15 min, followed by 50 mg/kg in 500 mL D5W, infused over 4h, followed by 100 mg/kg in 1000 mL of D5W over next 16h. Complete all NAC doses even if acetaminophen levels fall below toxic range.
  - Phytonadione (Aquamephyton) 5 mg IV/IM/SQ (if INR increased).
  - Fresh frozen plasma 2-4 U (if INR is unresponsive to Aquamephyton).
  - Trimethobenzamide (Tigan) 100-200 mg IM/PR q6h prn nausea.
10. Extras: ECG.
11. Labs: CBC, SMA 7&12, LFTs, INR/PTT, acetaminophen level now and in 4h. UA.
Theophylline Overdose
1. Admit to: Medical intensive care unit.
2. Diagnosis: Theophylline overdose
3. Condition:
4. Vital Signs: Neurochecks q2h. Call physician if BP >160/90, <90/60; P >130, <50; R >25, <10.
5. Activity: Bed rest.
6. Nursing: ECG monitoring until level <20 mcg/mL, aspiration and seizure precautions. Insert single lumen NG tube and lavage with normal saline if recent ingestion.
7. Diet: NPO
8. IV Fluids: D5 ½ NS at 125 cc/h
9. Special Medications:
   - Activated charcoal 50 gm PO round-the-clock, with sorbitol cathartic, until theophylline level <20 mcg/mL. Maintain head-of-bed at 30-45 degrees to prevent aspiration of charcoal.
   - Charcoal hemoperfusion should be considered if the serum level is >60 mcg/mL or if signs of neurotoxicity, seizure, coma are present.
   - Seizure: Lorazepam (Ativan) 0.1 mg/kg IV at 2 mg/min; may repeat x 1 if seizures continue.
10. Extras: ECG.
11. Labs: CBC, SMA 7&12, theophylline level now and in q6-8h; INR/PTT, liver panel. UA.

Tricyclic Antidepressant Overdose
1. Admit to: Medical intensive care unit.
2. Diagnosis: TCA Overdose
3. Condition:
4. Vital Signs: Neurochecks q1h.
5. Activity: Bedrest.
6. Nursing: Continuous suicide observation. ECG monitoring, measure QRS width hourly, inputs and outputs, aspiration and seizure precautions. Place single-lumen nasogastric tube and lavage with 2 liters of normal saline if recent ingestion.
7. Diet: NPO
8. IV Fluids: NS at 100-150 cc/hr.
9. Special Medications:
   - Activated charcoal premixed with sorbitol, 50 gm via NG tube q4-6h round-the-clock until the TCA level decreases to therapeutic range. Maintain head-of-bed at 30-45 degree angle to prevent charcoal aspiration.
   - Magnesium citrate 300 mL via nasogastric tube x 1 dose.
10. Protection Against Cardiac Toxicity:
    - If mechanical ventilation is necessary, hyperventilate to maintain pH 7.50-7.55.
    - Administer sodium bicarbonate 50-100 mEq (1-2 amps or 1-2 mEq/kg) IV over 5-10 min, followed by infusion of sodium bicarbonate (2 amps in D5W 1 L) at 100-150 cc/h. Adjust rate to maintain pH 7.50-7.55.
11. Extras: ECG.
12. Labs: Urine toxicology screen, serum TCA levels, liver panel, CBC, SMA-7 and 12, UA.

Neurologic Disorders

Ischemic Stroke
1. Admit to:
2. Diagnosis: Ischemic stroke
3. Condition:
4. Vital Signs: Vital signs and neurochecks q30minutes for 6 hours, then q60 minutes for 12 hours. Call physician if BP >185/105, <110/60; P >120, <50; R>24, <10; T >38.5°C; or change in neurologic status.
5. Activity: Bedrest.
6. Nursing: Head-of-bed at 30 degrees, turn q2h when awake, range of motion exercises qid. Foley catheter, eggcrate mattress. Guaiac stools, inputs and outputs. Bleeding precautions: check puncture sites for bleeding or hematomas. Apply digital pressure or pressure dressing to active compressible bleeding sites.
7. Diet: NPO except medications for 24 hours, then dysphagia ground diet with thickened liquids.
8. IV Fluids and Oxygen: 0.45% normal saline at 100 cc/hr. Oxygen at 2 L per minute by nasal cannula.
9. Special Medications:
   - Ischemic Stroke <3 hours:
     a. Tissue plasminogen activator (t-PA, Alteplase) is indicated if the patient presents within 3 hours of onset of symptoms and the stroke is non-hemorrhagic; 0.9 mg/kg (max 90 mg) over 60 min. Give 10% of the total dose as an initial bolus over 1 minute.
     b. Repeat CT scan or MRI 24 hours after completion of tPA. Begin heparin if scan results are negative for hemorrhage.
     c. Heparin 12 U/kg/h continuous IV infusion, without a bolus. Check aPTT q6h to maintain 1.2-1.5 x control.
   - Completed Ischemic Stroke >3 hours: -Aspirin enteric coated 325 mg PO qd OR
- Clopidogrel (Plavix) 75 mg PO qd OR
- Aspirin 25 mg/dipyridamole 200 mg (Aggrenox) 1 tab PO bid OR
- Aspirin 325 mg PO qd PLUS Clopidogrel (Plavix) 75 mg PO qd

10. Symptomatic Medications:
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Omeprazole (Prilosec) 20 mg PO bid or qhs.
- Docusate sodium (Colace) 100 mg PO qhs
- Bisacodyl (Dulcolax) 10-15 mg PO qhs or 10 mg PR pm.
- Acetaminophen (Tylenol) 650 mg PO/PR q4-6h prn.

11. Extras:
- CXR, ECG, CT without contrast or MRI with gadolinium contrast; carotid duplex scan; echocardiogram, 24-hour Holter monitor; swallowing studies. Physical therapy consult for range of motion exercises; neurology and rehabilitation medicine consults.

12. Labs:
- CBC, glucose, SMA 7&12, fasting lipid profile, VDRL, ESR; drug levels, INR/PTT, UA. Lupus anticoagulant, anticardiolipin antibody.

**Transient Ischemic Attack**

1. Admit to:
2. Diagnosis: Transient ischemic attack
3. Condition:
4. Vital Signs: q1-4h with neurochecks. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; or change in neurologic status.
5. Activity: Bedrest.
6. Nursing: Head-of-bed at 30 degrees, turn q2h when awake. Foley catheter to closed drainage, eggcrate mattress. Guaiac stools, inputs and outputs.
7. Diet: NPO except medications.
8. IV Fluids and Oxygen: 0.45% normal saline at 100 cc/h. Oxygen at 2 L per minute by nasal cannula.
9. Special Medications:
   - Aspirin 325 mg PO qd OR
   - Clopidogrel (Plavix) 75 mg PO qd OR
   - Aspirin 25 mg/dipyridamole 200 mg (Aggrenox) 1 tab PO bid.
   - Heparin (only if recurrent TIAs or cardiogenic or vertebrobasilar source for emboli) 700-800 U/h IV infusion without a bolus (25,000 U in 500 mL DSW); adjust q6-12h until PTT 1.2-1.5 x control.
   - Warfarin (Coumadin) 5.0-7.5 mg PO qd for 3d, then 2-4 mg PO qd. Titrate to INR of 2.0-2.5.
10. Symptomatic Medications:
- Famotidine (Pepcid) 20 mg IV/PO q12h.
- Docusate sodium (Colace) 100 mg PO qhs.
- Milk of magnesia 30 mL PO qd pm constipation.
11. Extras: CXR, ECG, CT without contrast; carotid duplex scan, echocardiogram, 24-hour Holter monitor. Physical therapy, neurology consults.
12. Labs: CBC, glucose, SMA 7&12, fasting lipid profile, VDRL, drug levels, INR/PTT, UA.

**Subarachnoid Hemorrhage**

1. Admit to:
2. Diagnosis: Subarachnoid hemorrhage
3. Condition:
4. Vital Signs: Vital signs and neurochecks q1-4h. Call physician if BP >185/105, <110/60; P >120, <50; R>24, <10; T >38.5°C; or change in neurologic status.
5. Activity: Bedrest.
6. Nursing: Head-of-bed at 30 degrees, turn q2h when awake. Foley catheter to closed drainage, eggcrate mattress. Guaiac stools, inputs and outputs.
7. Diet: NPO except medications.
8. IV Fluids and Oxygen: 0.45% normal saline at 100 cc/h. Oxygen at 2 L per minute by nasal cannula.
   - Keep room dark and quiet; strict bedrest. Neurologic checks q1hr for 12 hours, then q2hr for 12 hours, then q4hr. Call physician if abrupt change in neurologic status.
   - Restrict total fluids to 1000 mL/day; diet as tolerated.
9. Special Medications:
   - Nimodipine (Nimotop) 60 mg PO or via NG tube q4h for 21d, must start within 96 hours.
   - Phenytoin (seizures) load 15 mg/kg IV in NS (infuse at max 50 mg/min), then 300 mg PO/IV qAM (4-6 mg/kg/d) OR
   - Valproic acid (Depakene) 500-1000 mg IV q6h.
10. Hypertension:
   - Nitroprusside sodium, 0.1-0.5 mcg/kg/min (50 mg in 250 mL NS), titrate to control blood pressure OR
   - Labetalol (Trandate) 10-20 mg IV q15min pm or 1-2 mg/min IV infusion.
12. Labs: CBC, SMA 7&12, VDRL, UA.
Seizure and Status Epilepticus

1. Admit to:
2. Diagnosis: Seizure
3. Condition:
4. Vital Signs: q6h with neurochecks. Call physician if BP >160/90, <90/60; P >120, <50; R>25, <10; T >38.5°C; or any change in neurological status.
5. Activity: Bed rest
6. Nursing: Finger stick glucose. Seizure precautions with bed rails up; padded tongue blade at bedside. EEG monitoring.
7. Diet: NPO for 24h, then regular diet if alert.
8. IV Fluids: D5 ½ NS at 100 cc/hr; change to heparin lock when taking PO.
9. Special Medications:

**Status Epileptics:**

1. Maintain airway.
2. Position the patient laterally with the head down. The head and extremities should be cushioned to prevent injury.
3. A bite block or other soft object may be inserted into the mouth to prevent injury to the tongue.
4. Give 100% O2 by mask. Obtain brief history and a fingerstick glucose.
5. Secure IV access and draw blood for glucose analysis. Give thiamine 100 mg IV push, then dextrose 50% 50 mL IV push.

**Initial Control:**

- Lorazepam (Ativan) 6-8 mg (0.1 mg/kg; not to exceed 2 mg/min) IV at 1-2 mg/min. May repeat 6-8 mg q5-10min (max 80 mg/24h) OR
- Diazepam (Valium) 5-10 mg slow IV at 1-2 mg/min. Repeat 5-10 mg q5-10 min prn (max 100 mg/24h).
- Phenytoin (Dilantin) 15-20 mg/kg load in NS at 50 mg/min. Repeat 100-150 mg IV q30min, max 1.5 gm; monitor BP.
- Fosphenytoin (Cerebyx) 20 mg/kg IV/IM (at 150 mg/min), then 4-6 mg/kg/day in 2 or 3 doses (150 mg IV/IM q8h). Fosphenytoin is metabolized to phenytoin; fosphenytoin may be given IM.

**If seizures persist, administer phenobarbital 20 mg/kg IV at 50 mg/min, repeat 2 mg/kg q15min; additional phenobarbital may be given, up to max of 30-60 mg/kg.**

7. If seizures persist, intubate the patient and give:
   - Midazolam (Versed) 0.2 mg/kg IV push, then 0.045 mg/kg/hr; titrate up to 0.6 mg/kg/hr OR
   - Propofol (Diprivan) 2 mg/kg IV push over 2-5 min, then 50 mcg/kg/min; titrate up to 165 mcg/kg/min OR
   - Phenobarbital as above.
   - Induce coma with pentobarbital 10-15 mg/kg IV over 1-2h, then 1-1.5 mg/kg/h continuous infusion. Initiate continuous EEG monitoring.

8. Consider Intubation and General Anesthesia

**Maintenance Therapy for Epilepsy:**

**Primary Generalized Seizures – First-Line Therapy:**

- Carbamazepine (Tegretol) 200-400 mg PO tid [100, 200 mg]. Monitor CBC.
- Phenytoin (Dilantin) loading dose of 400 mg PO, followed by 300 mg PO q4hr for 2 doses (total of 1 g), then 300 mg PO qd or 100 mg tid or 200 mg bid [30, 50, 100 mg].
- Divalproex (Depakote) 250-500 mg PO tid-qid with meals [125, 250, 500 mg].
- Valproic acid (Depakene) 250-500 mg PO tid-qid with meals [250 mg].

**Primary Generalized Seizures -- Second Line Therapy:**

- Phenobarbital 30-120 mg PO bid [8, 16, 32, 65, 100 mg].
- Primidone (Mysoline) 250-500 mg PO tid [50, 250 mg]; metabolized to phenobarbital.
- Felbamate (Felbatol) 1200-2400 mg PO q4hr for 2 doses (total of 1 g), then 300 mg PO qd or 100 mg tid or 200 mg bid [30, 50, 100 mg].
- Valproic acid (Depakene) 250-500 mg PO tid-qid with meals [250 mg].

**Partial Seizure:**

- Carbamazepine (Tegretol) 200-400 mg PO tid [100, 200 mg].
- Divalproex (Depakote) 250-500 mg PO tid with meals [125, 250, 500 mg].
- Valproic acid (Depakene) 250-500 mg PO tid-qid with meals [250 mg].
- Phenobarbital 30-120 mg PO tid or qd [8, 16, 32, 65, 100 mg].
- Primidone (Mysoline) 250-500 mg PO tid [50, 250 mg]; metabolized to phenobarbital.
- Gabapentin (Neurontin), 300-400 mg PO bid-tid; max 1800 mg/day [100, 300, 400 mg]; adjunct therapy.
- Lamotrigine (Lamictal) 50 mg PO qd, then increase to 50-250 mg PO bid [25, 100, 150, 200 mg]; adjunct therapy.
- Topiramate (Topamax) 25 mg PO bid; titrate to max 200 mg PO bid [tab 25, 100, 200 mg]; adjunct therapy.
Absence Seizure:
- Divalproex (Depakote) 250-500 mg PO tid-qid [125, 250, 500 mg].
- Clonazepam (Klonopin) 0.5-5 mg PO bid-qid [0.5, 1, 2 mg].
- Lamotrigine (Lamictal) 50 mg PO qd, then increase to 50-250 mg PO bid [25, 100, 150, 200 mg]; adjunct therapy.
10. Extras: MRI with and without gadolinium or CT with contrast; EEG (with photic stimulation, hyperventilation, sleep deprivation, awake and asleep tracings); portable CXR, ECG.
11. Labs: CBC, SMA 7, glucose, Mg, calcium, phosphate, liver panel, VDRL, anticonvulsant levels. UA, drug screen.

Endocrinologic Disorders

Diabetic Ketoacidosis
1. Admit to:
2. Diagnosis: Diabetic ketoacidosis
3. Condition:
4. Vital Signs: q1-4h, postural BP and pulse. Call physician if BP >160/90, <90/50; P >140, <50; R >30, <10; T >38.5 °C; or urine output <20 mL/hr for more than 2 hours.
5. Activity: Bed rest with bedside commode.
7. Diet: NPO for 12 hours, then clear liquids as tolerated.
8. IV Fluids:
1-2 L NS over 1-3h (20-gauge), infuse at 400-1000 mL/h until hemodynamically stable, then change to 0.45% saline at 125-150 ccf/hr; keep urine output >30-60 mL/hr.
Add KCL when serum potassium is <5.0 mEq/L.
Concentration.......20-40 mEq KCL/L
Use K phosphate, 20-40 mEq/L, in place of KCL if hypophosphatemic.
Change to 5% dextrose in 0.45% saline with 20-40 mEq KCL/liter when blood glucose is 250-300 mg/dL.
9. Special Medications:
- Oxygen at 2 L/min by NC.
- Insulin regular (Humulin) 7-10 units (0.1 U/kg) IV bolus, then 7-10 U/h IV infusion (0.1 U/kg/hr); 50 U in 250 mL of 0.9% saline; flush IV tubing with 20 mL of insulin solution before starting infusion. Adjust insulin infusion to decrease serum glucose by 100 mg/dL or less per hour. When bicarbonate level is >16 mEq/L, and the anion gap is <16 mEq/L, decrease insulin infusion rate by half.
- When the glucose level reaches 250 mg/dL, 5% dextrose should be added to the replacement fluids with KCL 20-40 mEq/L.
- Use 10% glucose at 50-100 mL/h if anion gap persists and serum glucose has decreased to less than 100 mg/dL while on insulin infusion.
- Change to subcutaneous insulin when the anion gap has cleared; discontinue insulin infusion 1-2h after subcutaneous dose.
10. Symptomatic Medications:
- Famotidine (Pepcid) 20 mg IV q12h.
- Docusate sodium (Colace) 100 mg PO qhs.
- Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
11. Extras: Portable CXR, ECG.
12. Labs: Fingerstick glucose q1-2h. SMA 7 q4-6h. SMA 12, pH, bicarbonate, phosphate, amylase, lipase, hemoglobin A1c; CBC. UA, serum pregnancy test.

Nonketotic Hyperosmolar Syndrome
1. Admit to:
2. Diagnosis: Nonketotic hyperosmolar syndrome
3. Condition:
4. Vital Signs: q1h. Call physician if BP >160/90, <90/50; P >140, <50; R >25, <10; T >38.5 °C; or urine output <20 cc/hr for more than 4 hours.
5. Activity: Bed rest with bedside commode.
7. Diet: NPO.
8. IV Fluids: 1-2 L NS over 1h (16-gauge IV catheter), then give 0.45% saline at 125 ccf/hr. Maintain urine output >50 mL/h.
Add 20-40 mEq/L KCL when urine output adequate.
9. Special Medications:
- Insulin regular 0.5-1 U/kg IV infusion (50 U in 250 mL of 0.9% saline).
- Famotidine (Pepcid) 20 mg IV/PO q12h OR
- Lansoprazole (Prevacid) 30 mg PO qd.
- Heparin 5000 U SQ q12h.
10. Extras: Portable CXR, ECG.
11. Labs: Fingerstick glucose q1-2h x 6h, then q6h. SMA 7, osmolality. SMA 12, phosphate, ketones, hemoglobin A1c; CBC. UA.
Thyroid Storm and Hyperthyroidism

1. Admit to:
2. Diagnosis: Thyroid Storm
3. Condition:
4. Vital Signs: q1-4h. Call physician if BP >160/90, <90/60; P >130, <50; R >25, <10; T >38.5°C.
5. Activity: Bed rest
7. Diet: Regular
8. IV Fluids: D5 ½ NS at 125 mL/h.
9. Special Medications:
   - Subtotal Thyroidectomy: Indicated in patients with large goiter that extends retrosternally, in pregnant patients, and children who have major adverse reaction to medications.
     - Methimazole (Tapazole) 30-60 mg PO, then maintenance of 15 mg PO qd-bid OR
     - Propylthiouracil (PTU) 1000 mg PO, then 50-250 mg PO q4-8h, up to 1200 mg/d; usual maintenance dose 50 mg PO tid AND
     - Iodide solution (Lugol’s solution), 3-6 drops tid; one hour after propylthiouracil AND
     - Dexamethasone (Decadron) 2 mg IV q8h AND
     - Iodide solution (Lugol’s solution), 3-6 drops tid; one hour after propylthiouracil AND
     - Dexamethasone (Decadron) 2 mg IV q8h AND
     - Iodide solution (Lugol’s solution), 3-6 drops tid; one hour after propylthiouracil AND
     - Dexamethasone (Decadron) 2 mg IV q8h AND
11. Labs: CBC, SMA 7&12; sensitive TSH, free T4. UA.

Myxedema Coma and Hypothyroidism

1. Admit to:
2. Diagnosis: Myxedema Coma
3. Condition:
4. Vital Signs: q1h. Call physician if BP systolic >160/90, <90/60; P >130, <50; R >25, <10; T >38.5°C.
5. Activity: Bed rest
6. Nursing: Triple blankets pm temp <36°C, inputs and outputs, aspiration precautions.
7. Diet: NPO
8. IV Fluids: IV D5 NS TKO.
9. Special Medications:
   - Myxedema Coma and Hypothyroidism: Volume replacement with NS 1 L rapid IV over 1 hour, then 125 mL/h.
     - Levothyroxine (Synthroid, Levoxine) 300-500 mcg IV, then 100 mcg PO or IV qd.
     - Hydrocortisone 100 mg IV loading dose, then 50-100 mg IV q8h.
   - Hypothyroidism in Medically Stable Patient: Levothyroxine (Synthroid, T4) 50-75 mcg PO qd, increase by 25 mcg PO qd at 2-4 week intervals to 75-150 mcg qd until TSH normalized.
11. Labs: CBC, SMA 7&12; sensitive TSH, free T4. UA, rheumatoid factor, ANA.

Nephrologic Disorders

Renal Failure

1. Admit to:
2. Diagnosis: Renal failure
3. Condition:
4. Vital Signs: q8h. Call physician if QRS complex >0.14 sec; urine output <20 cc/hr; BP >160/90, <90-60; P >120, <50; R >25, <10; T >38.5°C.
5. Allergies: Avoid magnesius containing antacids, salt substitutes, NSAIDS. Discontinue phosphate or potassium supplements.
8. Diet: Renal diet of high biologic value protein of 0.6-0.8 g/kg, sodium 2 g, potassium 1 mEq/kg, and at least 35 kcal/kg of nonprotein calories. In oliguric patients, daily fluid intake should be restricted to less than 1 L after volume has been normalized.
9. IV Fluids: D5W at TKO.
10. Special Medications: Consider fluid challenge (to rule out pre-renal azotemia if not fluid overloaded) with 500-1000 mL NS IV over 30 min. In acute renal failure, in-and-out catheterize and check postvoid residual to rule out obstruction.
    - Furosemide (Lasix) 80-320 mg IV bolus over 10-60 min, double the dose if no response after 2 hours to total max 1000 mg/24h, or furosemide 1000 mg in
250 mL D5W at 20-40 mg/hr continuous IV infusion
OR
-Torsemide (Demadex) 20-40 mg IV bolus over 5-10 min, double the dose up to max 200 mg/day OR
- bumetanide (Bumex) 1-2 mg IV bolus over 1-20 min; double the dose if no response in 1-2 h to total max 10 mg/day.
- Meloalzone (Zaroxolyn) 5-10 mg PO (max 20 mg/24h) 30 min before a loop diuretic.
-Hyperkalemia is treated with sodium polystyrene sulfonate (Kayexalate), 15-30 gm PO/NG/PR q4-6h.
-Hyperphosphatemia is controlled with calcium acetate (PhosLo), 2-3 tabs with meals.
-Metabolic acidosis is treated with sodium bicarbonate to maintain the serum pH >7.2 and the bicarbonate level >20 mEq/L. 1-2 amps (50-100 mEq) IV push, followed by infusion of 2-3 amps in 1000 mL of D5W at 150 mL/hr.
-Adjust all medications to creatinine clearance, and remove potassium phosphate and magnesium from IV. Avoid NSAIDs and nephrotoxic drugs.

12. Labs: CBC, platelets, SMA 7&12, creatinine, BUN, potassium, magnesium, phosphate, calcium, uric acid, osmolality, ESR, INR/PTT, ANA. Urine specific gravity, UA with micro, urine C&S; 1st AM spot urine electrolytes, eosinophils, creatinine, pH, osmolality; Wright's stain, urine electrophoresis. 24h urine protein, creatinine, sodium.

Nephrolithiasis

1. Admit to:
2. Diagnosis: Nephrolithiasis
3. Condition:
4. Vital Signs: q8h. Call physician if urine output <30 cch/hr; BP >160/90, <90/60; T >38.5°C.
6. Nursing: Strain urine, measure inputs and outputs. Place Foley if no urine for 4 hours.
7. Diet: Regular, push oral fluids.
8. IV Fluids: IV D5 ½ NS at 100-125 cc/hr (maintain urine output of 80 mL/h).
9. Special Medications:
   - Cefazolin (Ancef) 1-2 gm IV q8h
   - Meperidine (Demerol) 75-100 mg and hydroxyzine 25 mg IM/V q2-4h pm pain OR
   - Butorphanol (Stadol) 0.5-2 mg IV q3-4h.
   - Hydrocodone/acetaminophen (Vicodin), 1-2 tab q4-6h PO pm pain OR
   - Oxycodone/acetaminophen (Percocet) 1 tab q6h pm pain OR
   - Acetaminophen with codeine (Tylenol 3) 1-2 tabs PO q3-4h pm pain.
   - Ketorolac (Toradol) 10 mg PO q4-6h pm pain, or 30-60 mg IV/IM then 15-30 mg IV/IM q6h (max 5 days).
   - Zolpidem (Ambien) 10 mg PO qhs pm insomnia.
11. Extras: Intravenous pyelogram, KUB, CXR, ECG.

Hypercalcemia

1. Admit to:
2. Diagnosis: Hypercalcemia
3. Condition:
4. Vital Signs: q4h. Call physician if BP >160/90, <90/60; P >120, <50; R >25, <10; T >38.5°C, or tetany or any abnormal mental status.
5. Activity: Encourage ambulation; up in chair at other times.
7. Diet: Restrict dietary calcium to 400 mg/d, push PO fluids.
8. Special Medications:
   - 1-2 L of 0.9% saline over 1-4 hours until no longer hypotensive, then saline diuresis with 0.9% saline infused at 125 cch/AND
   - Furosemide (Lasix) 20-80 mg IV q4-12h. Maintain urine output of 200 mL/h; monitor serum sodium, potassium, magnesium.
   - Calcitonin (Calcimar) 4-8 IU/kg IM q12h or SQ q6-12h.
   - Etidronate (Didronel) 7.5 mg/kg/day in 250 mL of normal saline IV infusion over 2 hours. May repeat in 3 days.
   - Pamidronate (Aredia) 60 mg in 500 mL of NS infused over 4 hours or 90 mg in 1 liter of NS infused over 24 hours x one dose.
10. Labs: Total and ionized calcium, parathyroid hormone, SMA 7&12, phosphate, Mg, alkaline phosphatase, prostate specific antigen and carcinoembryonic antigen. 24h urine calcium, phospho-
Hypocalcemia

1. Admit to: 
2. Diagnosis: Hypocalcemia 
3. Condition: 
4. Vital Signs: q4h. Call physician if BP >160/90, <90/60; P>120; <50; R>25, <10; T >38.5°C, or any abnormal mental status. 
5. Activity: Up ad lib 
7. Diet: No added salt diet. 
8. Special Medications: 
   Symptomatic Hypocalcemia: 
   -Calcium chloride, 10% (270 mg calcium/10 mL vial), give 5-10 mL slowly over 10 min or dilute in 50-100 mL of D5W and infuse over 20 min, repeat 20-30 min if symptomatic, or hourly if asymptomatic. Correct hyperphosphatemia before hypocalcemia OR 
   -Calcium gluconate, 20 mL of 10% solution IV (2 vials/90 mg elemental calcium/10 mL vial) infused over 10-15 min, followed by infusion of 60 mL of calcium gluconate in 500 cc of D5W (1 mg/mL) at 0.5-2.0 mg/kg/hr. 
   Chronic Hypocalcemia: 
   -Calcium carbonate with vitamin D (Oscal-D) 1-2 tab PO tid OR 
   -Calcium carbonate (Oscal) 1-2 tab PO tid OR 
   -Calcium citrate (Citracal) 1 tab PO q8h or Extra strength Tums 1-2 tabs PO with meals. 
   -Vitamin D2 (Ergocalciferol) 1 tab PO qd. 
   -Calcitriol (Rocaltrol) 0.25 mcg PO qd, titrate up to 0.5-2.0 mcg qd. 
   -Docusate sodium (Colace) 1 tab PO bid. 
9. Extras: CXR, ECG. 
10. Labs: SMA 7&12, phosphate, Mg. 24h urine calcium, potassium, phosphate, magnesium. 

Hyperkalemia

1. Admit to: 
2. Diagnosis: Hyperkalemia 
3. Condition: 
4. Vital Signs: q4h. Call physician if QRS complex >0.14 sec or BP >160/90, <90/60; P>120; <50; R>25, <10; T >38.5°C. 
5. Activity: Bed rest; up in chair as tolerated. 
6. Nursing: Inputs and outputs. Chart QRS complex width q1h. 
7. Diet: Regular, no salt substitutes. 
8. IV Fluids: D5NS at 125 cc/h 
9. Special Medications: 
   -Discontinue ACE inhibitors, angiotensin II receptor blockers, beta-blockers, potassium sparing diuretics. 
   -Calcium gluconate (10% solution) 10-30 mL IV over 2-5 min; second dose may be given in 5 min. Contraindicated if digoxin toxicity is suspected. Keep 10 mL vial of calcium gluconate at bedside for emergent use. 
   -Sodium bicarbonate 1 amp (50 mEq) IV over 5 min (give after calcium in separate IV). 
   -Regular insulin 10 units IV push with 1 ampule of 50% glucose IV push. 
   -Kayexalate 30-45 gm premixed in sorbitol solution PO/NG/PR now and q3-4h prn. 
   -Furosemide 40-80 mg IV, repeat prn. 
   -Consider emergent dialysis if cardiac complications or renal failure. 
10. Extras: ECG. 

Hypokalemia

1. Admit to: 
2. Diagnosis: Hypokalemia 
3. Condition: 
4. Vital Signs: q4h. Call physician if BP >160/90, <90/60; P>120; <50; R>25, <10; T >38.5°C. 
5. Activity: Bed rest; up in chair as tolerated. 
6. Nursing: Inputs and outputs 
7. Diet: Regular 
8. Special Medications: 
   Acute Therapy: 
   -KCL 20-40 mEq in 100 cc saline infused IVPB over 2 hours; or add 40-80 mEq to 1 liter of IV fluid and infuse over 4-8 hours. 
   -KCL elixir 40 mEq PO tid (in addition to IV); max total dose 100-200 mEq/d (3 mEq/kg/d). 
   Chronic Therapy: 
   -Micro-K 10 mEq tabs 2-3 tabs PO tid after meals (40-100 mEq/d) OR 
   -K-Dur 20 mEq tabs 1 Po bid-tid. 
   Hypokalemia with metabolic acidosis: 
   -Potassium citrate 15-30 mL in juice PO qid after meals (1 mEq/mL). 
   -Potassium gluconate 15 mL in juice PO qid after meals (20 mEq/15 mL). 
10. Labs: CBC, magnesium, SMA 7&12. UA, urine Na,


### Hypermagnesemia

1. **Admit to:**
2. **Diagnosis:** Hypermagnesemia
3. **Condition:**
4. **Vital Signs:** q8h. Call physician if QRS >0.14 sec.
5. **Activity:** Up ad lib
6. **Nursing:** Inputs and outputs, daily weights.
7. **Diet:** Regular
8. **Special Medications:**
   - Saline diuresis 0.9% saline infused at 100-200 ccs/h to replace urine loss AND
   - Calcium chloride, 1-3 gm added to saline (10% solution; 1 gm per 10 mL amp) to run at 1 gm/hr AND
   - Furosemide (Lasix) 20-40 mg IV q4-6h as needed.
   - Magnesium of >9.0 mEq/L requires stat hemodialysis because of risk of respiratory failure.
9. **Extras:** ECG
10. **Labs:** Magnesium, calcium, SMA 7&12, creatinine.

### Hypomagnesemia

1. **Admit to:**
2. **Diagnosis:** Hypomagnesemia
3. **Condition:**
4. **Vital Signs:** q6h
5. **Activity:** Up ad lib
6. **Diet:** Regular
7. **Special Medications:**
   - Magnesium sulfate 4-6 gm in 500 mL D5W IV at 1 gm/hr. Hold if no patellar reflex. (Estimation of Mg deficit = 0.2 x kg weight x desired increase in Mg concentration; give deficit over 2-3d) OR
   - Magnesium sulfate (severe hypomagnesemia <1.0) 1-2 gm (2-4 mL of 50% solution) IV over 15 min, OR
   - Magnesium chloride (Slow-Mag) 65-130 mg (1-2 tabs) PO tid-qid (64 mg or 5.3 mEq/tab) OR
   - Milk of magnesia 5 mL PO qd-qid.
8. **Extras:** ECG
9. **Labs:** Magnesium, calcium, SMA 7&12. Urine Mg, electrolytes, 24h urine magnesium, creatinine.

### Hypernatremia

1. **Admit to:**
2. **Diagnosis:** Hypernatremia
3. **Condition:**
4. **Vital Signs:** q2-8h. Call physician if BP >160/90, <70/50, P >140, <50; R>25, <10; T >38.5°C.
5. **Activity:** Bed rest; up in chair as tolerated.
6. **Nursing:** Inputs and outputs, daily weights.
7. **Diet:** No added salt. Push oral fluids.
8. **Special Medications:**
   - Hypernatremia with Hypovolemia: If volume depleted, give 1-2 L NS IV over 1-3 hours until not orthostatic, then give D5W IV to replace half of body water deficit over first 24hours (correct sodium at 1 mEq/L/hr), then remaining deficit over next 1-2 days.
   - Body water deficit (L) = \( \frac{0.6(\text{weight kg})([\text{Na serum}]-140)}{140} \).
9. **Extras:** CXR, ECG.
10. **Labs:** SMA 7&12, serum osmolality, liver panel, ADH, plasma renin activity. UA, urine specific gravity. Urine osmolality, Na, 24h urine magnesium, creatinine.

### Hyponatremia

1. **Admit to:**
2. **Diagnosis:** Hyponatremia
3. **Condition:**
4. **Vital Signs:** q4h. Call physician if BP >160/90, <70/50, P >140, <50; R>25, <10; T >38.5°C.
5. **Activity:** Up in chair as tolerated.
6. **Nursing:** Inputs and outputs, daily weights.
7. **Diet:** Regular diet.
8. **Special Medications:**
   - Hyponatremia with Hypervolemia and Edema (low osmolality <280 mOsm/L, UNa <10 mmol/L: nephrosis, heart failure, cirrhosis): -Water restrict to 0.5-1.0 L/d.
   - Furosemide 40-80 mg IV or PO qd-bid.
   - Hyponatremia with Normal Volume Status (low osmolality <280 mOsm/L, UNa <10 mmol: water intoxication; UNa >20: SIADH, diuretic-induced): -Water restrict to 0.5-1.0 L/d.
   - Furosemide 40-80 mg IV or PO qd-bid.
- Water restrict to 0.5-1.5 L/d.
- Conivaptan (Vaprisol) 20 mg IV over 30 minutes once, followed by a continuous infusion of 20 mg over 24 hours. If the response is insufficient, increase dose to 40 mg/24 hours; max 4 days.

**Hyponatremia with Hypovolemia**

(low osmolality <280 mOsm/L) UNa <10 mmol/L: vomiting, diarrhea, third space/respiratory/skin loss; UNa >20 mmol/L: diuretics, renal injury, RTA, adrenal insufficiency, partial obstruction, salt wasting:

- If volume depleted, give 0.5-2 L of 0.9% saline over 1-2 hours until no longer hypotensive, then 0.9% saline at 125 mL/h or 100-500 mL 3% hypertonic saline over 4h.

**Severe Symptomatic Hyponatremia**

If volume depleted, give 1-2 L of 0.9% saline (154 mEq/L) over 1-2 hours until no longer orthostatic. Determine volume of 3% hypertonic saline (513 mEq/L) to be infused:

\[
\text{Na (mEq deficit) = 0.6 x (wt kg)(desired [Na] - actual [Na])}
\]

\[
\text{Volume of solution (L) = \frac{\text{Sodium to be infused (mEq)}}{\text{Number of hrs}} \times \text{Number of hrs}}
\]

- Correct half of sodium deficit intravenously over 24 hours until serum sodium is 120 mEq/L; increase sodium by 12-20 mEq/L over 24 hours (1 mEq/L/h).
- Alternative Method: 3% saline 100-300 mL over 4-6h, repeated as needed.

9. **Extras:** CXR, ECG, head/chest CT scan.

10. **Labs:** SMA 7&12, osmolality, triglyceride, liver panel. UA, urine specific gravity, Urine osmolality, Na.

### Hyperphosphatemia

1. **Admit to:**
2. **Diagnosis:** Hyperphosphatemia
3. **Condition:**
4. **Vital Signs:** qid
5. **Activity:** Up ad lib
6. **Nursing:** Inputs and outputs
7. **Diet:** Low phosphorus diet.
8. **Special Medications:**
   - Moderate Hyperphosphatemia:
     - Restrict dietary phosphate to 0.7-1.0 gm/d.
     - Calcium acetate (PhosLo) 1-3 tabs PO tid with meals OR
     - Aluminum hydroxide (Amphojel) 5-10 mL or 1-2 tablets PO before meals tid.
   - Severe Hyperphosphatemia:
     - Volume expansion with 0.9% saline 1-2 L over 1-2h.
     - Acetazolamide (Diamox) 500 mg PO or IV q6h.
     - Consider dialysis.
9. **Extras:** CXR PA and LAT, ECG.
10. **Labs:** Phosphate, SMA 7&12, magnesium, calcium. UA, parathyroid hormone.

### Hypophosphatemia

1. **Admit to:**
2. **Diagnosis:** Hypophosphatemia
3. **Condition:**
4. **Vital Signs:** qid
5. **Activity:** Up ad lib
6. **Nursing:** Inputs and outputs
7. **Diet:** Regular diet.
8. **Special Medications:**
   - Mild to Moderate Hypophosphatemia (1.0-2.2 mg/dL):
     - Sodium or potassium phosphate 0.25 mMoles/kg in 150-250 mL of NS or D5W at 10 mMoles/hr.
     - Neutral phosphate (Nutra-Phos), 2 tab PO bid (250 mg elemental phosphorus/tab) OR
     - Phospho-Soda 5 mL (129 mg phosphorus) PO bid-tid.
   - Severe Hypophosphatemia (<1.0 mg/dL):
     - Na or K phosphate 0.5 mMoles/kg in 250 mL D5W or NS, IV infusion at 10 mMoles/hr OR
     - Add potassium phosphate to IV solution in place of maintenance KCL; max IV dose 7.5 mg phosphorus/kg/6h.
9. **Extras:** CXR PA and LAT, ECG.
10. **Labs:** Phosphate, SMA 7&12, Mg, calcium, UA.

### Rheumatologic Disorders

#### Systemic Lupus Erythematosus

1. **Admit to:**
2. **Diagnosis:** Systemic Lupus Erythematosus
3. **Condition:**
4. **Vital Signs:** tid
5. **Allergies:**
6. **Activity:** Up as tolerated with bathroom privileges
7. **Nursing:**
8. **Diet:** No added salt, low psoralen diet.
9. **Special Medications:**
Acute Gout Attack

1. Admit to:
2. Diagnosis: Acute gout attack
3. Condition:
4. Vital Signs: tid
5. Activity: Bed rest with bedside commode
6. Nursing: Keep foot elevated; support sheets over foot; guaiac stools.
7. Diet: Low purine diet.
8. Special Medications:
   - Ibuprofen (Motrin) 800 mg, then 400-800 mg PO q4-6h OR
   - Diclofenac (Voltaren) 25-75 mg tid-qid with food OR
   - Indomethacin (Indocin) 50 mg PO q6h for 2d, then 50 mg tid for 2 days, then 25 mg PO tid OR
   - Ketorolac (Toradol) 30-60 mg IV/IM, then 15-30 mg IV/IM q6h or 10 mg PO tid-qid OR
   - Naproxen sodium (Anaprox, Anaprox-DS) 550 mg PO OR
   - Methylprednisolone (SoluMedrol) 125 mg IV x 1 dose THEN
     - Prednisone 60 mg PO qd for 5 days, followed by tapering.
   - Colchicine 2 tablets (0.5 mg or 0.6 mg), followed by 1 tablet q1h until relief, max dose of 9.6 mg/24h. Maintenance colchicine: 0.5-0.6 mg PO qd-bid.
9. Hypouricemic Therapy:
   - Probenecid (Benemid), 250 mg bid. Increase the dosage to 500 mg bid after 1 week, then increase by 500-mg increments every 4 weeks until the uric acid level is below 6.5 mg/dL. Max dose 2 g/d. Contraindicated during acute attack.
   - Allopurinol (Zyloprim) 300 mg PO qd, may increase by 100-300 mg q2weeks. Usually initiated after the acute attack.
9. Symptomatic Medications:
   - Famotidine (Pepcid) 20 mg IV/PO q12h.
   - Meperidine (Demerol) 50-100 mg IM/IV q4-6h prn pain OR
   - Hydrocortisone/acetaminophen (Vicodin), 1-2 tab q4-6h PO prn pain.
   - Docusate sodium (Colace) 100 mg PO qhs.
   - Acetaminophen (Tylenol) 325-650 mg PO q4-6h prn headache.
   - Zolpidem (Ambien) 5-10 mg qhs prn insomnia.

### Commonly Used Drug Levels

<table>
<thead>
<tr>
<th>Drug</th>
<th>Therapeutic Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amikacin</td>
<td>Peak 25-30; trough &lt;10 mcg/mL</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>1.0-3.0 mcg/mL</td>
</tr>
<tr>
<td>Amintriptiline</td>
<td>100-250 ng/mL</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>4-10 mcg/mL</td>
</tr>
<tr>
<td>Desipramine</td>
<td>0.5-2.0 mg/mL</td>
</tr>
<tr>
<td>Digoxin</td>
<td>2-5 mcg/mL</td>
</tr>
<tr>
<td>Disopyramide</td>
<td>75-200 mg/mL</td>
</tr>
<tr>
<td>Dextropropine</td>
<td>0.2-1.0 mcg/mL</td>
</tr>
<tr>
<td>Flecainide</td>
<td>Peak 6.0-8.0; trough &lt;2.0 mcg/mL</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>150-300 mg/mL</td>
</tr>
<tr>
<td>Imipramine</td>
<td>2-5 mcg/mL</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>0.5-1.4 mEq/L</td>
</tr>
<tr>
<td>Lithium</td>
<td>1.0-2.0 mg/mL</td>
</tr>
<tr>
<td>Mexiletine</td>
<td>50-150 mg/mL</td>
</tr>
<tr>
<td>Nortriptiline</td>
<td>10-30 mEq/mL</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>4.0-8.0 mcg/mL</td>
</tr>
<tr>
<td>Procainamide</td>
<td>2.5-5.0 mcg/mL</td>
</tr>
<tr>
<td>Quinidine</td>
<td>Peak 10-20; trough &lt;5 mcg/mL</td>
</tr>
<tr>
<td>Salicylate</td>
<td>8-20 mg/mL</td>
</tr>
<tr>
<td>Streptomycin</td>
<td>4-10 mcg/mL</td>
</tr>
<tr>
<td>Theophylline</td>
<td>50-100 mcg/mL</td>
</tr>
<tr>
<td>Tocainide</td>
<td>Peak 30-40; trough &lt;10 mcg/mL</td>
</tr>
<tr>
<td>Valproic acid</td>
<td></td>
</tr>
<tr>
<td>Vancomycin</td>
<td></td>
</tr>
</tbody>
</table>
Extended Interval Gentamicin/Tobramycin Therapy

<table>
<thead>
<tr>
<th>GFR (mL/min)</th>
<th>Gentamicin/Tobramycin Dosage Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;60</td>
<td>7 mg/kg every 24 hours</td>
</tr>
<tr>
<td>40-59</td>
<td>7 mg/kg every 36 hours</td>
</tr>
<tr>
<td>20-39</td>
<td>7 mg/kg every 48 hours</td>
</tr>
<tr>
<td>&lt;20</td>
<td>Extended interval not recommended</td>
</tr>
</tbody>
</table>

Each dose is administer over 60 minutes. Therapeutic range is a peak level of 20-30 mcg/mL and a trough level of <1.0 mcg/mL (during the 4 hours before the next dose). Monitor renal function and hearing status.

Drugs that Prolong the QT Interval

- Amiodarone
- Bepridil
- Chlorpromazine
- Desipramine
- Disopyramide
- Dofetilide
- Droperidol
- Erythromycin
- Flecainide
- Fluoxetine
- Foscarnet
- Fosphenytoin
- Gatifloxacin
- Halofantrine
- Haloperidol
- Ibutilide
- Isradipine
- Meclozine
- Moxifloxacin
- Naratriptan
- Nicardipine
- Octreotide
- Pentamidine
- Pimozide
- Probucol
- Procanamide
- Quetiapine
- Quinidine
- Risperidone
- Salmeterol
- Sotalol
- Sparfloxacin
- Sumatriptan
- Tamoxifen
- Thioridazine
- Venlafaxine
- Zolmitriptan