## Current Clinical Strategies

History and Physical Examination

Tenth Edition

Paul D. Chan, M.D. Peter J. Winkle, M.D.

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Current Clinical Strategies Publishing 27071 Cabot Road Laguna Hills, California 92653-7012

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## 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 Compliant: Reason given by patient for seeking medical care and the duration of the symptom. List all of the patients 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 fontanels in pediatric patients.

Eyes: Pupils equal round and react to light and accommo-

(EOMI), and visual fields. Funduscopy (papilledema, arteriovenous nicking, hemorrhages, exudates); scleral icterus, ptosis. Ears: Acuity, tympanic membranes (dull, shiny, intact, injected, bulging).

dation (PERRLA); extra ocular movements intact

- Mouth and Throat: Mucus membrane color and moisture; oral lesions, dentition, pharynx, tonsils.
- Neck: Jugulovenous distention (JVD) at a 45 degree incline, thy romegaly, lymphade no pathy, masses, bruits,abdominojugular reflux.
- Chest: Equal expansion, tactile fremitus, percussion, egophony, whispered pectoriloquy.
- Heart: Point of maximal impulse (PMI), thrills (palpable turbulence); regular rate and rhythm (RRR), first and
- murs (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

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

III, IV, VI: Pupil responses to light, extraocular eye

V: Facial sensation, ability to open jaw against resis-

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

XI: Shoulder shrug and turns head against resistance

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, medica-

VII: Close eyes tightly, smile, show teeth

placed on mastoid process) IX, X: Palette moves in midline when patient says "ah,"

XII: Stick out tongue in midline

tions, and antibiotics.

Inguinal masses, hernias, scrotum,

tenderness. Genitourinary:

testicles, varicoceles.

**Cranial Nerve Examination:** 

movements, ptosis

tance, corneal reflex.

II: Vision and visual fields

I: Smell

speech

- second heart sounds (S1, S2); gallops (S3, S4), mur-
- auscultation, rhonchi, crackles, rubs, breath sounds,

## **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.

#### **Progress Note**

#### Date/time:

Subjective: Any problems and symptoms of the patient should be charted. Appetite, pain, head-aches 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, risks and alternatives to the procedure were explained to the patient. Note that the patient was given the opportunity to ask questions and that the patient consented to the procedure in writing.

Lab tests: Electrolytes, INR, CBC 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 laboratory 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 proce-

dures and antibiotic therapy. **Studies Performed:** Electrocardiograms, CT scans.

Discharge Medications: Follow-up Arrangements:

## **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

## 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.

## Cardiovascular Disorders

## Chest Pain and Myocardial Infarction

- Chief Compliant: The patient is a 50 year old white male with hypertension who complains of chest pain for 4 hours
- History of the Present Illness: Duration of chest pain.

  Location, radiation (to arm, jaw, back), character (squeezing, sharp, dull), intensity, rate of onset (gradual or sudden); relationship of pain to activity (at rest, during sleep, during exercise); relief by nitroglycerine; increase in frequency or severity of baseline anginal pattern. Improvement or worsening of pain. Past episodes of chest pain. Age of onset of angina.
- **Associated Symptoms**: Diaphoresis, nausea, vomiting, dyspnea, orthopnea, edema, palpitations, syncope, dysphagia, cough, sputum, paresthesias.
- Aggravating and Relieving Factors: Effect of inspiration on pain; effect of eating, NSAIDS, alcohol, stress.
- **Cardiac Testing:** Past stress testing, stress echocardiogram, angiogram, nuclear scans, ECGs.
- Cardiac Risk factors: Hypertension, hyperlipidemia, diabetes, smoking, and a strong family history (coronary artery disease in early or mid-adulthood in a first-degree relative).
- PMH: History of diabetes, claudication, stroke. Exercise tolerance; history of peptic ulcer disease. Prior history of myocardial infarction, coronary bypass grafting or angioplasty.
- **Social History:** Smoking, alcohol, cocaine usage, illicit drugs.
- Medications: Aspirin, beta-blockers, estrogen.

## Physical Examination

- **General:** Visible pain, apprehension, distress, pallor. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Pulse (tachycardia or bradycardia), BP (hypertension or hypotension), respirations (tachypnea), temperature.
- **Skin:** Cold extremities (peripheral vascular disease), xanthomas (hypercholesterolemia).
- **HEENT:** Fundi, "silver wire" arteries, arteriolar narrowing, A-V nicking, hypertensive retinopathy; carotid bruits, jugulovenous distention.
- **Chest:** Inspiratory crackles (heart failure), percussion note.
- Heart: Decreased intensity of first heart sound (S1) (LV dysfunction); third heart sound (S3 gallop) (heart failure, dilation), S4 gallop (more audible in the left lateral position; decreased LV compliance due to ischemia); systolic mitral insufficiency murmur (papillary muscle dysfunction), cardiac rub (pericarditis).
- Abdomen: Hepatojugular reflux, epigastric tenderness, hepatomegaly, pulsatile mass (aortic aneurysm).
- Rectal: Occult blood.
- Extremities: Edema (heart failure), femoral bruits, unequal or diminished pulses (aortic dissection); calf pain, swelling (thrombosis).
- **Neurologic:** Altered mental status.

#### Labs:

- Electrocardiographic Findings in Acute Myocardial Infarction: ST segment elevations in two contiguous leads with ST depressions in reciprocal leads, hyperacute T waves.
- Chest X-ray: Cardiomegaly, pulmonary edema (CHF).
  Electrolytes, LDH, magnesium, CBC. CPK with isoenzymes, troponin I or troponin T, myoglobin, and LDH. Echocardiography.

Common Markers for Acute Myocardial Infarc- tion			
Marker	Initial Eleva- tion After MI	Mean Time to Peak Eleva- tions	Time to Return to Base- line
Myoglobi n	1-4 h	6-7 h	18-24 h
CTnl	3-12 h	10-24 h	3-10 d
CTnT	3-12 h	12-48 h	5-14 d
СКМВ	4-12 h	10-24 h	48-72 h
CKMBiso	2-6 h	12 h	38 h

### Differential Diagnosis of Chest Pain

MB, MM = tissue

A. Acute Pericarditis. Characterized by pleuritic-type chest pain and diffuse ST segment elevation.

CTnl, CTnT = troponins of cardiac myofibrils; CPK-

- B. Aortic Dissection. "Tearing" chest pain with uncontrolled hypertension, widened mediastinum and increased aortic prominence on chest X-ray.
- C. Esophageal Rupture. Occurs after vomiting; X-ray may reveal air in mediastinum or a left side hydrothorax.
- D. Acute Cholecystitis. Characterized by right subcostal abdominal pain with anorexia, nausea, vomiting, and fever.
- E. Acute Peptic Ulcer Disease. Epigastric pain with melena or hematemesis, and anemia.

## Dyspnea

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of shortness of breath for 4 hours.

History of the Present Illness: Rate of onset of shortness of breath (gradual, sudden), orthopnea (dyspnea when supine), paroxysmal nocturnal dyspnea (PND), chest pain, palpitations. Dyspnea with physical exertion; history of myocardial infarction, syncope. Past episodes; aggravating or relieving factors (noncompliance with medications, salt overindulgence). Edema, weight gain, cough, sputum, fever, anxiety; hemoptysis, leg pain (DVT).

Past Medical History: Emphysema, heart failure, hyper-

tension, coronary artery disease, asthma, occupational exposures, HIV risk factors.

**Medications:** Bronchodilators, cardiac medications (noncompliance), drug allergies.

**Past Treatment or Testing:** Cardiac testing, chest X-rays, ECG's, spirometry.

#### Physical Examination

General Appearance: Respiratory distress, dyspnea, pallor, diaphoresis. Note whether the patient appears ill, well, or in distress. Fluid input and output balance.

Vital Signs: BP (supine and upright), pulse (tachycardia), temperature, respiratory rate (tachypnea).

**HEENT:** Jugulovenous distention at 45 degrees, tracheal deviation (pneumothorax).

Chest: Stridor (foreign body), retractions, breath sounds, wheezing, crackles (rales), rhonchi; dullness to percussion (pleural effusion), barrel chest (COPD); unilateral hyperresonance (pneumothorax).

Heart: Lateral displacement of point of maximal impulse; irregular rate, irregular rhythm (atrial fibrillation); S3

- gallop (LV dilation), S4 (myocardial infarction), holosystolic apex murmur (mitral regurgitation); faint heart sounds (pericardial effusion).
- Abdomen: Abdominojugular reflux (pressing on abdomen increases jugular vein distention), hepatomegaly, liver
- tenderness.

  Extremities: Edema, pulses, cyanosis, clubbing. Calf
- tenderness or swelling (DVT). **Neurologic:** Altered mental status.
- Labs: ABG, cardiac enzymes; chest X-ray (cardiomegaly, hyperinflation with flattened diaphragms, infiltrates, effusions, pulmonary edema), ventilation/perfusion scan.

#### Electrocardiogram

- A. ST segment depression or elevation, new left bundle-branch block.
  - B. ST elevations in two contiguous leads, with ST depressions in reciprocal leads (MI).
- Differential Diagnosis: Heart failure, myocardial infarction, upper airway obstruction, pneumonia, pulmonary embolism, chronic obstructive pulmonary disease, asthma, pneumothorax, foreign body aspiration, hyperventilation, malignancy, anemia.

## Edema

- Chief Compliant: The patient is a 50 year old white male with hypertension who complains of ankle swelling for 1 day.
- History of the Present Illness: Duration of edema;
  - localized or generalized; let pain, redness. History of heart failure, liver, or renal disease; weight gain, shortness of breath, malnutrition, chronic diarrhea (protein losing enteropathy), allergies, alcoholism. Exacerbation by upright position. Recent fluid input and output balance.
- Past Medical History: Cardiac testing, chest X-rays. History of deep vein thrombosis, venous insufficiency.
- Medications: Cardiac drugs, diuretics, calcium channel blockers.

## Physical Examination General Appearance: Respiratory distress, dyspnea,

- pallor, diaphoresis. Note whether the patient appears ill, well, or malnourished.

  Vitals: BP (hypotension), pulse, temperature, respiratory
- rate.
- **HEENT:** Jugulovenous distention at 45°; carotid pulse amplitude.
- **Chest:** Breath sounds, crackles, wheeze, dullness to percussion.
- Heart: Displacement of point of maximal impulse, atrial fibrillation (irregular rhythm); S3 gallop (LV dilation),
- friction rubs. **Abdomen:** Abdominojugular reflux, ascites, hepatomegaly, splenomegaly, distention, fluid wave,
- shifting dullness, generalized tenderness.

  Extremities: Pitting or non-pitting edema (graded 1 to
- 4+), redness, warmth; mottled brown discoloration of ankle skin (venous insufficiency); leg circumference, calf tenderness, Homan's sign (dorsiflexion elicits pain; thrombosis); pulses, cyanosis, clubbing.
- Neurologic: Altered mental status.
- Labs: Electrolytes, liver function tests, CBC, chest X-ray, ECG, cardiac enzymes, Doppler studies of lower extremities.

#### **Differential Diagnosis of Edema**

- **Unilateral Edema:** Deep venous thrombosis; lymphatic obstruction by tumor.
  - Generalized Edema: Heart failure, cirrhosis, acute glomerulonephritis, nephrotic syndrome, renal failure, obstruction of hepatic venous outflow, obstruction of inferior or superior vena cava.
  - Endocrine: Mineralocorticoid excess,

hypoalbuminemia.

Miscellaneous: Anemia, angioedema, iatrogenic

## Congestive Heart Failure

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of shortness of breath for 1 day.

History of the Present Illness: Duration of dyspnea; rate of onset (gradual, sudden); paroxysmal nocturnal dyspnea (PND), orthopnea; number of pillows needed under back when supine to prevent dyspnea; dyspnea

on exertion (DOE); edema of lower extremities. Exercise tolerance (past and present), weight gain. Severity of dyspnea compared with past episodes. Associated Symptoms: Fatigue, chest pain, pleuritic

pain, cough, fever, sputum, diaphoresis, palpitations, syncope, viral illness. Past Medical History: Past episodes of heart failure;

hypertension, excess salt or fluid intake; noncompliance with diuretics, digoxin, antihypertensives; alcoholism, drug use, diabetes, coronary artery disease, myocardial infarction, heart murmur, arrhythmias. Thyroid disease,

anemia, pulmonary disease. Past Testing: Echocardiograms for ejection fraction, cardiac testing, angiograms, ECGs.

Cardiac Risk Factors: Smoking, diabetes, family history of coronary artery disease or heart failure, hypercholesterolemia, hypertension. Precipitating Factors: Infections, noncompliance with

low salt diet; excessive fluid intake; anemia, hyperthyroidism, pulmonary embolism, nonsteroidal anti-inflammatory drugs, renal insufficiency; beta blockers, calcium blockers, antiarrhythmics.

Treatment in Emergency Room: IV Lasix given, volume diuresed. Recent fluid input and output balance.

#### **Physical Examination** General Appearance: Respiratory distress, anxiety,

diaphoresis. Dyspnea, pallor. Note whether the patient appears ill, well, or malnourished. Vital Signs: BP (hypotension or hypertension), pulse

(tachycardia), temperature, respiratory rate (tachypnea).

HEENT: Jugulovenous distention at a 45 degree incline (vertical distance from the sternal angle to top of column of blood); hepatojugular reflux (pressing on abdomen causes jugulovenous distention); carotid pulse, amplitude, duration, bruits.

Chest: Breath sounds, crackles, rhonchi; dullness to percussion (pleural effusion). Heart: Lateral displacement of point of maximal impulse;

irregular rhythm (atrial fibrillation); S3 gallop (LV dila-

Abdomen: Ascites, hepatomegaly, liver tenderness.

Extremities: Edema (graded 1 to 4+), pulses, jaundice, muscle wasting.

Neurologic: Altered mental status.

Labs: Chest X-ray: cardiomegaly, perihilar congestion; vascular cephalization (increased density of upper lobe vasculature); Kerley B lines (horizontal streaks in lower lobes), pleural effusions.

ECG: Left ventricular hypertrophy, ectopic beats, atrial fibrillation.

Electrolytes, BUN, creatinine, sodium; CBC; serial cardiac

#### enzymes, CPK, MB, troponins, LDH. Echocardiogram. Conditions That Mimic or Provoke Heart Failure:

- A. Coronary artery disease and myocardial infarction B. Hypertension
- C. Aortic or mitral valve disease

metabolic

- D. Cardiomyopathies: Hypertrophic, idiopathic dilated, postpartum, genetic, toxic, nutritional,
- E. Myocarditis: Infectious, toxic, immune

- Pericardial constriction
- G. Tachyarrhythmias or bradyarrhythmias
- H. Pulmonary embolism
- ı. Pulmonary disease J. High output states: Anemia, hyperthyroidism, arteriovenous fistulas, Paget's disease, fibrous
- dysplasia, multiple myeloma K. Renal failure, nephrotic syndrome
- Factors Associated with Heart Failure
- A. Increase Demand: Anemia, fever, infection, excess dietary salt, renal failure, liver failure, thyrotoxicosis, arteriovenous fistula. Arrhythmias,
  - cardiac ischemia/infarction, pulmonary emboli, alcohol abuse, hypertension. B. Medications: Antiarrhythmics (disopyramide), beta-blockers, calcium blockers, NSAID's, non-
- compliance with diuretics, excessive intravenous New York Heart Association Classification of Heart

**Failure** Class I: Symptomatic only with strenuous activity. Class II: Symptomatic with usual level of activity. Class III: Symptomatic with minimal activity, but asymptomatic at rest.

## **Palpitations and Atrial Fibrillation**

Class IV: Symptomatic at rest.

Chief Compliant: The patient is a 50 year old white male

# with hypertension who complains of palpitations for 8

hours History of the Present Illness: Palpitations (rapid or irregular heart beat), fatigue, dizziness, nausea, dyspnea, edema; duration of palpitations. Results of

previous ECGs. Associated Symptoms: Chest pain, pleuritic pain, syncope, fatigue, exercise intolerance, diaphoresis, symptoms of hyperthyroidism (tremor, anxiety).

Cardiac History: Hypertension, coronary disease, rheumatic heart disease, arrhythmias. Past Medical History: Diabetes, pneumonia, noncompli-

ance with cardiac medications, pericarditis, hyperthyroidism, electrolyte abnormalities, COPD, mitral

valve stenosis; diet pills, decongestants, alcohol, caffeine, cocaine. **Physical Examination** General Appearance: Respiratory distress, anxiety, diaphoresis. Dyspnea, pallor. Note whether the patient

appears ill, well, or malnourished. Vital Signs: BP (hypotension), pulse (irregular tachycar-

dia), respiratory rate, temperature. HEENT: Retinal hemorrhages (emboli), jugulovenous distention, carotid bruits; thyromegaly (hyperthyroidism).

Chest: Crackles (rales). Heart: Irregular rhythm (atrial fibrillation); dyskinetic apical pulse, displaced point of maximal impulse

(cardiomegaly), S4, mitral regurgitation murmur (rheumatic fever); pericardial rub (pericarditis). Rectal: Occult blood. Extremities: Peripheral pulses with irregular timing and

amplitude. Edema, cyanosis, petechia (emboli). Femoral artery bruits (atherosclerosis).

Neuro: Altered mental status, motor weakness (embolic

stroke), CN 2-12, sensory; dysphasia, dysarthria (stroke); tremor (hyperthyroidism). Labs: Sodium, potassium, BUN, creatinine; magnesium;

drug levels; CBC; serial cardiac enzymes; CPK, LDH, TSH, free T4. Chest X-ray. ECG: Irregular R-R intervals with no P waves (atrial fibrillation). Irregular baseline with rapid fibrillary waves (320 per minute). The ventricular response rate is 130-

180 per minute. Echocardiogram for atrial chamber size.

#### Differential Diagnosis of Atrial Fibrillation

Lone Atrial Fibrillation: No underlying disease state. Cardiac Causes: Hypertensive heart disease with left ventricular hypertrophy, heart failure, mitral valve stenosis or regurgitation, pericarditis, hypertrophic cardiomyopathy, coronary artery disease, myocardial infarction, aortic stenosis, amyloidosis.

Noncardiac Causes: Hypoglycemia, theophylline intoxication, pneumonia, asthma, chronic obstructive pulmonary disease, pulmonary embolism, heavy alcohol intake or alcohol withdrawal, hyperthyroidism, systemic illness, electrolyte abnormalities. Stimulant abuse, excessive caffeine, over-the-counter cold remedies, illicit drugs.

## Hypertension

- Chief Compliant: The patient is a 50 year old white male with coronary heart disease who presents with a blood pressure of 190/120 mmHg for 1 day.
- History of the Present Illness: Degree of blood pressure
- elevation; patient's baseline BP from records; baseline BUN and creatinine. Age of onset of hypertension. **Associated Symptoms:** Chest or back pain (aortic dissection), dyspnea, orthopnea, dizziness, blurred vision (hypertensive retinopathy); nausea, vomiting, headache (pheochromocytoma); lethargy, confusion
- (encephalopathy).

  Paroxysms of tremor, palpitations, diaphoresis; edema, thyroid disease, angina; flank pain, dysuria, pyelonephritis. Alcohol withdrawal, noncompliance with antihypertensives (clonidine or beta-blocker with-
- drawal), excessive salt, alcohol.

  Medications: Over-the-counter cold remedies, beta agonists, diet pills, eye medications (sympathomimetics), bronchodilators, cocaine, amphetamines, nonsteroidal anti-inflammatory agents, oral
- contraceptives, corticosteroids.

  Past Medical History: Cardiac Risk Factors: Family history of coronary artery disease before age 55, diabetes, hypertension, smoking, hypercholesterolemia.

  Past Testing: Urinalysis, ECG, creatinine.

## Physical Examination

- **General Appearance:** Delirium, confusion (hypertensive encephalopathy).
- Vital Signs: Supine and upright blood pressure; BP in all extremities; pulse, temperature, respirations. **HEENT:** Hypertensive retinopathy, hemorrhages,
- exudates, "cotton wool" spots, A-V nicking; papilledema; thyromegaly (hyperthyroidism). Jugulovenous distention, carotid bruits.
- **Chest:** Crackles (rales, pulmonary edema), wheeze, intercostal bruits (aortic coarctation).
- Heart: Rhythm; laterally displaced apical impulse with patient in left lateral position (ventricular hypertrophy); narrowly split S2 with increased aortic component; systolic ejection murmurs.
- Abdomen: Renal bruits (bruit just below costal margin, renal artery stenosis); abdominal aortic enlargement (aortic aneurysm), renal masses, enlarged kidney (polycystic kidney disease); costovertebral angle tenderness. Truncal obesity (Cushing's syndrome).
- Skin: Striae (Cushing's syndrome), uremic frost (chronic renal failure), hirsutism (adrenal hyperplasia), plethora (pheochromocytoma).
- Extremities: Asymmetric femoral to radial pulses (coarctation of aortic); femoral bruits, edema; tremor (pheochromocytoma, hyperthyroidism).
- Neuro: Altered mental status, rapid return phase of deep tendon reflexes (hyperthyroidism), localized weakness (stroke), visual acuity.
- Labs: Potassium, BUN, creatinine, glucose, uric acid, CBC. UA with microscopic (RBC casts, hematuria,

proteinuria). 24 hour urine for metanephrine, plasma catecholamines (pheochromocytoma), plasma renin activity.

activity.

12 Lead Electrocardiography: Evidence of ischemic heart disease, rhythm and conduction disturbances, or

left ventricular hypertrophy.

Chest X-ray: Cardiomegaly, indentation of aorta

(coarctation), rib notching.

Findings Suggesting Secondary Hypertension:

- **A. Primary Aldosteronism:** Serum potassium <3.5 mEq/L while not taking medication.
- Aortic Coarctation: Femoral pulse delayed later than radial pulse; posterior systolic bruits below
- C. Pheochromocytoma: Tachycardia, tremor, pallor.
- D. Renovascular Stenosis: Paraumbilical abdomi-
- E. Polycystic Kidneys: Flank or abdominal mass.
   F. Pyelonephritis: Urinary tract infections,
- costovertebral angle tenderness.

  G. Renal Parenchymal Disease: Increased serum creatinine ≥1.5 mg/dL, proteinuria.

orealisme 2 1.5 mg/dE, proteinand.			
Screening Tests for Secondary Hypertension			
Hypertensive Disorder	Screening Test		
Renovascular Hypertension	Captopril Test: Plasma renin level before and 1 hr after captopril 25 mg PO. A greater than 150% increase in renin is positive Captopril Renography: Renal scan before and after captopril 25 mg PO Intravenous pyelography MRI angiography Digital subtraction angiography		
Hyperaldosteroni sm	Serum Potassium 24 hr urine potassium Plasma renin activity CT scan of adrenals		
Pheochromocyto ma	24 hr urine metanephrine Plasma catecholamine level CT scan Nuclear MIBG scan		
Cushing's Syn- drome	Plasma ACTH Dexamethasone suppression test		
Hyperparathyroid ism	Serum calcium Serum parathyroid hormone		

#### **Differential Diagnosis of Hypertension**

- A. Primary (essential) Hypertension (90%)
- B. Secondary Hypertension: Renovascular hypertension, pheochromocytoma, cocaine use; withdrawal from alpha<sub>2</sub> stimulants, clonidine or beta blockers, alcohol withdrawal; noncompliance with antihypertensive medications.

## Pericarditis

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of chest pain for 6 hours.

History of the Present Illness: Sharp pleuritic chest pain; onset, intensity, radiation, duration. Exacerbated by supine position, coughing or deep inspiration; relieved by leaning forward; pain referred to the back; fever, chills, palpitations, dyspnea.

Associated Findings: History of recent upper respiratory infection, autoimmune disease; prior episodes of pain; tuberculosis exposure; myalgias, arthralgias, rashes, fatigue, anorexia, weight loss, kidney disease.

fatigue, anorexia, weight loss, kidney disease.

Medications: Hydralazine, procainamide, isoniazid,

penicillin.

#### **Physical Examination**

General Appearance: Respiratory distress, anxiety, diaphoresis. Dyspnea, pallor, leaning forward position. Vital Signs: BP, pulse (tachycardia); pulsus paradoxus

(drop in systolic BP >10 mmHg with inspiration). **HEENT:** Cornea, sclera, iris lesions, oral ulcers (lupus);

jugulovenous distention (cardiac tamponade).

Skin: Malar rash (butterfly rash), discoid rash (lupus).

Chest: Crackles (rales), rhonchi.

Heart: Rhythm; friction rub on end-expiration while sitting forward; cardiac rub with 1-3 components at left lower sternal border; distant heart sounds (pericardial effusion).

Rectal: Occult blood.

Extremities: Arthralgias, joint tenderness.

Labs: ECG: diffuse, downwardly, concave, ST segment elevation in limb leads and precordial leads; upright T waves, PR segment depression, low QRS voltage.

Chest X-ray: large cardiac silhouette; "water bottle sign," pericardial calcifications.

Echocardiogram.

Increased WBC; UA, urine protein, urine RBCs; CPK, MB, LDH, blood culture, increased ESR.

Differential Diagnosis: Idiopathic pericarditis, infectious pericarditis (viral, bacterial, mycoplasmal, mycobacterial), Lyme disease, uremia, neoplasm, connective tissue disease, lupus, rheumatic fever, polymyositis, myxedema, sarcoidosis, post myocardial infarction pericarditis (Dressler's syndrome), drugs (penicillin, isoniazid, procainamide, hydralazine).

## **Syncope**

Chief Compliant: The patient is a 50 year old white male with hypertension who presents with loss of consciousness for 1 minute, 1 hour before admission.

History of the Present Illness: Time of occurrence and description of the episode. Duration of unconsciousness, rate of onset; activity before and after event. Body position, arm position (reaching), neck position (turning to side), mental status before and after event. Precipitants (fear, tension, hunger, pain, cough, micturition, defecation, exertion, Valsalva, hyperventilation, tight shirt collar).

Seizure activity (tonic/clonic). Chest pain, palpitations, dyspnea, weakness.

Post-syncopal disorientation, confusion, vertigo, flushing; urinary of fecal incontinence, tongue biting. Rate of return to alertness (delayed or spontaneous).

**Prodromal Symptoms:** Nausea, diaphoresis, pallor, lightheadedness, dimming vision (vasovagal syncope).

Past Medical History: Past episodes of syncope, stroke, transient ischemic attacks, seizures, cardiac disease, arrhythmias, diabetes, anxiety attacks.

**Past Testing:** 24 hour Holter, exercise testing, cardiac testing, ECG, EEG.

Medications Associated with Syncope			
Antihypertensives or antiAnt	iarrhythmics		
angina agents	Digoxin		
Adrenergic antago-	Quinidine		
nists Calcium chan-	Insulin		
nel blockers Dru	gs of abuse		
Diuretics	Alcohol		
Nitrates	Cocaine		
Vasodilators	Marijuana		
Antidepressants			
Tricyclic antidepres-			
sants			
Phenothiazines			

Physical Examination
General Appearance: Level of alertness, respiratory
distress, anxiety, diaphoresis. Dyspnea, pallor. Note
whether the patient appears ill or well.
<b>Vital Signs:</b> Temperature, respiratory rate, postural vitals
(supine and after standing 2 minutes), pulse. Blood
pressure in all extremities; asymmetric radial to femoral
artery pulsations (aortic dissection).
<b>HEENT:</b> Cranial bruising (trauma). Pupil size and reactiv-
ity, extraocular movements; tongue or buccal lacera-
tions (seizure); flat jugular veins (volume depletion);
carotid or vertebral bruits.
<b>Skin:</b> Pallor, turgor, capillary refill.
Chest: Crackles, rhonchi (aspiration).
Heart: Irregular rhythm (atrial fibrillation); systolic mur-
murs (aortic stenosis), friction rub.
<b>Abdomen:</b> Bruits, tenderness, pulsatile mass.
Genitourinary/Rectal: Occult blood, urinary or fecal
incontinence (seizure).
<b>Extremities:</b> Needle marks, injection site fat atrophy
(diabetes), extremity palpation for trauma.
Neuro: Cranial nerves 2-12, strength, gait, sensory,
altered mental status; nystagmus. Turn patient's head
side to side, up and down; have patient reach above
bood and nick up object

Neuro: Cranial nerves 2-12, strength, gait, sensory, altered mental status; nystagmus. Turn patient's head side to side, up and down; have patient reach above head, and pick up object.

Labs: ECG: Arrhythmias, conduction blocks. Chest X-ray, electrolytes, glucose, Mg, BUN, creatinine, CBC; 24-hour Holter monitor.

Differential Diagnosis of Syncope

Non-cardiovascular

Metabolic
Hyperventilation
Hypoglycemia
Hypoxia
Neurologic
Cerebrovascular insufficiency
Normal pressure hy-

## Pulmonary Disorders

## Hemoptysis

- Chief Compliant: The patient is a 50 year old white male with hypertension who has been coughing up blood for one day.
- History of the Present Illness: Quantify the amount of blood, acuteness of onset, color (bright red, dark), character (coffee grounds, clots); dyspnea, chest pain (left or right), fever, chills; past bronchoscopies, exposure to tuberculosis; hematuria, weight loss, anorexia, hoarseness.
- Farm exposure, homelessness, residence in a nursing home, immigration from a foreign country. Smoking, leg pain or swelling (pulmonary embolism), bronchitis, aspiration of food or foreign body.
- Past Medical History: COPD, heart failure, HIV risk factors (pulmonary Kaposi's sarcoma). Prior chest Xrays, CT scans, tuberculin testing (PPD).

Medications: Anticoagulants, aspirin, NSAIDs.

Family history: Bleeding disorders.

#### Physical Examination

- General Appearance: Dyspnea, respiratory distress. Anxiety, diaphoresis, pallor. Note whether the patient appears ill or well.
- Vital Signs: Temperature, respiratory rate (tachypnea), pulse (tachycardia), BP (hypotension); assess hemodynamic status.
- **Skin:** Petechiae, ecchymoses (coagulopathy); cyanosis, purple plaques (Kaposi's sarcoma); rashes (paraneoplastic syndromes).
- **HEENT:** Nasal or oropharyngeal lesions, tongue lacerations; telangiectasias on buccal mucosa (Rendu-Osler-Weber disease); ulcerations of nasal septum (Wegener's granulomatosus), jugulovenous distention, gingival disease (aspiration).
- **Lymph Nodes:** Cervical, scalene or supraclavicular adenopathy (Virchow's nodes, intrathoracic malignancy).
- Chest: Stridor, tenderness of chest wall; rhonchi, apical crackles (tuberculosis); localized wheezing (foreign body, malignancy), basilar crackles (pulmonary edema), pleural friction rub, breast masses (metastasis).
- **Heart:** Mitral stenosis murmur (diastolic rumble), right ventricular gallop; accentuated second heart sound (pulmonary embolism).
- Abdomen: Masses, liver nodules (metastases), tenderness.
- Extremities: Calf tenderness, calf swelling (pulmonary embolism); clubbing (pulmonary disease), edema, bone pain (metastasis).

Rectal: Occult blood.

- Labs: Sputum Gram stain, cytology, acid fast bacteria stain; CBC, platelets, ABG; pH of expectorated blood (alkaline=pulmonary; acidic=GI); UA (hematuria); INR/PTT, bleeding time; creatinine, sputum fungal culture; anti-glomerular basement membrane antibody, antinuclear antibody; PPD, cryptococcus antigen.
- ECG, chest X-ray, CT scan, bronchoscopy, ventilation/perfusion scan.

#### **Differential Diagnosis**

**Infection:** Bronchitis, pneumonia, lung abscess, tuberculosis, fungal infection, bronchiectasis, broncholithiasis.

**Neoplasms:** Bronchogenic carcinoma, metastatic cancer, Kaposi's sarcoma.

Vascular: Pulmonary embolism, mitral stenosis, pulmonary edema.

**Miscellaneous:** Trauma, foreign body, aspiration, coagulopathy, epistaxis, oropharyngeal bleeding, vasculitis, Goodpasture's syndrome, lupus, hemosiderosis, Wegener's granulomatosus.

## Wheezing and Asthma

Chief Compliant: The patient is a 50 year old white male

with hypertension who complains of wheezing for one day.

History of the Present Illness: Onset, duration, and progression of wheezing; severity of attack compared to previous episodes; cough, fever, chills, purulent sputum; current and baseline peak flow rate. Frequency of

bronchodilator use, relief of symptoms by bronchodilators. Frequency of exacerbations and hospitalizations or emergency department visits; duration of past exacerbations, steroid dependency, history of intubation, home oxygen or nebulizer use.

Precipitating factors, exposure to allergens (foods, pollen, animals, drugs); seasons that provoke symptoms; exacerbation by exercise, aspirin, beta-blockers, recent

upper respiratory infection; chest pain, foreign body aspiration. Worsening at night or with infection. Treatment given in emergency room and response.

Past Medical History: Previous episodes of asthma, COPD, pneumonia. Baseline arterial blood gas results; past pulmonary function testing. Family History: Family history of asthma, allergies, hay-

fever, atopic dermatitis. Social History: Smoking, alcohol.

### **Physical Examination**

General Appearance: Dyspnea, respiratory distress, diaphoresis, somnolence. Anxiety, diaphoresis, pallor.

Note whether the patient appears cachectic, well, or in distress. Vital Signs: Temperature, respiratory rate (tachypnea

>28 breaths/min), pulse (tachycardia), BP (widened

pulse pressure, hypotension), pulsus paradoxus (inspiratory drop in systolic blood pressure >10 mmHg = severe attack). HEENT: Nasal flaring, pharyngeal erythema, cyanosis,

jugulovenous distention, grunting. Chest: Expiratory wheeze, rhonchi, decreased intensity of breath sounds (emphysema); sternocleidomastoid muscle contractions, barrel chest, increased

anteroposterior diameter (hyperinflation); intracostal and supraclavicular retractions. Heart: Decreased cardiac dullness to percussion (hyperinflation); distant heart sounds, third heart sound gallop

(S3, cor pulmonale); increased intensity of pulmonic component of second heart sound (pulmonary hypertension). Abdomen: Retractions, tenderness.

Extremities: Cyanosis, clubbing, edema.

Skin: Rash, urticaria.

Neuro: Decreased mental status, confusion.

Labs: Chest X-ray: hyperinflation, bullae, flattening of diaphragms; small, elongated heart.

ABG: Respiratory alkalosis, hypoxia. Sputum gram stain; CBC, electrolytes, theophylline level.

ECG: Sinus tachycardia, right axis deviation, right ventricular hypertrophy. Pulmonary function tests, peak flow

rate. Differential Diagnosis: Asthma, bronchitis, COPD,

pneumonia, congestive heart failure, anaphylaxis, upper airway obstruction, endobronchial tumors, carcinoid.

# Chronic Obstructive Pulmonary Disease

- Chief Compliant: The patient is a 50 year old white male with chronic obstructive pulmonary disease who complains of wheezing for one day.
- History of the Present Illness: Duration of wheezing, dyspnea, cough, fever, chills; increased sputum production; sputum quantity, consistency, color; smoking (pack-years); severity of attack compared to previous episodes; chest pain, pleurisy.
- Current and baseline peak flow rate. Frequency of bronchodilator use, relief of symptoms by bronchodilators. Frequency of exacerbations and hospitalizations or emergency department visits; duration of past exacerbations, steroid dependency, history of intubation, home oxygen or nebulizer use. Chest trauma, noncompliance with medications.
- Baseline blood gases.
- Treatment given in emergency room and response.

  Precipitating factors, exposure to allergens (foods, pollen, animals, drugs); seasons that provoke symptoms; exacerbation by exercise, aspirin, beta-blockers, recent upper respiratory infection. Worsening at night or with infection.
- Past Medical History: Frequency of exacerbations, home oxygen use, steroid dependency, history of intubation, nebulizer use; pneumonia, past pulmonary function tests. Dishetes heart failure.

tests. Diabetes, heart failure.

Medications: Bronchodilators, prednisone, ipratropium.

Family History: Emphysema.

Social History: smoking, alcohol abuse.

#### Physical Examination

- **General Appearance:** Diaphoresis, respiratory distress; speech interrupted by breaths. Anxiety, dyspnea, pallor. Note whether the patient appears "cachectic," in severe distress, or well.
- Vital Signs: Temperature, respiratory rate (tachypnea, >28 breaths/min), pulse (tachycardia), BP.
- HEENT: Pursed-lip breathing, jugulovenous distention.

Mucous membrane cyanosis, perioral cyanosis.

- Chest: Barrel chest, retractions, sternocleidomastoid muscle contractions, supraclavicular retractions, intercostal retractions, expiratory wheezing, rhonchi. Decreased air movement, hyperinflation.
- **Heart:** Right ventricular heave, distant heart sounds, S3 gallop (cor pulmonale).
- Extremities: Cyanosis, clubbing, edema.
- Neuro: Decreased mental status, somnolence, confusion.

  Labs: Chest X-ray: Diaphragmatic flattening, bullae, hyperaeration.
- ABG: Respiratory alkalosis (early), acidosis (late), hypoxia. Sputum gram stain, culture, CBC, electrolytes.
  ECG: Sinus tachycardia, right axis deviation, right ventric-
- ECG: Sinus tachycardia, right axis deviation, right ventricular hypertrophy, PVCs.

  Differential Diagnosis: COPD, chronic bronchitis,
- asthma, pneumonia, heart failure, alpha-1-antitrypsin deficiency, cystic fibrosis.

## Pulmonary Embolism

- Chief Compliant: The patient is a 50 year old white male with hypertension who complains of shortness of breath for 4 hours.
- **History of the Present Illness:** Sudden onset of pleuritic chest pain and dyspnea. Unilateral leg pain, swelling; fever, cough, hemoptysis, diaphoresis, syncope. History of deep venous thrombosis.
- Virchow's Triad: Immobility, trauma, hypercoagulability, malignancy (pancreas, lung, genitourinary, stomach, breast, pelvic, bone); estrogens (oral contraceptives), history of heart failure, surgery, pregnancy.

## **Physical Examination**

General Appearance: Dyspnea, apprehension, diaphoresis. Note whether the patient appears in

respiratory distress, well, or malnourished.

Vitals: Temperature (fever), respiratory rate (tachypnea,

>28 breaths/min), pulse (tachycardia >100/min), BP (hypotension).

HEENT: Jugulovenous distention, prominent jugular Awaves.

Chest: Crackles; tenderness or splinting of chest wall, pleural friction rub; breast mass (malignancy).

Heart: Right ventricular gallop; accentuated, loud, pul-

monic component of second heart sound (S2); S3 or S4 gallop; murmurs. Extremities: Cyanosis, edema, calf redness or tenderness; Homan's sign (pain with dorsiflexion of foot); calf

swelling, increased calf circumference (>2 cm differ-

ence), dilated superficial veins. Rectal: Occult blood.

	Genitourinary: Testion Neuro: Altered menta		•	
	Frequency of Symptoms and Signs in Pulmonary Embolism			
	Symptoms	%	Signs	%
	Dyspnea Pleuritic chest pain	84 74	Tachypnea (>16/min)	92
	Apprehension	59	Rales	58
ı	Cough	53	Accentuated S2	53
ı	Hemoptysis	30	Tachycardia	44
ı	Sweating	27	Fever (>37.8°C)	43
	Non-pleuritic chest	14	Diaphoresis	36

\_abs: ABG: Hypoxemia, hypocapnia, respiratory alkalosis.

S3 or S4 gallop

Thrombophlebitis

34

pain

Syncope

Lung Scan: Ventilation/perfusion mismatch. Duplex ultrasound of lower extremities.

Pulmonary Angiogram: Arterial filling defects.

Chest X-ray: Elevated hemidiaphragm, wedge shaped infiltrate; localized oligemia; effusion, segmental

atelectasis ECG: Sinus tachycardia, nonspecific ST-T wave changes,

QRS changes (acute right shift, S<sub>1</sub>Q<sub>3</sub> pattern); right

heart strain pattern (P-pulmonale, right bundle branch block, right axis deviation).

Differential Diagnosis: Heart failure, myocardial infarc-

tion, pneumonia, pulmonary edema, chronic obstructive pulmonary disease, asthma, aspiration of foreign body or gastric contents, pleuritis.

## Infectious Diseases

#### Fever

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of fever for one week.

History of the Present Illness: Degree of fever, time of onset, pattern of fever; shaking chills (rigors), cough, sputum, sore throat, headache, neck stiffness, dysuria, urinary frequency, back pain; night sweats; vaginal discharge, myalgias, nausea, vomiting, diarrhea, angrexia

Chest or abdominal pain; ear, bone or joint pain; recent acetaminophen use.

Exposure to tuberculosis or hepatitis; travel history, animal exposure; recent dental GI procedures. Ill contacts; Foley catheter; antibiotic use, alcohol, allergies.

Past Medical History: Cirrhosis, diabetes, heart murmur, recent surgery; AIDS risk factors.

 $\textbf{Medications:} \ \textbf{Antibiotics, acetaminophen.}$ 

Social History: Alcoholism.

#### **Physical Examination**

**General Appearance:** Toxic appearance, altered level of consciousness. Dyspnea, diaphoresis. Note whether the patient appears, septic, ill, or well.

Vital Signs: Temperature (fever curve), respiratory rate (tachypnea), pulse (tachycardia), BP.

Skin: Pallor, delayed capillary refill; rash, purpura, petechia (septic emboli, meningococcemia). Pustules, cellulitis, abscesses.

**HEENT:** Papilledema, periodontitis, tympanic membrane inflammation, sinus tenderness; pharyngeal erythema, lymphadenopathy, neck rigidity.

Breast: Tenderness, masses.

Chest: Rhonchi, crackles, dullness to percussion (pneumonia).

**Heart:** Murmurs (endocarditis), friction rub (pericarditis). **Abdomen:** Masses, tenderness, hepatomegaly,

splenomegaly, Murphy's sign (right upper quadrant tenderness and arrest of inspiration, cholecystitis); shifting dullness, ascites. Costovertebral angle tenderness, suprapubic tenderness.

Extremities: Cellulitis, infected decubitus ulcers or wounds; IV catheter tenderness (phlebitis), calf tenderness, Homan's sign; joint or bone tenderness (septic arthritis). Osler's nodes, Janeway's lesions (peripheral lesions of endocarditis).

Rectal: Prostate tenderness; rectal flocculence, fissures, and anal ulcers.

Pelvic/Genitourinary: Cervical discharge, cervical motion tenderness; adnexal or uterine tenderness, adnexal masses; genital herpes lesions.

Neurologic: Altered mental status.

Labs: CBC, blood C&S x 2, glucose, BUN, creatinine, UA, urine Gram stain, C&S; lumbar puncture; skin lesion cultures, bilirubin, transaminases; tuberculin skin test, Gram Strain of buffy coat

Chest X-ray; abdominal X-rays; gallium, indium scans.

## **Differential Diagnosis**

Infectious Causes of Fever: Abscesses, mycobacterial infections (tuberculosis), cystitis, pyelonephritis, endocarditis, wound infection, diverticulitis, cholangitis, osteomyelitis, IV catheter phlebitis, sinusitis, otitis media, upper respiratory infection, pharyngitis, pelvic infection, cellulitis, hepatitis, infected decubitus ulcer, peritonitis, abdominal abscess, perirectal abscess, mastitis; viral infections, parasitic infections.

Malignancies: Lymphomas, leukemia, solid tumors, carcinomas

Connective Tissue Diseases: Lupus, rheumatic fever, rheumatoid arthritis, temporal arteritis, sarcoidosis, polymyalgia rheumatica.

Other Causes of Fever: Atelectasis, drug fever, pulmo-

nary emboli, pericarditis, pancreatitis, factitious fever, alcohol withdrawal. Deep vein thrombosis, myocardial infarction, gout, porphyria, thyroid storm.

Medications Associated with Fever: Barbiturates, isoniazid, nitrofurantoin, penicillins, phenytoin, procainamide, sulfonamides.

## Sepsis

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of high fever and

chills for one day. History of the Present Illness: Degree of fever, time of onset, pattern of fever; shaking chills (rigors), cough,

sputum, sore throat, headache, neck stiffness, dysuria, urinary frequency, back pain; night sweats; vaginal discharge, myalgias, nausea, vomiting, diarrhea,

malaise, anorexia. Chest or abdominal pain; ear, bone or joint pain. Exposure to tuberculosis or hepatitis; travel history, animal

exposure; recent dental GI procedures. IV catheter, Foley catheter; antibiotic use, alcohol, allergies. Past Medical History: Cirrhosis, diabetes, heart murmur,

recent surgery; AIDS risk factors. Medications: Antibiotics, acetaminophen.

Social History: Alcoholism.

## **Physical Examination**

General Appearance: Toxic appearance, altered level of consciousness. Dyspnea, apprehension, diaphoresis. Note whether the patient appears, septic, ill, or well.

Vital Signs: Temperature (fever curve), respiratory rate

(tachypnea or hypoventilation), pulse (tachycardia), BP (hypotension). Skin: Pallor, mottling, cool extremities, delayed capillary refill; rash, purpura, petechia (septic emboli,

meningococcemia), ecthyma gangrenosum (purpuric necrotic plaque of Pseudomonas infection). Pustules, cellulitis, abscesses. HEENT: Papilledema, periodontitis, tympanic membrane inflammation, sinus tenderness; pharyngeal erythema,

lymphadenopathy, neck rigidity. Breast: Tenderness, masses. Chest: Rhonchi, crackles, dullness to percussion (pneu-

monia). Heart: Murmurs (endocarditis), friction rub (pericarditis). Abdomen: Masses, tenderness, hepatomegaly,

splenomegaly; Murphy's sign (right upper quadrant

tenderness and arrest of inspiration, cholecystitis); shifting dullness, ascites. Costovertebral angle tenderness, suprapubic tenderness. Extremities: Cellulitis, infected decubitus ulcers or

wounds; IV catheter tenderness (phlebitis), calf tenderness, Homan's sign; joint or bone tenderness (septic arthritis). Osler's nodes, Janeway's lesions (peripheral lesions of endocarditis).

Rectal: Prostate tenderness; rectal flocculence, fissures, and anal ulcers.

Pelvic/Genitourinary: Cervical discharge, cervical motion tenderness; adnexal or uterine tenderness, adnexal

masses; genital herpes lesions. Neurologic: Altered mental status.

Labs: CBC, blood C&S x 2, glucose, BUN, creatinine, UA, urine Gram stain, C&S; lumbar puncture; skin lesion cultures, bilirubin, transaminases; tuberculin skin test, Gram Strain of buffy coat

Chest X-ray; abdominal X-rays; gallium, indium scans.

Laboratory Tests for Serious Infections		
Complete blood count, leukocyte differential and platelet count Electrolytes Arterial blood gases	Serum lactic acid Cultures with antibiotic sensitivities Blood, urine, wound, sputum, drains	
Blood urea nitrogen and	Chest X-ray	
creatinine	Adjunctive imaging studies	
Urinalysis	(eg, computed tomogra-	
INR, partial	phy, magnetic resonance	

imaging, abdominal X-

rays)

#### **Differential Diagnosis**

fibrinogen

thromboplastin time.

Infectious Causes of Sepsis: Abscesses, mycobacterial infections (tuberculosis), pyelonephritis, endocarditis, wound infection, diverticulitis, cholangitis, osteomyelitis, IV catheter phlebitis, pelvic infection, cellulitis, infected decubitus ulcer, peritonitis, abdominal abscess, perirectal abscess, parasitic infections.

Defining sepsis and related disorders		
Term	Definition	
Systemic inflamma- tory re- sponse syn- drome (SIRS)	The systemic inflammatory response to a severe clinical insult manifested by ${\scriptstyle >}2$ of the following conditions: Temperature >38°C or <36°C, heart rate >90 beats/min, respiratory rate >20 breaths/min or PaCO $_2$ <32 mm Hg, white blood cell count >12,000 cells/mm³ , <4000 cells/mm³ , or >10% band cells	
Sepsis	The presence of SIRS caused by an infectious process; sepsis is considered severe if hypotension or systemic manifestations of hypoperfusion (lactic acidosis, oliguria, change in mental status) is present.	
Septic shock	Sepsis-induced hypotension despite adequate fluid resuscitation, along with the presence of perfusion abnormalities that may induce lactic acidosis, oliguria, or an alteration in mental status.	
Multiple organ dysfunction syndrome (MODS)	The presence of altered organ function in an acutely ill patient such that homeo- stasis cannot be maintained without intervention	

#### Cough and Pneumonia

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of cough for 12 hours.

History of the Present Illness: Duration of cough, chills, rigors, fever; rate of onset of symptoms. Sputum color, quantity, consistency, blood; living situation (nursing home, homelessness). Recent antibiotic use.

Associated Symptoms: Pleuritic chest pain, dyspnea, sore throat, rhinorrhea, headache, stiff neck, ear pain; nausea, vomiting, diarrhea, myalgias, arthralgias.

Past Medical History: Previous pneumonia, intravenous drug abuse, AIDS risk factors. Diabetes, heart failure, COPD, asthma, immunosuppression, alcoholism, steroids; ill contacts, aspiration, smoking, travel history, exposure to tuberculosis, tuberculin testing. Pneumococcal vaccination.

## **Physical Examination**

General Appearance: Respiratory distress, dehydration.
Note whether the patient appears septic, ill, well, or malnourished.

Vital Signs: Temperature (fever), respiratory rate (tachypnea), pulse (tachycardia), BP (hypotension).

- **HEENT:** Tympanic membranes, pharyngeal erythema, lymphadenopathy, neck rigidity.
- Chest: Dullness to percussion, tactile fremitus (increased sound conduction); rhonchi; end-inspiratory crackles; bronchial breath sounds with decreased intensity; whispered pectoriloquy (increased transmission of
- Extremities: Cyanosis, clubbing.
- **Neuro:** Gag reflex, mental status, cranial nerves 2-12.

sound), egophony (E to A changes).

- **Labs:** CBC, electrolytes, BUN, creatinine, glucose; UA, ECG, ABG.
- **Chest X-ray:** Segmental consolidation, air bronchograms, atelectasis, effusion.
- Sputum Gram Stain: >25 WBC per low-power field, bacteria.
- Differential Diagnosis: Pneumonia, heart failure, asthma, bronchitis, viral infection, pulmonary embolism, malignancy.
- Etiologic Agents of Community Acquired Pneumonia

  Age 5-40 (without underlying lung disease): Viral,
  mycoplasma pneumoniae, Chlamydia pneumoniae,
  - mycopiasma pneumoniae, Chiamydia pneumoniae, Streptococcus pneumoniae, legionella. >40 (no underlying lung disease): Streptococcus
  - pneumonia, group A streptococcus, H. influenza. >40 (with underlying disease): Klebsiella pneumonia, Enterobacteriaceae, Legionella, Staphylococcus
  - aureus, Chlamydia pneumoniae. **Aspiration Pneumonia:** Streptococcus pneumoniae,
    Bacteroides sp, anaerobes, Klebsiella,

Enterobacter.

# Pneumocystis Carinii Pneumonia and AIDS

- **Chief Compliant:** The patient is a 32 year old white male with AIDS who complains of cough for 1 day.
- History of the Present Illness: Progressive exertional dyspnea and fatigue with exertion (climbing stairs). Fever, chills, insidious onset; CD4 lymphocyte count and HIV-RNA titer (viral load); duration of HIV positivity; prior episodes of PCP or opportunistic infection.
- Dry nonproductive cough, night sweats. Prophylactic trimethoprim/sulfamethoxazole treatment; antiviral therapy. Baseline and admission arterial blood gas.
- Associated Symptoms: Headache, stiff neck, lethargy, fatigue, weakness, malaise, weight loss, diarrhea, visual changes. Oral lesions, odynophagia (pain with swallowing), skin lesions.
- Past Medical History: History of herpes simplex, toxoplasmosis, tuberculosis, hepatitis, mycobacterium avium complex, syphilis. Prior pneumococcal immunization. Mode of acquisition of HIV infection; sexual, substance use history (intravenous drugs), blood transfusion.
- **Medications:** Antivirals, antibiotics, alternative medications.

### Physical Examination

- **General Appearance:** Cachexia, respiratory distress, cyanosis. Note whether the patient appears septic, ill, well, or malnourished.
- Vital Signs: Temperature (fever), respiratory rate (tachypnea), pulse (tachycardia), BP (hypotension).
- **HEENT:** Herpetic lesions, oropharyngeal thrush, hairy leukoplakia; oral Kaposi's sarcoma (purple-brown macules); retinitis, hemorrhages, perivascular white spots, cotton wool spots (CMV retinitis); visual field deficits (toxoplasmosis). Neck rigidity, lymphadenopathy.
- Chest: Dullness, decreased breath sounds at bases, crackles, rhonchi.
  Heart: Murmurs (IV drug users).
- Abdomen: Right upper quadrant tenderness,

hepatosplenomegaly.

**Pelvic/Rectal:** Candidiasis, perianal herpetic lesions, ulcers, condyloma.

Dermatologic Signs of AIDS: Rashes, Kaposi's sarcoma (multiple purple nodules or plaques), seborrheic dermatitis, zoster, herpes, molluscum contagiosum, oral thrush.

Lymph Node Examination: Lymphadenopathy.

**Neuro:** Confusion, disorientation (AIDS dementia complex, meningitis), motor deficits, sensory deficits, cranial nerves.

Labs: Chest X-ray: Diffuse, interstitial infiltrates.

ABG: hypoxia, increased Aa gradient. CBC, sputum gram stain, Pneumocystis immunofluorescent stain; CD4 count, HIV RNA PCR or bDNA, hepatitis surface antigen, hepatitis antibody, electrolytes.

Bronchoalveolar lavage, high-resolution CT scan. **Differential Diagnosis:** Pneumocystis carinii pneumonia, bacterial pneumonia, tuberculosis, Kaposi's sarcoma.

## **Meningitis**

**Chief Compliant:** The patient is a 80 year old female with diabetes who complains of fever for 8 hours.

History of the Present Illness: Duration and degree of fever, chills; headache, neck stiffness; cough, sputum; lethargy, irritability (high pitched cry), altered consciousness, nausea, vomiting. Skin rashes, ill contacts, travel history.

History of pneumonia, bronchitis, otitis media, sinusitis, endocarditis.

Past Medical History: Diabetes, alcoholism, sickle cell disease, splenectomy malignancy, immunosuppression, AIDS, intravenous drug use, tuberculosis; recent upper respiratory infections.

Medications: Antibiotics, acetaminophen.

#### **Physical Examination**

**General Appearance:** Level of consciousness, obtundation, labored respirations. Note whether the patient appears ill, well, or septic.

Vital Signs: Temperature (fever), pulse (tachycardia), respiratory rate (tachypnea), BP (hypotension).

**HEENT:** Pupil reactivity, extraocular movements, papilledema. Full fontanelle in infants. Brudzinski's sign (neck flexion causes hip flexion); Kernig's sign (flexing hip and extending knee elicits resistance).

Chest: Rhonchi, crackles.

Heart: Murmurs, friction rubs, S3, S4.

**Skin:** Capillary refill, rashes, splinter hemorrhages of nails, Janeway's lesions (endocarditis), petechia, purpura (meningococcemia).

**Neuro:** Altered mental status, cranial nerve palsies, weakness, sensory deficits, Babinski's sign.

CT Scan: Increased intracranial pressure.

Labs:

CSF Tube 1 - Gram stain, culture and sensitivity, bacterial antigen screen (1-2 mL).

CSF Tube 2 - Glucose, protein (1-2 mL).

CSF Tube 3 - Cell count and differential (1-2 mL).

CBC, electrolytes, BUN, creatinine.

Differential Diagnosis: Meningitis, encephalitis, brain abscess, viral infection, tuberculosis, osteomyelitis, subarachnoid hemorrhage.

## Etiology of Bacterial Meningitis

**15-50 years:** Streptococcus pneumoniae, Neisseria meningitis, Listeria.

>50 years or debilitated: Streptococcus pneumoniae, Neisseria meningitis, Listeria, Haemophilus influenza, Pseudomonas, streptococci.

**AIDS:** Cryptococcus neoformans, Toxoplasma gondii, herpes encephalitis, coccidioides.

Disease	Color	Protein	Cells	Glucose
Normal CSF Fluid	Clear	<50 mg/100 mL	<5 lymphs/ mm³	>40 mg/100 mL, ½- 2/3 of blood glucose level drawn at same time
Bacterial men- ingitis or tubercu- lous men- ingitis	Yellow opale scent	Elevated 50- 1500	25-10000 WBC with pre- domi- nate polys	low
Tuberculous, fungal, partially treated bacterial, syphilitic meningi- tis, menin- geal metastase s	Clear opal- escen t	Elevated usu- ally <500	10-500 WBC with pre- domi- nant lymphs	20-40, low
Viral meningi- tis, par- tially treated bacterial meningi- tis, en- cephalitis, toxo- plasmosis	Clear opal- escen t	Slightly ele- vated or normal	10-500 WBC with pre- domi- nant lymphs	Normal to low

# Pyelonephritis and Urinary Tract Infection

- **Chief Compliant:** The patient is a 50 year old female with diabetes who complains of flank pain for 8 hours.
- History of the Present Illness: Dysuria, frequency (repeated voiding of small amounts), urgency; suprapubic discomfort or pain, hematuria, fever, chills, (pyelonephritis); back pain, nausea, vomiting.
- History of urinary infections, renal stones or colicky pain. Recent antibiotic use, prostate enlargement. Diaphragm use.
- Risk factors: Diaphragm or spermicide use, sexual intercourse, elderly, anatomic abnormality, calculi, prostatic obstruction, urinary tract instrumentation, urinary tract obstruction, catheterization.

## Physical Examination

- **General Appearance:** Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Temperature (fever), respiratory rate, pulse, BP.
- **Abdomen:** Suprapubic tenderness, costovertebral angle tenderness, masses.
- Pelvic/Genitourinary: Urethral or vaginal discharge, cystocele
- Rectal: Prostatic hypertrophy or tenderness (prostatitis).

  Labs: UA with micro. Urine Gram stain, urine C&S. CBC with differential, creatinine, electrolytes.
- Pathogens: E coli, Klebsiella, Proteus, Pseudomonas, Enterobacter, Staphylococcus saprophyticus, enterococcus, group B streptococcus, Chlamydia trachomatis
- Differential Diagnosis: Acute cystitis, pyelonephritis, vulvovaginitis, gonococcal or chlamydia urethritis, herpes, cervicitis, papillary necrosis, renal calculus, appendicitis, cholecystitis, pelvic inflammatory disease.

#### **Endocarditis**

- Chief Compliant: The patient is a 50 year old white male with mitral valve prolapse who complains of fever for 4
- History of the Present Illness: Fever, chills, night sweats, fatigue, malaise, weight loss; pain in fingers or toes (emboli); pleuritic chest pain; skin lesions. History of heart murmur, rheumatic heart disease, heart failure, prosthetic valve.
- Past Medical History: Recent dental or gastrointestinal procedure; intravenous drug use, recent intravenous catheterization; urinary tract infection; colonic disease, decubitus ulcers, wound infection. History of stroke.

## Physical Examination

- **General Appearance:** Septic appearance. Note whether the patient appears ill, well, or malnourished.
- Vitals: Temperature (fever), pulse (tachycardia), BP (hypotension).
- **HEENT:** Oral mucosal and conjunctival petechiae; Roth's spots (retinal hemorrhages with pale center, emboli).
- Heart: New or worsening heart murmur.
- **Abdomen:** Liver tenderness (abscess); splenomegaly, spinal tenderness (vertebral abscess).
- **Neuro:** Focal neurological deficits (septic emboli), cranial nerves.
- Extremities: Splinter hemorrhages under nails; Osler's nodes (tender, erythematous nodules on pads of toes or fingers); Janeway lesions (erythematous, nontender lesions on palms and soles, septic emboli), joint pain (septic arthritis).
- Labs: WBC, UA (hematuria); blood cultures x 3, urine culture

Echocardiogram: Vegetations, valvular insufficiency.
 Chest X-ray: Cardiomegaly, valvular calcifications, multiple focal infiltrates.
 Native Valve Pathogens: Streptococcus viridans, strepto-

Native Valve Pathogens: Streptococcus viridans, streptococcus bovis, enterococci, staphylococcus aureus, streptococcus pneumonia, pseudomonas, group D streptococcus.

Prosthetic Valve Pathogens: Staphylococcus aureus, Enterobacter sp., staphylococcus epidermidis.

## Gastrointestinal Disorders

# Abdominal Pain and the Acute Abdomen

- Chief Compliant: The patient is a 50 year old white male with diabetes who complains of right lower quadrant abdominal pain for 4 hours.
- History of the Present Illness: Duration of pain, pattern of progression; exact location at onset and at present; diffuse or localized; location and character at onset and at present (burning, crampy, sharp, dull); constant or intermittent ("colicky"); radiation of pain (to shoulder, back, groin); sudden or gradual onset.
- Effect of eating, vomiting, defecation, flatus, urination, inspiration, movement, position on the pain. Timing and characteristics of last bowel movement. Similar episodes in past; relation to last menstrual period.
- Associated Symptoms: Fever, chills, nausea, vomiting (bilious, feculent, blood, coffee ground-colored material); vomiting before or after onset of pain; jaundice, constipation, change in bowel habits or stool caliber, obstipation (inability to pass gas); chest pain, diarrhea, hematochezia (rectal bleeding), melena (black, tarry stools); dysuria, hematuria, anorexia, weight loss, dysphagia, odynophagia (painful swallowing); early satiety, trauma.
- Aggravating or Relieving Factors: Fatty food intolerance, medications, aspirin, NSAID's, narcotics, anticholinergics, laxatives, antacids.
- Past Medical History: History of abdominal surgery (appendectomy, cholecystectomy), hernias, gallstones; coronary disease, kidney stones; alcoholism, cirrhosis, peptic ulcer, dyspepsia. Endoscopies, X-rays, upper Gl series.

### Physical Examination

- **General Appearance:** Degree of distress, body positioning to relieve pain, nutritional status. Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.
- Vitals: Temperature (fever), pulse (tachycardia), BP (hypotension), respiratory rate (tachypnea).
- **HEENT:** Pale conjunctiva, scleral icterus, atherosclerotic retinopathy, "silver wire" arteries (ischemic colitis); flat neck veins (hypovolemia). Lymphadenopathy, Virchow node (supraclavicular mass).

## Abdomen

- Inspection: Scars, ecchymosis, visible peristalsis (small bowel obstruction), distension. Scaphoid, flat.
- Auscultation: Absent bowel sounds (paralytic ileus or late obstruction), high-pitched rushes (obstruction), bruits (ischemic colitis).
- Palpation: Begin palpation in quadrant diagonally opposite to point of maximal pain with patient's legs flexed and relaxed. Bimanual palpation of flank (renal disease). Rebound tenderness; hepatomegaly, splenomegaly, masses; hernias (incisional, inguinal, femoral). Pulsating masses; costovertebral angle tenderness. Bulging flanks, shifting dullness, fluid wave (ascites).

#### **Specific Signs on Palpation**

- **Murphy's sign:** Inspiratory arrest with right upper quadrant palpation, cholecystitis.
- **Charcot's sign:** Right upper quadrant pain, jaundice, fever; gallstones.
- **Courvoisier's sign:** Palpable, nontender gallbladder with jaundice; pancreatic malignancy.
- McBurney's point tenderness: Located two thirds of the way between umbilicus and anterior superior iliac spine; appendicitis.
- **Iliopsoas sign:** Elevation of legs against examiner's hand causes pain, retrocecal appendicitis.

nal rotation of thigh causes pain in pelvic appendicitis.

ovsing's sign: Manual pressure and release at

Obturator sign: Flexion of right thigh and exter-

- Rovsing's sign: Manual pressure and release at left lower quadrant colon causes referred pain at McBurney's point; appendicitis.
- **Cullen's sign:** Bluish periumbilical discoloration; peritoneal hemorrhage.
- **Grey Turner's sign:** Flank ecchymoses; retroperitoneal hemorrhage.
- **Percussion:** Loss of liver dullness (perforated viscus, free air in peritoneum); liver and spleen span by percussion.
- Rectal Examination: Masses, tenderness, impacted stool; gross or occult blood.

  Genital/Pelvic Examination: Cervical discharge, adnexal
- tenderness, uterine size, masses, cervical motion tenderness. Extremities: Femoral pulses, popliteal pulses (absent
- pulses indicate ischemic colitis), edema. **Skin:** Jaundice, dependent purpura (mesenteric infarc-
- tion), petechia (gonococcemia).

  Stigmata of Liver Disease: Spider angiomata, periumbilical collateral veins (Caput medusae), gynecomastia, ascites, hepatosplenomegaly, testicular atrophy.
- atrophy. **Labs:** CBC, electrolytes, liver function tests, amylase,
- lipase, UA, pregnancy test. ECG.

  Chest X-ray: Free air under diaphragm, infiltrates, effusion (pancreatitis).
- X-rays of abdomen (acute abdomen series): Flank stripe, subdiaphragmatic free air, distended loops of bowel, sentinel loop, air fluid levels, thumbprinting, mass effects, calcifications, fecaliths, portal vein gas, pneumatobilia.

#### **Differential Diagnosis**

- **Generalized Pain:** Intestinal infarction, peritonitis, obstruction, diabetic ketoacidosis, sickle crisis, acute porphyria, penetrating posterior duodenal ulcer, psychogenic pain.
- Right Upper Quadrant: Cholecystitis, cholangitis, hepatitis, gastritis, pancreatitis, hepatic metastases, gonococcal perihepatitis (Fitz-Hugh-Curtis syndrome), retrocecal appendicitis, pneumonia, peptic ulcer.
- Epigastrium: Gastritis, peptic ulcer, gastroesophageal reflux disease, esophagitis, gastroenteritis, pancreatitis, perforated viscus, intestinal obstruction, ileus, myocardial infarction, aortic aneurysm.
- Left Upper Quadrant: Peptic ulcer, gastritis, esophagitis, gastroesophageal reflux, pancreatitis, myocardial ischemia, pneumonia, splenic infarction, pulmonary embolus.
- Left Lower Quadrant: Diverticulitis, intestinal obstruction, colitis, strangulated hernia, inflammatory bowel disease, gastroenteritis, pyelonephritis, nephrolithiasis, mesenteric lymphadenitis, mesenteric thrombosis, aortic aneurysm, volvulus, intussusception, sickle crisis, salpingitis, ovarian cyst, ectopic pregnancy, endometriosis, testicular torsion, psychogenic pain.
- Right Lower Quadrant: Appendicitis, diverticulitis (redundant sigmoid) salpingitis, endometritis, endometriosis, intussusception, ectopic pregnancy, hemorrhage or rupture of ovarian cyst, renal calculus.
- Hypogastric/Pelvic: Cystitis, salpingitis, ectopic pregnancy, diverticulitis, strangulated hernia, endometriosis, appendicitis, ovarian cyst torsion; bladder distension, nephrolithiasis, prostatitis, malignancy.

## Nausea and Vomiting

Chief Compliant: The patient is a 50 year old white male with diabetes who complains of vomiting for 4 hours.History of the Present Illness: Character of emesis

- (color, food, bilious, feculent, hematemesis, coffee ground material, projectile); abdominal pain, effect of vomiting on pain; early satiety, fever, melena, vertigo, tinnitus (labyrinthitis).
- Clay colored stools, dark urine, jaundice (biliary obstruction); recent change in medications. Ingestion of spoiled food; exposure to ill contacts; dysphagia, odynophagia.
- Possibility of pregnancy (last menstrual period, contraception, sexual history).

  Past Medical History: Diabetes, cardiac disease, peptic
- ulcer, liver disease, CNS disease, headache. X-rays, upper GI series, endoscopy.

  Medications Associated with Nausea: Digoxin,
- colchicine, theophylline, chemotherapy, anticholinergics, morphine, meperidine (Demerol), oral contraceptives, progesterone, antiarrhythmics, erythromycin, antibiotics, antidepressants.

#### **Physical Examination**

**General Appearance:** Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.

Vital Signs: BP (orthostatic hypotension), pulse (tachy-

cardia), respiratory rate, temperature (fever). **Skin:** Pallor, jaundice, spider angiomas.

**HEENT:** Nystagmus, papilledema; ketone odor on breath (apple odor, diabetic ketoacidosis); jugulovenous

distention or flat neck veins. **Abdomen:** Scars, bowel sounds, bruits, tenderness,

rebound, rigidity, distention, hepatomegaly, ascites. **Extremities:** Edema, cyanosis.

Rectal: Masses, occult blood.

Labs: CBC, electrolytes, UA, amylase, lipase, LFTs,

pregnancy test, four views of the abdomen series.

Differential Diagnosis: Gastroenteritis, systemic infections, medications (contraceptives, antiarrhythmics,

tions, medications (contraceptives, antiarrhythmics, chemotherapy, antibiotics), pregnancy, appendicitis, peptic ulcer, cholecystitis, hepatitis, intestinal obstruction, gastroesophageal reflux, gastroparesis, ileus, pancreatitis, myocardial ischemia, tumors (esophageal, gastric), increased intracranial pressure, labyrinthitis, diabetic ketoacidosis, renal failure, toxins, bulimia, psychogenic vomiting.

## **Anorexia and Weight Loss**

Chief Compliant: The patient is a 50 year old white male with diabetes who complains of loss of appetite and weight loss for one week.

- History of the Present Illness: Time of onset, amount and rate of weight loss (sudden, gradual); change in appetite, nausea, vomiting, dysphagia, abdominal pain; exacerbation of pain with eating (intestinal angina); diarrhea, fever, chills, night sweats; dental problems; restricted access to food.
- Polyuria, polydipsia; skin or hair changes; 24-hour diet recall; dyspepsia, jaundice, dysuria; cough, change in bowel habits; chronic illness.
- Dietary restrictions (low salt, low fat); diminished taste, malignancy, AIDS risks factors; psychiatric disease, renal disease, alcoholism, drug abuse (cocaine, amphetamines).

## Physical Examination

- **General Appearance:** Muscle wasting, cachexia. Signs of dehydration. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Pulse (bradycardia), BP, respiratory rate, temperature (hypothermia).
- Skin: Pallor, jaundice, hair changes, skin laxity, cheilosis, dermatitis (Pellagra).

  HEENT: Dental erosions from vomiting, oropharyngeal

lesions, thyromegaly, glossitis, temporal wasting, supraclavicular adenopathy (Virchow's node).

Chest: Rhonchi, barrel shaped chest.

Heart: Murmurs, displaced PMI.

Rectal: Occult blood, masses.

infection, alcohol abuse, AIDS.

Abdomen: Scars, decreased bowel sounds, tenderness, hepatomegaly splenomegaly. Periumbilical adenopathy, palpable masses.

Extremities: Edema, muscle wasting, lymphadenopathy,

skin abrasions on fingers. Neurologic: Decreased sensation, poor proprioception.

Labs: CBC, electrolytes, protein, albumin, pre-albumin,

transferrin, thyroid studies, LFTs, toxicology screen. Differential Diagnosis: Inadequate caloric intake, peptic ulcer, depression, anorexia nervosa, dementia, hyper/hypothyroidism, cardiopulmonary disease, narcotics, diminished taste, diminished olfaction, poor dental hygiene (loose dentures), cholelithiasis, malignancy (gastric carcinoma), gastritis, hepatic or renal failure,

## Diarrhea

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of diarrhea for two days.

History of the Present Illness: Rate of onset, duration, frequency. Volume of stool output (number of stools per day), watery stools; fever. Abdominal cramps, bloating, flatulence, tenesmus (painful urge to defecate), anorexia, nausea, vomiting, bloating; myalgias, arthralgias, weight loss.

Stool Appearance: Buoyancy, blood or mucus, oily, foul odor.

Recent ingestion of spoiled poultry (salmonella), milk, seafood (shrimp, shellfish; Vibrio parahaemolyticus); common sources (restaurants), travel history, laxative abuse.

Ill contacts with diarrhea, inflammatory bowel disease; family history of celiac disease.

Past Medical History: Sexual exposures, immunosuppressive agents, AIDS risk factors, coronary artery disease, peripheral vascular disease (ischemic colitis). Exacerbation by stress.

Medications Associated with Diarrhea: Laxatives, magnesium-containing antacids, sulfa drugs, antibiotics (erythromycin, clindamycin), cholinergic agents, colchicine, milk (lactase deficiency), gum (sorbitol).

### Physical Examination

General Appearance: Signs of dehydration or malnutrition. Septic appearance. Note whether the patient appears ill or well.

Vital Signs: BP (orthostatic hypotension), pulse (tachycardia), respiratory rate, temperature (fever).

Skin: Decreased skin turgor, skin mottling, delayed

capillary refill, jaundice. HEENT: Oral ulcers (inflammatory bowel or celiac disease), dry mucous membranes, cheilosis (cracked lips, riboflavin deficiency); glossitis (B12, folate deficiency).

Oropharyngeal candidiasis (AIDS). Abdomen: Hyperactive bowel sounds, tenderness,

rebound, guarding, rigidity (peritoneal signs), distention, hepatomegaly, bruits (ischemic colitis).

Extremities: Arthritis (ulcerative colitis). Absent peripheral pulses, bruits (ischemic colitis).

Rectal: Perianal ulcers, sphincter tone, tenderness,

masses, occult blood. Neuro: Mental status changes. Peripheral neuropathy (B6, B12 deficiency), decreased perianal sensation,

sphincter reflex. Labs: Electrolytes, Wright's stain for fecal leucocytes; cultures for enteric pathogens, ova and parasites x 3; clostridium difficile toxin. CBC with differential, calcium,

albumin, flexible sigmoidoscopy.

Abdominal X-ray: Air fluid levels, dilation, pancreatic

calcifications.

### Differential Diagnosis

Acute Infectious Diarrhea: Infectious diarrhea (salmonella, shigella, E coli, Campylobacter, Bacillus cereus), enteric viruses (rotavirus, Norwalk virus), traveler's diarrhea,

antibiotic-related diarrhea

#### Chronic Diarrhea:

- Osmotic Diarrhea: Laxatives, lactulose, lactase deficiency (gastroenteritis, sprue), other disaccharidase deficiencies, ingestion of mannitol, sorbitol, enteral feeding.
- Secretory Diarrhea: Bacterial enterotoxins, viral infection; AIDS-associated disorders (mycobacterial, HIV enteropathy), Zollinger-Ellison syndrome, vasoactive intestinal peptide tumor, carcinoid tumors, medullary thyroid cancer, colonic villus adenoma.
- Exudative Diarrhea: Bacterial infection, Clostridium difficile, parasites, Crohn's disease, ulcerative colitis, diverticulitis, intestinal ischemia, diverticulitis.
- Diarrhea Secondary to Altered Intestinal Motility:
  Diabetic gastroparesis, hyperthyroidism, laxatives, cholinergics, irritable bowel syndrome, bacterial overgrowth, constipation-related diarrhea.

# Hematemesis and Upper Gastrointestinal Bleeding

- **Chief Compliant:** The patient is a 50 year old white male with peptic ulcer disease who complains of emesis of blood for 4 hours.
- **History of the Present Illness:** Duration and frequency of hematemesis (bright red blood, coffee ground material), volume of blood, hematocrit. Forceful retching prior to hematemesis (Mallory-Weiss tear).
- Abdominal pain, melena, hematochezia (bright red blood per rectum); history of peptic ulcer, esophagitis, prior bleeding episodes. Nose bleeds, syncope, lightheadedness, nausea.
- Ingestion of alcohol. Weight loss, malaise, fatigue, anorexia, early satiety, jaundice.
- Nasogastric aspirate quantity and character; transfusions given previously.

  Past Medical History: Liver or renal disease, hepatic
- encephalopathy, esophageal varices, aortic surgery.

  Past Testing: X-ray studies, endoscopy. Past Treatment: Endoscopic sclerotherapy, shunt surgery.
- **Medications:** Aspirin, nonsteroidal anti-inflammatory drugs, steroids, anticoagulants.
- Family History: Liver disease or bleeding disorders.

## Physical Examination

- **General Appearance:** Pallor, diaphoresis, cold extremities, confusion. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Supine and upright pulse and blood pressure (orthostatic hypotension; resting tachycardia indicates a 10% blood volume loss; postural hypotension indicates a 20-30% blood loss); oliguria (<20 mL of urine per hour), temperature.
- Skin: Delayed capillary refill, pallor, petechiae. Stigmata of liver disease (jaundice, umbilical venous collaterals [caput medusae], spider angiomas, parotid gland hypertrophy). Hemorrhagic telangiectasia (Osler-Weber-Rendu syndrome), abnormal pigmentation (Peutz-Jeghers syndrome); purple-brown nodules (Kaposi's sarcoma).
- HEENT: Scleral pallor, oral telangiectasia, flat neck veins.
  Chest: Gynecomastia (cirrhosis), breast masses (metastatic disease).

Heart: Systolic ejection murmur.

Abdomen: Scars, tenderness, rebound, masses,

- splenomegaly, hepatic atrophy (cirrhosis), liver nodules. Ascites, dilated abdominal veins.
- **Extremities:** Dupuytren's contracture (palmar
- contractures, cirrhosis), edema.

  Neuro: Decreased mental status, confusion, poor mem-
- ory, asterixis (flapping wrists, hepatic encephalopathy). **Genitourinary/Rectal:** Gross or occult blood, masses,

testicular atrophy.

- Labs: CBC, platelets, electrolytes, BUN (elevation suggests upper GI bleed), glucose, INR/PTT, ECG. Endoscopy, nuclear scan, angiography.
- Differential Diagnosis of Upper GI Bleeding: Gastric or duodenal ulcer, esophageal varices, Mallory Weiss tear (gastroesophageal junction tear due to vomiting or retching), gastritis, esophagitis, swallowed blood (nose bleed, oral lesion), duodenitis, gastric cancer, vascular ectasias, coagulopathy, hypertrophic gastropathy (Menetrier's disease), aorto-enteric fistula.

# Melena and Lower Gastrointestinal Bleeding

- Chief Compliant: The patient is a 50 year old white male with diverticulosis who complains of rectal bleeding for 8 hours.
- History of the Present Illness: Duration, quantity, color of bleeding (gross blood, streaks on stool, melena), recent hematocrit. Change in bowel habits or stool caliber, abdominal pain, fever. Constipation, diarrhea, anorectal pain. Epistaxis, anorexia, weight loss, mal-
- aise, vomiting. Color of nasogastric aspirate.

  Fecal mucus, tenesmus (straining during defecation), lightheadedness.
- Past Medical History: Diverticulosis, hemorrhoids, colitis, peptic ulcer, hematemesis, bleeding disease, coronary or renal disease, cirrhosis, alcoholism, easy bruising.
- Medications: Anticoagulants, aspirin, NSAIDS.
- Past Testing: Barium enema, colonoscopy, sigmoidoscopy, upper GI series.

## Physical Examination General Appearance: Signs of dehydration, pallor. Note

- whether the patient appears ill, well, or malnourished. **Vital Signs:** BP, pulse (orthostatic hypotension), respira-
- tory rate, temperature (tachycardia), oliguria.
- Skin: Cold, clammy skin; delayed capillary refill, pallor, jaundice. Stigmata of liver disease: Umbilical venous collaterals (Caput medusae), jaundice, spider angiomata, parotid gland hypertrophy, gynecomastia. Rashes, purpura, buccal mucosa discolorations or pigmentation (Henoch-Schönlein purpura or Peutz-Jeghers polyposis syndrome).
- **HEENT:** Atherosclerotic retinal disease, "silver wire" arteries (ischemic colitis).
- **Heart:** Systolic ejection murmurs, atrial fibrillation (mesenteric emboli).
- **Abdomen:** Scars, bruits, masses, distention, rebound tenderness, hernias, liver atrophy (cirrhosis), splenomegaly. Ascites, pulsatile masses (aortic aneurysm).
- **Genitourinary:** Testicular atrophy.
- Extremities: Cold, pale extremities.
- **Neuro:** Decreased mental status, confusion, asterixis (flapping hand tremor; hepatic encephalopathy).
- Rectal: Gross or occult blood, masses, hemorrhoids; fissures, polyps, ulcers.

  Labs: CBC (anemia), liver function tests, ammonia level.
- Abdominal X-ray series (thumbprinting, air fluid levels).
- Differential Diagnosis of Lower Gastrointestinal Bleeding: Hemorrhoids, fissures, diverticulosis, upper GI bleeding, rectal trauma, inflammatory bowel disease, infectious colitis, ischemic colitis, bleeding polyps, carcinoma, angiodysplasias, intussusception,

coagulopathies, Meckel's diverticulitis, epistaxis, endometriosis, aortoenteric fistula.

## Cholecystitis

Chief Compliant: The patient is a 50 year old white male with obesity who complains of right upper quadrant pain for 6 hours.

History of the Present Illness: Biliary colic (constant

right upper quadrant pain, 30-90 minutes after meals, lasting several hours). Radiation to epigastrium, scapula or back; nausea, vomiting, anorexia, low-grade fever; fatty food intolerance, dark urine, clay colored stools; bloating, jaundice, early satiety, flatulence,

stools; bloating, jaundice, early satiety, flatulence, obesity.

Previous epigastric pain, gallstones, alcohol.

Past Medical History: Fasting, weight loss,

hyperalimentation, estrogen, pregnancy, diabetes, sickle cell anemia, hereditary spherocytosis. **Prior Testing:** Ultrasounds, HIDA scans, endoscopies. **Causes of Cholesterol Stones:** Hereditary, pregnancy, exogenous steroids, diabetes, Crohn's disease; rapid

weight loss, hyperalimentation.

Causes of Pigment Stones: Asians with biliary parasites, sickle cell anemia, hereditary spherocytosis, cirrhosis.

## Physical Examination General Appearance: Obese, restless patient unable to

find a comfortable position. Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.

Vital Signs: Pulse (mild tachycardia), temperature (low-

Vital Signs: Pulse (mild tachycardia), temperature (lowgrade fever), respiratory rate (shallow respirations), BP. Skin: Jaundice, capillary refill.

HEENT: Scleral icterus, sublingual jaundice.

Abdomen: Epigastric or right upper quadrant tenderness,

Murphy's sign (tenderness and inspiratory arrest during

palpation of RUQ); firm tender, sausage-like mass in RUQ (enlarged gallbladder); guarding, rigidity, rebound (peritoneal signs); Charcot's sign (intermittent right upper quadrant abdominal pain, jaundice, fever).

Labs: Ultrasound, HIDA (radionuclide) scan, WBC, proposition biogenia, alkaling phosphatase, AST, any

hyperbilirubinemia, alkaline phosphatase, AST, amylase.

Plain Abdominal X-ray: Increased gallbladder shadow,

gallbladder calcifications; air in gallbladder wall (emphysematous cholecystitis), small bowel obstruction (gallstone ileus).

Differential Diagnosis: Calculus cholecystitis, cholangitis peptic ulcer paggreatitis appendicitis

cholangitis, peptic ulcer, pancreatitis, appendicitis, gastroesophageal reflux disease, hepatitis, nephrolithiasis, pyelonephritis, hepatic metastases, gonococcal perihepatitis (Fitz-Hugh-Curtis syndrome), pleurisy, pneumonia, angina, herpes zoster.

## Jaundice and Hepatitis

- Chief Compliant: The patient is a 50 year old white male with alcoholism who complains of jaundice for 3 days.
- History of the Present Illness: Dull right upper quadrant pain, anorexia, jaundice, nausea, vomiting, fever, dark urine, increased abdominal girth (ascites), pruritus, arthralgias, urticarial rash; somnolence (hepatic encephalopathy). Weight loss, melena, hematochezia, hematemesis.
- IV drug abuse, alcoholism, exposure to hepatitis or jaundiced persons, blood transfusion, day care centers, foreign travel; prior hepatitis immunization.
- Past Medical History: Heart failure, sepsis. Prior Testing: Hepatitis serologies, liver function tests, liver biopsy.
- **Medications**: Hepatotoxins: Acetaminophen, isoniazid, nitrofurantoin, methotrexate, sulfonamides, NSAIDS, phenytoin.
- Family History: Jaundice, liver disease.

#### Physical Examination

- **General Appearance:** Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Pulse, BP, respiratory rate, temperature (fever).
- **Skin:** Jaundice, needle tracks, sclerotic veins from intravenous injections, urticaria, spider angiomas, bronze skin discoloration (hemochromatosis).
- **HEENT:** Scleral icterus, sublingual jaundice, lymphadenopathy, Kayser-Fleischer rings (bronze corneal pigmentation, Wilson's disease).
- **Chest:** Gynecomastia, Murphy's sign (inspiratory arrest with palpation of the right upper quadrant).
- Abdomen: Scars, bowel sounds, right upper quadrant tenderness; liver span, hepatomegaly; liver margin texture (blunt, irregular, firm), splenomegaly (hepatitis) or hepatic atrophy (cirrhosis), ascites. Umbilical venous collaterals (Caput medusae). Courvoisier's sign (palpable nontender gallbladder with jaundice; pancreatic or biliary malignancy).
- Genitourinary: Testicular atrophy.
- Extremities: Joint tenderness, palmar erythema, Dupuytren's contracture (fibrotic palmar ridge).
- **Neuro:** Disorientation, confusion, asterixis (flapping tremor when wrists are hyperextended, encephalopathy).
- Rectal: Occult blood, hemorrhoids.
- Labs: CBC with differential, LFTs, amylase, lipase, hepatitis serologies (hepatitis B surface antibody, hepatitis B surface antigen, hepatitis A IgM, hepatitis C antibody), antimitochondrial antibody (primary biliary cirrhosis), ANA, ceruloplasmin, urine copper (Wilson's disease), alpha-1-antitrypsin deficiency, drug screen, serum iron, TIBC, ferritin (hemochromatosis), liver biopsy.

## Differential Diagnosis of Jaundice Extrahepatic Causes of Jaundice: Biliary tract disease

(gallstone, stricture, cancer), infections (parasites, HIV, CMV, microsporidia); pancreatitis, pancreatic cancer. Intrahepatic Causes of Jaundice: Viral hepatitis,

medication-related hepatitis, acute fatty liver of pregnancy, alcoholic hepatitis, cirrhosis, primary biliary cirrhosis, autoimmune hepatitis, Wilson's disease, right heart failure, total parenteral nutrition; Dubin Johnson syndrome, Rotor's syndrome (direct hyperbilirubinemia); Gilbert's syndrome, Crigler-Niger syndrome (indirect); sclerosing cholangitis, sarcoidosis, amyloidosis, tumor.

#### Cirrhosis

- Chief Compliant: The patient is a 50 year old white male with alcoholism who complains of jaundice for one
- History of the Present Illness: Jaundice, anorexia, nausea; abdominal distension, abdominal pain, increased abdominal girth (ascites); vomiting, diarrhea, fatigue. Somnolence, confusion (encephalopathy).
- Precipitating Factors of Encephalopathy: Gastrointestinal bleeding, high protein intake, constipation,

Alcohol use, viral hepatitis, blood transfusion, IV drug

azotemia, CNS depressants. Medications Associated with Hepatotoxicity: Acetaminophen, isoniazid, nitrofurantoin, methotrexate,

sulfonamides, NSAIDS, phenytoin.

## **Physical Examination**

- General Appearance: Muscle wasting, fetor hepaticas (malodorous breath). Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Pulse, BP, temperature (fever), respiratory rate.
- Skin: Jaundice, spider angiomas (stellate, erythematous arterioles), palmar erythema; bronze skin discoloration (hemochromatosis), purpura, loss of body hair.
- HEENT: Kayser-Fleischer rings (bronze corneal pigmentation, Wilson's disease), jugulovenous distention (fluid overload). Parotid enlargement, scleral icterus, gingival hemorrhage (thrombocytopenia).
- Chest: Bibasilar crackles, gynecomastia.
- Abdomen: Bulging flanks, tenderness, rebound (peritonitis); fluid wave, shifting dullness, "puddle sign" (flick over lower abdomen while auscultating for dullness). Courvoisier's sign (palpable nontender gallbladder with jaundice; pancreatic malignancy); atrophic liver; liver texture (blunt, irregular, firm), splenomegaly. Umbilical
- or groin hernias (ascites). Genitourinary: Scrotal edema, testicular atrophy.
- Extremities: Lower extremity edema.
- Neuro: Confusion, asterixis (jerking movement of hand
- with wrist hyperextension; hepatic encephalopathy). Rectal: Occult blood, hemorrhoids. Stigmata of Liver Disease: Spider angiomas (stellate,
- red arterioles), jaundice, bronze discoloration (hemochromatosis), dilated periumbilical collateral veins (Caput medusae), ecchymoses, umbilical eversion, venous hum and thrill at umbilicus (Cruveilhier-Baumgarten syndrome); palmar erythema, Dupuytren's

contracture (fibrotic palmar ridge to ring finger). Lacrimal and parotid gland enlargement, testicular atrophy,

- gynecomastia, ascites, encephalopathy, edema. Labs: CBC, electrolytes, LFTs, albumin, INR/PTT, liver function tests, bilirubin, UA. Hepatitis serologies, antimitochondrial, antibody (primary biliary cirrhosis), ANA, anti-Smith antibody, ceruloplasmin, urine copper (Wilson's disease), alpha-1-antitrypsin, serum iron,
- TIBC, ferritin (hemochromatosis). Abdominal X-ray: Hepatic angle sign (loss of lower margin of right lateral liver angle), separation or central-
- ization of bowel loops, generalized abdominal haziness (ascites). Ultrasound, paracentesis. Differential Diagnosis of Cirrhosis: Alcoholic liver
  - disease, viral hepatitis (B, C, D), hemochromatosis, primary biliary cirrhosis, autoimmune hepatitis, inborn error of metabolism (Crigler Najjar syndrome; Wilson's disease, alpha-1-antitrypsin deficiency), heart failure, venous outflow obstruction (Budd-Chiari, portal vein thrombus).

Etiol- ogy	Appe aranc e	Pro- tein	Se- rum/flui d albu- men ratio	RBC	WBC	Other
Cirrho- sis	Straw	<3 g/dL	>1.1	low	<250 cells/ mm³	
Sponta neous Bacter- ial Perito- nitis	Cloud y	<3	>1.1	low	>250 polys	Bacteria on gram stain and culture
Sec- ondary Bacte- rial Perito- nitis	Puru- lent	>3	<1.1	low	>1000 0	Bacteria on gram stain and culture
Neo- plasm	Straw /bloo dy	>3	varies	high	>1000 lymph s	Malig- nant cells on cytol- ogy; tri- glycer- ides
Tuber- culosis	Clear	>3	<1.1	low- high	>1000 lymph s	Acid fast bacilli
Heart Failure	Straw	>3	>1.1	low	<1000	
Pan- creatiti s	Tur- bid	>3	<1.1	varies	varies	Elevated amylase, lipase

**Evaluation of Ascites Fluid** 

### **Pancreatitis**

- Chief Compliant: The patient is a 50 year old white male with alcoholism who complains of abdominal pain for 4 hours.
- History of the Present Illness: Constant, dull, boring, mid-epigastric or left upper quadrant pain; radiation to the mid-back; exacerbated by supine position, relieved by sitting with knees drawn up; nausea, vomiting, low-grade fever, rigors, jaundice, anorexia, dyspnea; elevated amylase.
- Precipitating Factors: Alcohol, gallstones, trauma, postoperative pancreatitis, retrograde cholangiopancreatography, hypertriglyceridemia, hypercalcemia, renal failure, Coxsackie virus or mumps infection, mycoplasma infection. Lupus, vasculitis,
- Medications Associated with Pancreatitis: Sulfonamides, thiazides, dideoxyinosine (DDI), furosemide, tetracycline, estrogen, azathioprine, valproate, pentami-

penetration of peptic ulcer, scorpion stings, tumor.

#### **Physical Examination**

- **General Appearance:** Signs of volume depletion, tachypnea. Septic appearance. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: Temperature (low-grade fever), pulse (tachycardia), BP (hypotension), respirations (tachypnea).

  Chest: Crackles, left lower lobe dullness (pleural effu-
- sion). **HEENT:** Scleral icterus, Chvostek's sign (taping cheek
- results in facial spasm, hypocalcemia). **Skin:** Jaundice, subcutaneous fat necrosis (erythematous skin nodules on legs and ankles); palpable purpura
- (polyarteritis nodosum). **Abdomen:** Epigastric tenderness, distension; rigidity, rebound, guarding, hypoactive bowel sounds; upper abdominal mass; Cullen's sign (periumbilical bluish
- discoloration from hemoperitoneum), Grey-Turner's sign (bluish flank discoloration from retroperitoneal hemorrhage).

  Extremities: Peripheral edema, anasarca.
- Labs: Amylase, lipase, calcium, WBC, triglycerides,
- glucose, AST, LDL, UA.

  Abdomen X-Rays: Ileus, pancreatic calcifications, obscure psoas margins, displaced or atonic stomach. Colon cutoff sign (spasm of splenic flexure with no distal colonic gas), diffuse ground-glass appearance (ascites).
- Chest X-ray: Left plural effusion.

  Ultrasound: Gallstones, pancreatic edema or enlarge-
- Ultrasound: Gallstones, pancreatic edema or enlargement.
- CT Scan with Oral Contrast: Pancreatic phlegmon, pseudocyst, abscess.
- Ranson's Criteria of Pancreatitis Severity:
  - Early criteria: Age >55; WBC >16,000; glucose >200; LDH >350 IU/L; AST >250. During initial 48 hours: Hematocrit decrease >10%;
- BUN increase >5; arterial pO<sub>2</sub> <60 mmHg; base deficit >4 mEq/L; calcium <8; estimated fluid sequestration >6 L.

  Differential Diagnosis of Midepigastric Pain: Pancreati-
- tis, peptic ulcer, cholecystitis, hepatitis, bowel obstruction, mesenteric ischemia, renal colic, aortic dissection, pneumonia, myocardial ischemia.

  Disorders Associated with Pancreatitis: Alcoholic
- pancreatitis, gallstone pancreatitis, penetrating peptic ulcer, trauma, medications, hyperlipidemia, hypercalcemia, viral infections, pancreatic divisum, familial pancreatitis, pancreatic malignancy, methyl alcohol, scorpion stings, endoscopic retrograde cholangiopancreatography, vasculitis.

### **Gastritis and Peptic Ulcer Disease**

- Chief Compliant: The patient is a 50 year old white male with arthritis who complains of abdominal pain for two days
- History of the Present Illness: Recurrent, dull, burning, epigastric pain; 1-3 hours after meals; relieved by or worsen by food; worse when supine or reclining; relieved by antacids; awakens patient at night or in early morning. Pain may radiate to back; nausea, vomiting, weight loss, coffee ground hematemesis; melena. Alcohol, salicylates, nonsteroidal anti-inflammatory drugs.
- Past Medical History: Endoscopy, upper GI series; history of previous ulcer disease and Helicobacter pylori (HP) therapy, surgery.

### **Physical Examination**

**General Appearance:** Mild distress. Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.

Vital Signs: Pulse (tachycardia), BP (orthostatic hypotension), respiratory rate, temperature.

Skin: Pallor, delayed capillary refill.

Abdomen: Scars, mild to moderate epigastric tenderness; rebound, rigidity, guarding (perforated ulcer), bowel

Rectal: Occult blood.

sounds.

**Labs:** CBC, electrolytes, BUN, amylase, lipase. Abdominal X-ray series, endoscopy.

Differential Diagnosis: Pancreatitis, gastritis, gastroenteritis, perforating ulcer, intestinal obstruction, mesenteric thrombosis, aortic aneurysm, gastroesophageal reflux disease, non-ulcer dyspepsia, hepatitis, cholecystitis.

### **Mesenteric Ischemia and Infarction**

- Chief Compliant: The patient is a 50 year old white male with coronary heart disease who complains of abdominal pain for 6 hours.
- History of the Present Illness: Sudden onset of severe, poorly localized, periumbilical pain; pain is postprandial and may be relieved by nitroglycerine; episodes of bloody diarrhea, nausea, vomiting, food aversion, weight loss.
- Pain out of proportion to the physical findings may be the only presenting symptom.
- Past Medical History: Peripheral arterial occlusive disease, claudication, chest pain, angina, myocardial infarction, atrial fibrillation, hypertension, hypercholesterolemia, diabetes, heart failure.

Medications: Nitroglycerine, beta-blockers, aspirin.

### Physical Examination

- **General Appearance:** Lethargy, mild to moderate distress. Signs of dehydration, septic appearance. Note whether the patient appears "cachectic," ill, well, or malnourished.
- **Vitals:** Pulse, BP (orthostatic hypotension), pulse (tachycardia), respiratory rate, temperature.
- **HEENT:** Atherosclerotic retinopathy, "silver wire" arteries; carotid bruits (mesenteric ischemia).
- Skin: Cold, clammy skin, pallor, delayed capillary refill.
- Abdomen: Initially hyperactive bowel sounds, then absent bowel sounds; rebound tenderness, distention, guarding, rigidity (peritoneal signs), pulsatile masses (aortic aneurysm), abdominal bruit.
- **Extremities:** Weak peripheral pulses, femoral bruits; asymmetric pulses (atherosclerotic disease).

Rectal: Occult or gross blood.

Labs: CBC, electrolytes, leukocytosis, hyperamylasemia. Hemoconcentration, prerenal azotemia, metabolic acidosis.

Chest X-ray: Free air under diaphragm (perforated viscus). Abdominal X-ray: "thumb-printing" (edema of

intestinal wall), portal vein gas. Bowel wall gas (colonic ischemia, nonocclusive); angiogram. Differential Diagnosis: Mesenteric ischemia, mesenteric infarction, appendicitis, peritonitis,, acute cholecystitis,

perforated viscus, peptic ulcer, gastroenteritis, pancreatitis, bowel obstruction, carcinoma, ruptured aortic

## Intestinal Obstruction

Chief Compliant: The patient is a 50 year old white male

with colon cancer who complains of abdominal pain for 6 hours.

aneurvsm.

History of the Present Illness: Vomiting (bilious, feculent, bloody), nausea, obstipation, distention,

crampy abdominal pain. Initially crampy or colicky pain

with exacerbations every 5-10 minutes. Pain becomes diffuse with fever. Hernias, previous abdominal surgery,

use of opiates, anticholinergics, antipsychotics, gallstones; colon cancer; history of constipation, recent weight loss. Pain localizes to periumbilical region in small bowel

obstruction and localizes to lower abdomen in large bowel obstruction. **Physical Examination** 

General Appearance: Severe distress, signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.

Vital Signs: BP (hypotension), pulse (tachycardia), respiratory rate, temperature (fever). Skin: Cold, clammy skin, pallor.

Abdomen: Hernias (incisional, inguinal, femoral, umbilical), scars (intraabdominal adhesions). Tenderness, rebound, rigidity, tender mass, distention, bruits.

Bowel Sounds: High pitch rushes and tinkles coinciding with cramping (early) or absent bowel sounds (late). Rectal: Gross blood, masses.

Labs: Leucocytosis, elevated BUN and creatinine, electrolytes; hypokalemic metabolic alkalosis due to vomit-

ing, hyperamylasemia. Abdominal X-rays: Dilated loops of small or large bowel, air-fluid levels, ladder pattern of dilated loops of bowel

in the mid-abdomen. Colonic distention with haustral markings. Causes of Small Bowel Obstruction: Adhesions (previous surgery), hernias, strictures from inflammatory processes; superior mesenteric artery syndrome,

gallstone ileus. Ischemia, small bowel tumors, metastatic cancer. Causes of Large Bowel Obstruction: Colon cancer,

volvulus, diverticulitis, adynamic ileus, mesenteric ischemia, Ogilvie's syndrome (chronic pseudo-obstruction); narcotic ileus.

Differential Diagnosis: Cholecystitis, peptic ulcer, gastritis, gastroenteritis, peritonitis, sickle crisis, cancer, pancreatitis, renal colic, myocardial infarction.

## **Gynecologic Disorders**

### Amenorrhea

- Chief Compliant: The patient is a 24 year old female with anorexia nervosa who complains of amenorrhea for 3 months.
- History of the Present Illness: Primary amenorrhea (absence of menses by age 16) or secondary amenorrhea (cessation of menses after previously normal menstruation). Age of menarche, last menstrual period. Menstrual pattern, timing of breast and pubic hair development, sexual activity, possibility of pregnancy, pregnancy testing.
- Life style changes, dieting and excessive exercise, medications (contraceptives) or drugs (marijuana), psychologic stress.
- Hot flushes and night sweats (hypoestrogenism), galactorrhea (prolactinoma).
- History of dilation and curettage, postpartum infection (Asherman's syndrome), history of severe hemorrhage (Sheehan's syndrome), obesity, weight gain or loss, headaches, visual disturbances, thyroid symptoms; symptoms of pregnancy (nausea, breast tenderness).
- **Past Medical History:** Pregnancy complications, radiation therapy, chemotherapy.
- Medications: phenothiazines, antidepressants.

#### **Physical Examination**

tumors.

- General Appearance: Secondary sexual characteristics, body habitus, obesity, signs of hyperthyroidism (tremor) or hypothyroidism (bradycardia, cool dry skin, hypothermia, brittle hair). Note whether the patient appears ill, well, or malnourished.
- **HEENT:** Acne, hirsutism, temporal balding, deepening of the voice (hyperandrogenism), thyroid enlargement or nodules.
- Chest: Galactorrhea, Tanner stage of breast development, breast atrophy.
- Abdomen: Abdominal striae (Cushing's syndrome).
  Gyn: Pubic hair distribution; inguinal or labial masses, clitoromegaly, imperforate hymen, vaginal septum, vaginal atrophy, uterine enlargement, ovarian cysts or
- Neuro: Visual field defects, cranial nerve palsies, focal motor deficits, .
- **Labs:** Pregnancy test, prolactin, TSH, FSH, LH. Progesterone-estrogen challenge test.

#### **Differential Diagnosis of Amenorrhea**

#### Pregnancy

### Hormonal contraception

Hypothalamic-related Chronic or systemic ill-

Stress

Athletics

Eating disorder

Obesity

Drugs Tumor

### Pituitary-related

Hypopituitarism

Tumor Infiltration

Infarction Ovarian-related

Dysgenesis

Agenesis

Ovarian failure

Outflow tract-related Imperforate hymen

Transverse vaginal sep-

Agenesis of the vagina, cervix, uterus Uterine synechiae

Androgen excess

Polycystic ovarian syndrome

Adrenal tumor

Adrenal hyperplasia (classic and

nonclassic) Ovarian tumor

Other endocrine causes

Thyroid disease Cushing syndrome

### Abnormal Uterine Bleeding

Chief Compliant: The patient is a 24 year old female who complains of abnormal vaginal bleeding for two weeks.

History of the Present Illness: Last menstrual period, age of menarche; regularity, duration and frequency of menses; amount of bleeding, number of pads per day; passage of clots; postcoital bleeding, intermenstrual bleeding; abdominal pain, fever, lightheadedness, sexually active, possibility of pregnancy, birth control method, hormonal contraception.

Psychologic stress, weight changes, exercise. Changes in hair or skin texture or distribution

Molimina symptoms of pregnancy (premenstrual breast tenderness, bloating, dysmenorrhea). Past Medical History: Obstetrical history. Thyroid, renal,

or hepatic diseases, coagulopathies. Adenomyosis, endometriosis, fibroids. Dental bleeding, endometrial biopsies.

Family History: Coagulopathies, endocrine disorders.

#### **Physical Examination** General Appearance: Assess rate of bleeding. Note

whether the patient appears ill or well; obesity.

Vital Signs: Assess hemodynamic stability, tachycardia, hypotension, orthostatic vitals; signs of shock.

Skin: Pallor, hirsutism, petechiae, skin and hair changes; fine thinning hair (hypothyroidism),

**HEENT:** Thyroid enlargement

Chest: Breast development by Tanner staging, galactorrhea.

Gyn: Pubic hair distribution. Cervical motion tenderness, adnexal tenderness, uterine size, cervical lesions. Cervical lesions should be biopsied.

Labs: CBC, platelets; serum pregnancy test; gonococcal Chlamydia test, endometrial sampling. INR/PTT, bleeding time, type and screen.

#### **Differential Diagnosis**

Pregnancy-related. Ectopic pregnancy, abortion

Hormonal contraception. Oral contraceptive pills Hypothalamic-related. Dieting, chronic illness, stress,

excessive exercise, eating disorders, obesity, drugs

Pituitary-related. Prolactinoma

Outflow tract-related. Trauma, foreign body, vaginal tumor, cervical carcinoma, endometrial polyp, uterine myoma, uterine carcinoma, intrauterine

Androgen excess. Polycystic ovarian syndrome, adrenal tumor, ovarian tumor, adrenal hyperplasia Other endocrine causes. Thyroid disease, adrenal

disease

Hematologic-related. Thrombocytopenia, clotting

lant medications

factor deficiencies, thrombocytopenia, anticoagu-

Infectious causes. Pelvic inflammatory disease, cervicitis

### **Pelvic Pain and Ectopic Pregnancy**

Chief Compliant: The patient is a 50 year old female with

hypertension who complains of chest pain for 4 hours. History of the Present Illness: Positive pregnancy test,

missed menstrual period, pelvic or abdominal pain (bilateral or unilateral), symptoms of pregnancy (nausea, breast tenderness); abnormal vaginal bleeding

(quantify). Last menstrual period, menstrual interval, duration, age of menarche, obstetrical history.

Characteristics of pelvic pain; onset, duration; shoulder pain. Rupture of ectopic pregnancy usually occurs 6-12

weeks after last menstrual period. Current sexual activity and practices.

Associated Symptoms: Fever, vaginal discharge, dysuria, gastrointestinal symptoms, fever.

Risk Factors for Ectopic Pregnancy: Multiparity, pelvic

inflammatory disease, tubal surgery, previous pelvic surgery, previous ectopic, and intrauterine device (IUD)

history, sexually transmitted diseases, Chlamydia, gonorrhea, infertility. Medications: Method of Contraception: Oral contracep-

Past Medical History: Surgical history, gynecologic

tives or barrier method, intrauterine device (IUD).

## **Physical Examination**

General Appearance: Moderate to severe distress. Septic appearance. Note whether the patient appears ill, well, or distressed. Vital Signs: BP (hypotension), pulse (tachycardia),

respiratory rate, temperature (low fever). Skin: Cold clammy skin, pallor, delayed capillary refill. Abdomen: Cullen's sign (periumbilical darkening, intraabdominal bleeding), local then generalized

tenderness, rebound (peritoneal signs). Pelvic: Cervical discharge, cervical motion tenderness; Chadwick's sign (cervical cyanosis; pregnancy); Hegar's sign (softening of uterine isthmus; pregnancy); enlarged

uterus; tender adnexal mass or cul-de-sac fullness. Labs: Quantitative beta-HCG, transvaginal ultrasound. Type and hold, Rh, CBC, UA with micro; GC, chlamydia culture.

Differential Diagnosis of Pelvic Pain

### Pregnancy-Related Causes. Ectopic pregnancy,

abortion (spontaneous, threatened, or incomplete), intrauterine pregnancy with corpus luteum bleeding. Gynecologic Disorders. Pelvic inflammatory disease, endometriosis, ovarian cyst hemorrhage or rupture, adnexal torsion, Mittelschmerz, uterine leiomyoma torsion, primary dysmenorrhea, tumor.

Non-reproductive Tract Causes

Gastrointestinal. Appendicitis, inflammatory bowel disease, mesenteric adenitis, irritable bowel syndrome, diverticulitis. Urinary Tract. Urinary tract infection, renal calculus.

### Neurologic Disorders

#### Headache

- **Chief Compliant:** The patient is a 50 year old female with hypertension who complains of chest pain for 4 hours.
- History of the Present Illness: Quality of pain (dull, band-like, sharp, throbbing), location (retro-orbital, temporal, suboccipital, bilateral or unilateral), time course of typical headache episode; onset (gradual or sudden); exacerbating or relieving factors; time of day, effect of supine position.
- Age at onset of headaches; change in severity, frequency; awakening from sleep; analgesic or codeine use; family history of migraine. "The worst headache ever" (subarachnoid hemorrhage).
- **Aura or Prodrome:** Visual scotomata, blurred vision; nausea, vomiting, sensory disturbances.
- Associated Symptoms: Weakness, diplopia, photophobia, fever, nasal discharge (sinusitis); neck stiffness (meningitis); eye pain or redness (glaucoma); ataxia, dysarthria, transient blindness. Lacrimation, flushing, intermittent headaches (cluster headaches), depression.
- Aggravating or Relieving Factors: Relief by analgesics or sleep. Exacerbation by foods (chocolate, alcohol, wine, cheese, monosodium glutamate), emotional upset, menses; hypertension, trauma; lack of sleep; exacerbation by fatigue, exertion.
- Drugs: ACE inhibitors and antagonists, alpha-adrenergic blockers, metronidazole (Flagyl), calcium channel blockers, e.g., nifedipine (Adalat), H2 blockers, oral contraceptives, nitrates, NSAIDs, selective-serotonin reuptake inhibitors.

### Physical Examination

- **General Appearance:** Note whether the patient appears ill or well.
- Vital Signs: BP (hypertension), pulse, temperature (fever), respiratory rate.
- **HEENT:** Cranial or temporal tenderness (temporal arteritis), asymmetric pupil reactivity; papilledema, extraocular movements, visual field deficits. Conjunctival injection, lacrimation, rhinorrhea (cluster headache).
- Temporomandibular joint tenderness (TMJ syndrome); temporal or ocular bruits (arteriovenous malformation); sinus tenderness (sinusitis).
- sinus tenderness (sinusitis).

  Dental infection, tooth tenderness to percussion (abscess).
- Neck: Neck rigidity; paraspinal muscle tenderness.
- **Skin:** Café au lait spots (neurofibromatosis), facial angiofibromas (adenoma sebaceum).
- **Neuro:** Cranial nerve palsies (intracranial tumor); auditory acuity, focal weakness (intracranial tumor), sensory deficits, deep tendon reflexes, ataxia.
- **Labs:** Electrolytes, ESR, MRI scan, lumbar puncture. CBC with differential.
- Indications for MRI scan: Focal neurologic signs, papilledema, decreased visual acuity, increased frequency or severity of headache, excruciating or paroxysmal headache, awakening from sleep, persistent vomiting, head trauma with focal neurologic signs or lethargy.
- Differential Diagnosis: Migraine, tension headache; systemic infection, subarachnoid hemorrhage, sinusitis, arteriovenous malformation, hypertensive encephalopathy, temporal arteritis, meningitis, encephalitis, post concussion syndrome, intracranial tumor, venous sinus thrombosis, benign intracranial hypertension (pseudotumor cerebri), subdural hematoma, trigeminal neuralgia, glaucoma, analgesic overuse.
- Characteristics of Migraine: Childhood to early adult onset; family history of headache; aura of scotomas or

scintillations, unilateral pulsating or throbbing pain; nausea, vomiting. Lasts 2-6 hours; relief with sleep.

Characteristics of Tension Headache: Bilateral, generalized, bitemporal or suboccipital. Band-like pressure; throbbing pain, occurs late in day; related to stress. Onset in adolescence or young adult. Lasts hours and is usually relieved by simple analgesics.

Characteristics of Cluster Headache: Unilateral, retroorbital searing pain, lacrimation, nasal and conjunctival congestion. Young males; lasts 20-60 min. Occurs several times each day over several weeks, followed by pain-free periods.

### Dizziness and Vertigo

**Chief Compliant:** The patient is a 50 year old female with hypertension who complains of chest pain for 4 hours.

History of the Present Illness: Sensation of spinning or movement of surroundings, light headedness, nausea, vomiting, tinnitus. Rate of onset of vertigo. Aggravation by change in position, turning head, changing from supine to standing, coughing.

Hyperventilation, recent change in eyeglasses. Headache, hearing loss, head trauma, diplopia.

Past Medical History: Recent upper respiratory infection, paresthesias, syncope; hypertension, diabetes, history of stroke, transient ischemic attack, anemia, cardiovascular disease.

Medications Associated with Vertigo: Antihypertensives, aspirin, alcohol, sedatives, diuretics, phenytoin, gentamicin, furosemide.

#### **Physical Examination**

**General Appearance:** Effect of hyperventilation on symptoms. Effect of Valsalva maneuver on symptoms. Note whether the patient appears ill or well.

**Vital Signs:** Pulse, BP (supine and upright, postural hypotension), respiratory rate, temperature.

**HEENT:** Nystagmus, visual acuity, visual field deficits, papilledema; facial weakness. Tympanic membrane inflammation (otitis media), cerumen. Effect of head turning or of placing the patient recumbent with head extended over edge of bed; Rinne's test (air/bone conduction); Weber test (lateralization of sound).

Heart: Rhythm, murmurs.

**Neuro:** Cranial nerves 2-12, sensory deficits, ataxia, weakness. Romberg test, finger to nose test (coordination), tandem gait.

Rectal: Occult blood.

Labs: CBC, electrolytes, MRI scan.

### Differential Diagnosis

hypotension.

Drugs Associated with Vertigo: Aminoglycosides, loop diuretics, aspirin, caffeine, alcohol, phenytoin, psychotropics (lithium, haloperidol), benzodiazepines.

Peripheral Causes of Vertigo: Acute labyrinthitis/neuronitis, benign positional vertigo, Meniere's disease (vertigo, tinnitus, deafness), otitis media, acoustic neuroma, cerebellopontine angle tumor, cholesteatoma (chronic middle ear effusion), impacted cerumen.

Central Causes of Vertigo: Vertebrobasilar insufficiency, brain stem or cerebellar infarctions, tumors, encephalitis, meningitis, brain stem or cerebellar contusion, Parkinson's disease, multiple sclerosis.

Other Disorders Associated with Vertigo: Motion sickness, presyncope, syndrome of multiple sensory deficits (peripheral neuropathies, visual impairment, orthopedic problems), new eyeglasses, orthostatic

**Delirium, Coma and Confusion** 

Chief Compliant: The patient is a 50 year old male with coronary heart disease who presents with confusion for

6 hours. History of the Present Illness: Level of consciousness,

obtundation (awake but not alert), stupor (unconscious but awakable with vigorous stimulation), coma (cannot be awakened). Confusion, hallucination, formification (sensation that insects are crawling under skin); poor concentration, agitation.

Activity and symptoms prior to onset. Fever, headache, epilepsy (post-ictal state).

Past Medical History: Trauma, suicide attempts or depression, dementia, stroke, transient ischemic attacks, hypertension; renal, liver or cardiac disease. Medications: Insulin, oral hypoglycemics, narcotics, alcohol, drugs, antipsychotics, anticholinergics, antico-

### **Physical Examination**

agulants.

General Appearance: Signs of dehydration, septic appearance. Note whether the patient appears ill, well, or malnourished.

Vital Signs: BP (hypertensive encephalopathy), pulse, temperature (fever), respiratory rate.

**HEENT:** Skull palpation for tenderness, lacerations. Pupil size and reactivity; extraocular movements. Papilledema, hemorrhages, flame lesions; facial asymmetry, ptosis, weakness. Battle's sign (ecchymosis over

skull fracture), hemotympanum (basal skull fracture). Tongue or cheek lacerations (post-ictal state). Atrophic tongue (B12 deficiency).

mastoid process), raccoon sign (periorbital ecchymosis,

Neck: Neck rigidity, carotid bruits. Chest: Breathing pattern (Cheyne-Stokes hyperventila-

tion); crackles, wheezes. Heart: Rhythm, murmurs.

Abdomen: Hepatomegaly, splenomegaly, masses, ascites, tenderness, distention, dilated superficial veins (liver failure).

Extremities: Needle track marks (drug overdose), tattoos. Skin: Cyanosis, jaundice, spider angiomata, palmar erythema (hepatic encephalopathy); capillary refill, petechia, splinter hemorrhages. Injection site fat atro-

phy (diabetes). Neuro: Concentration (subtraction of serial 7s, delirium), strength, cranial nerves 2-12, mini-mental status exam; orientation to person, place, time, recent events; Babinski's sign, primitive reflexes (snout, suck, glabella, palmomental grasp). Tremor (Parkinson's disease, delirium tremens), incoherent speech, lethargy, somno-

### **Glasgow Coma Scale**

lence.

Best Verbal Response: None - 1; incomprehensible sounds or cries - 2; appropriate words or vocal sounds - 3; confused speech or words - 4; oriented speech - 5. Best Eye Opening Response: No eye opening - 1; eyes open to pain - 2; eyes open to speech - 3; eyes

open spontaneously - 4. Best Motor Response: None - 1; abnormal extension

to pain - 2; abnormal flexion to pain - 3; withdraws to pain - 4; localizes to pain - 5; obeys commands - 6. Total Score: 3-15

Special Neurologic Signs

Decortication: Painful stimuli causes flexion of arms, wrist and fingers with leg extension; indicates damage to contralateral hemisphere above midbrain. Decerebration: Painful stimuli causes extension of legs

and arms; wrists and fingers flex; indicates midbrain and pons functioning. Oculocephalic Reflex (Doll's eyes maneuver): Eye

movements in response to lateral rotation of head; no eye movements or loose movements occur with bihemispheric lesions.

Oculovestibular Reflex (Cold caloric maneuver): Irrigation of ear with cold water causes tonic deviation of eyes to irrigated ear if intact brain stem; if the patient is conscious, nystagmus and vertigo will occur.

is conscious, nystagmus and vertigo will occur. **Labs:** Glucose, electrolytes, calcium, BUN, creatinine, ABG. CT/MRI, ammonia, alcohol, liver function tests, urine toxicology screen, B-12, folate levels. LP if no signs of elevated intracranial pressure and suspicion of meningitis.

Differential Diagnosis of Delirium: Electrolyte imbalance, hyperglycemia, hypoglycemia (insulin overdose), alcohol or drug withdraw or intoxication, hypoxia, meningitis, encephalitis, systemic infection, stroke, intracranial hemorrhage, postictal state, exacerbation of dementia; narcotic or anticholinergic overdose; steroid withdrawal, hepatic encephalopathy; psychotic states, dehydration, hypertensive encephalopathy, head trauma, subdural hematoma, uremia, vitamin B12 or folate deficiency, hypothyroidism, ketoacidosis, factitious coma.

### Weakness and Ischemic Stroke

**Chief Compliant:** The patient is a 50 year old white male with claudication who presents with right arm weakness for 3 hours.

History of the Present Illness: Rate and pattern of onset of weakness (gradual, sudden); time of onset and time course to maximum deficit; anatomic location of deficit; activity prior to onset (Valsalva, exertion, neck movement, sleeping); improvement or progression of weakness; headache prior to event, nausea, vomiting, loss of consciousness; visual aura, vertigo, seizure.

dysphagia, palpitations; prior transient ischemic attacks (neurologic deficit lasting less than 24 hours), prior strokes; past transient monocular blindness (Amaurosis fugax), tongue biting, tonic-clonic movements, head trauma, claudication. Past Medical History: Hypertension, diabetes, coronary

Confusion, dysarthria, incontinence of stool or urine,

disease, endocarditis, hyperligidemia, IV drug abuse, cocaine use, heart failure, valvular disease, arrhythmias (atrial fibrillation). **Past testing:** CT scans, carotid Doppler studies, echocardiograms.

**Medications:** Anticoagulants, alcohol, antihypertensives, cigarette smoking.

Family history: Stroke, hyperlipidemia, cardiac disease.

### Physical Examination

**General Appearance:** Level of consciousness, lethargy. Note whether the patient appears ill or well.

Vital Signs: BP, pulse (bradycardia), temperature, respiratory rate. Cushing's response (bradycardia, hypertension, abnormal respirations).

HEENT: Signs of head trauma, pupil size and reactivity, extraocular movements. Fundi: hypertensive retinopathy, Roth spots (flame-shaped lesions, endocarditis), retinal hemorrhages (subarachnoid

hemorrhage), papilledema; facial asymmetry or weak-

ness. Tongue or buccal lacerations. **Neck:** Neck rigidity, carotid bruits.

Chest: Breathing pattern, Cheyne Stokes respiration (periodic breathing with periods of apnea, elevated intracranial pressure).

Heart: Irregular rhythm (atrial fibrillation), S3 (heart failure), murmurs (mitral stenosis, cardiogenic emboli).

Abdomen: Aortic pulsations, renal bruits (atherosclerotic disease).

 Extremities: Unequal peripheral pulses, ecchymoses,

trauma.

Skin: Petechia, splinter hemorrhages.

Neuro: Focal motor deficits, cranial nerves 2-12, gaze, ptosis, Babinski's sign (stroke sole of foot, and toes dorsiflex if pyramidal tract lesion). Clonus, primitive

- reflexes (snout, glabella, palmomental, grasp). Minimental status exam, memory, concentration.

  Signs of Increased Intracranial Pressure: Lethardy.
- Signs of Increased Intracranial Pressure: Lethargy, headache, vomiting, meningismus, papilledema, focal neurologic deficits.
- Signs of Cerebral Herniation: Obtundation, dilation of ipsilateral pupil, decerebrate posturing (extension of arms and legs in response to painful stimuli), ascending weakness. Cushing's response bradycardia, hypertension, abnormal respirations.
- Labs: CT scan: Bleeding, infarction, mass effect, midline shift. ECG, CBC.
- Differential Diagnosis of Stroke: Abscess, meningitis, encephalitis, subdural hematoma, brain tumor, hypoglycemia, hypocalcemia, postictal paralysis (Todd's paralysis), delirium, conversion reaction; atypical migraine, basilar artery stenosis, transient ischemic attack

### Seizure

Chief Compliant: The patient is a 50 year old white male with epilepsy who presents with a seizure 4 hours prior to admission.

History of the Present Illness: Time of onset of seizure, duration of seizure, tonic-clonic movements, description of seizure. Past seizures, noncompliance with anticonvulsant medication (recent blood level). Aura (irritability, behavioral change, lethargy), pallor, incontinence of urine or feces, vomiting, post-ictal weakness or paralysis. Biting of tongue, past episodes of incontinence of urine during sleep.

Prodrome (visual changes, paresthesias), stroke, migraine headaches, fever, chills. Diabetes (hypoglycemia), family history of epilepsy.

Factors that May Precipitate Seizures: Fatigue, sleep deprivation, infection, hyperventilation, head trauma, alcohol or drug withdrawal, cocaine; meningitis, high fever, uremia, hypoglycemia, theophylline toxicity, stroke.

Past testing: EEG's, MRI scans.

### **Physical Examination**

**General Appearance:** Post-ictal lethargy. Note whether the patient appears ill or well.

Vital Signs: BP (hypertension), pulse, respiratory rate, temperature (hyperpyrexia).

**HEENT:** Head trauma; pupil reactivity and equality, extraocular movements; papilledema, gum hyperplasia (phenytoin); tongue or buccal lacerations; carotid bruits, neck rigidity.

Chest: Rhonchi, wheeze (aspiration).

Heart: Rhythm, murmurs.

Extremities: Cyanosis, fractures, trauma.

Genitourinary/Rectal: Incontinence of urine or feces.

Skin: Café-au-lait spots, neurofibromas (Von Recklinghausen's disease), splinter hemorrhages (endocarditis). Unilateral port-wine facial nevus (Sturge-Weber syndrome); facial angiofibromas (adenoma sebaceum), hypopigmented ash leaf spots (tuberous sclerosis). Spider angiomas (hepatic encephalopathy), hirsutism (phenytoin).

**Neuro:** Dysarthria, sensory deficits, visual field deficits, focal weakness (Todd's paralysis), cranial nerves, Babinski's sign.

Labs: Glucose, electrolytes, calcium, liver function tests, CBC, urine toxicology, anticonvulsant levels, RPR/VDRL. EEG, MRI, lumbar puncture.

Differential Diagnosis: Epilepsy (complex partial seizure, generalized seizure), noncompliance with anticonvulsant medications, hypoglycemia, hyponatremia, hypocalcemia, hypomagnesemia, hypertensive encephalopathy, alcohol withdrawal, meningitis, encephalitis, brain tumor, stroke, vasculitis,



### Renal Disorders

### Oliguria and Acute Renal Failure

Chief Compliant: The patient is a 50 year old white male with diabetes who presents with decreased urine output for 8 hours.

History of the Present Illness: Oliguria (<20 mL/h, 400-500 mL urine/day); anuria (<100 mL urine/day); hemorrhage, heart failure, sepsis, vomiting, nasogastric suction; diarrhea, fever, chills; measured fluid input and output by Foley catheter; prostate enlargement, kidney stones

Dysuria, flank pain. Abdominal pain, hematuria, passing of tissue fragments, foamy urine (proteinuria).

Past Medical History: Recent upper respiratory infection (post streptococcal glomerulonephritis), recent chemotherapy (tumor lysis syndrome).

Medications: Anticholinergics, nephrotoxic drugs (aminoglycosides, amphotericin, NSAID's)renally excreted medications.

#### **Physical Examination**

General Appearance: Signs of dehydration, septic appearance. Note whether the patient appears ill or well

Vital Signs: BP (orthostatic vitals; an increase in heart rate by >15 mmHg and a fall in systolic pressure >15 mmHg, indicates significant volume depletion); pulse (tachycardia); temperature (fever), respiratory rate (tachypnea).

**Skin:** Decreased skin turgor over sternum (hypovolemia); skin temperature and color; delayed capillary refill; jaundice (hepatorenal syndrome).

**HEENT:** Oral mucosa moisture, ocular moisture, flat neck veins (volume depletion), venous distention (heart failure).

Chest: Crackles (heart failure).

**Heart:** Irregular rhythm, murmurs, S3 (volume overload). **Abdomen:** Hepatomegaly, abdominojugular reflex (heart

failure); costovertebral angle tenderness; distended bladder, nephromegaly (obstruction).

**Pelvic:** Pelvic masses, cystocele, urethrocele.

Rectal: Prostate hypertrophy; absent sphincter reflex, decreased sensation (atonic bladder due to vertebral disk herniation).

Extremities: Peripheral edema (heart failure).

Labs: Sodium, potassium, BUN, creatinine, uric acid.
Urine and serum osmolality, UA, urine creatinine.
Ultrasound of bladder and kidneys.

Clinical Findings in Pre-renal, Renal, Post-renal Failure				
	Prerenal	ARF	Postrenal	
BUN/Creati- nine ratio	>15:1	<15:1	varies	
Urine so- dium	<20 mMol/L	>20	varies	
Urine osmolalit y	>500 mOsm/ kg	<350	varies	
Renal fail- ure Index	<1	>1	varies	
FE Na	<1%	>1%	varies	
Urine/plasm a creatinine	>40	>20	varies	

Urine analy- ses	normal	cellular casts	RBCs, WBCs, bacteria
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#### Differential Diagnosis of Acute Renal Failure Prerenal Insult

A. Prerenal insult is the most common cause of acute renal failure, accounting for 70%. It is usually caused by reduced renal perfusion pressure secondary to extracellular fluid volume loss (diarrhea, diuresis, GI hemorrhage), or secondary to extracellular fluid sequestration (pancreatitis, sepsis), inadequate cardiac output, renal vasoconstriction (sepsis, liver disease), or inadequate fluid intake or replacement.

#### Intrarenal Insult

- A. Insult to the renal parenchyma (tubular necrosis) causes 20% of acute renal failure.
- B. Prolonged hypoperfusion is the most common cause of tubular necrosis. Nephrotoxins (radiographic contrast, aminoglycosides) are the second most common cause of tubular necrosis.
- **C.** Pigmenturia induced renal injury can be caused by intravascular hemolysis or rhabdomyolysis.
- D. Acute glomerulonephritis or acute interstitial nephritis (usually from allergic reactions to betalactam antibiotics, sulfonamides, rifampin, NSAIDs, cimetidine, phenytoin, allopurinol, thiazides, furosemide, analgesics) are occasional causes of intrarenal kidney failure.

#### Postrenal Insult

- A. Postrenal damage results from obstruction of urine flow, and it is the least common cause of acute renal failure, accounting for 10%.
- B. Postrenal insult may be caused by prostate cancer, benign prostatic hypertrophy, renal calculi obstruction or amyloidosis, uric acid crystals, multiple myeloma, or acyclovir.

#### **Chronic Renal Failure**

Chief Compliant: The patient is a 50 year old white male with diabetes who presents with an elevated creatinine for 2 weeks.

History of the Present Illness: Oliguria, current and baseline creatinine and BUN. Diabetes, hypertension; history of pyelonephritis, sepsis, heart failure, liver disease; peripheral edema, dark colored urine, rashes or purpura. Hypovolemia secondary to diarrhea, hemorrhage, over-diuresis; glomerulonephritis, interstitial nephritis. Excessive bleeding, flank pain, anorexia, insomnia, fatigue, malaise, weight loss, paresthesias, anemia.

**Past Medical History:** Past ultrasounds, kidney stones, prostate disease, urethral obstruction.

**Medications:** Nonsteroidal anti-inflammatory drugs, aminoglycosides, contrast dyes.

**Family History:** Polycystic kidney disease, hereditary glomerulonephritis.

### Physical Examination

**General Appearance:** Evaluate intravascular volume status. Signs of fluid overload. Note whether the patient appears ill, well, or lethargic.

Vital Signs: Postural blood pressure and pulse (tachycardia, hypertension), temperature (fever), respiratory rate.

Skin: Skin turgor, sallow yellow skin (urochromes), fine white powder (uremic frost), purpura, petechiae (coagulopathy). Jaundice, spider angiomas (hepatorenal syndrome).

**HEENT:** Neck vein distention (volume overload).

Chest: Crackles (rales).

Heart: S3 gallop (volume overload), cardiac friction rub

(pericarditis), displacement of heart border, muffled heart sounds (effusion), irregular rhythm (electrolyte imbalances).

Abdomen: Distended bladder, costovertebral angle tenderness, suprapubic tenderness, pelvic masses,

Rectal: Occult blood, prostate enlargement.

Neuro: Asterixis, myoclonus, sensory deficits, motor deficits Labs: BUN, creatinine, potassium (hyperkalemia), albu-

min, calcium, phosphorus, proteinuria.

Differential Diagnosis of Chronic Renal Failure: Hypertensive nephrosclerosis, diabetic nephrosclerosis, glomerulonephritis, polycystic kidney disease, tubulointerstitial renal disease, reflux nephropathy, analgesic nephropathy, chronic obstructive uropathy, amyloidosis, Lupus nephropathy.

#### Hematuria

Chief Compliant: The patient is a 50 year old white male with hypertension who complains of bloody urine for 4 days.

History of the Present Illness: Quantity of RBCs found on urinalysis. Repeat testing. Color, timing, pattern of hematuria: Initial hematuria (anterior urethral lesion); terminal hematuria (bladder neck or prostate lesion); hematuria throughout voiding (bladder or upper urinary tract). Frequency, dysuria, suprapubic pain, flank pain (renal colic), perineal pain; fever. Recent exercise,

menstruation; bleeding between voidings. Foley catheterization, prior stone passage, tissue passage in urine, joint pain.

Recent sore throat, streptococcal skin infection (glomerulonephritis), joint pain.

Past Medical History: Prior pyelonephritis; occupational exposure to toxins.

Medications Associated with Hematuria: Warfarin, aspirin, ibuprofen, naproxen, phenobarbital, allopurinol, phenytoin, cyclophosphamide. Causes of Red Urine: Pyridium, phenytoin, ibuprofen, cascara laxatives, levodopa, methyldopa, quinine, rifampin, berries, flava beans, food coloring, rhubarb, beets, hemoglobinuria, myoglobinuria. Family History: Hematuria, renal disease, sickle cell,

bleeding diathesis, deafness (Alport's syndrome), hypertension.

### Physical Examination

General Appearance: Signs of dehydration. Note whether the patient appears ill, well, or lethargic. Vital Signs: BP (hypertension), pulse (tachycardia),

respiratory rate, temperature (fever). Skin: Rashes.

**HEENT:** Pharyngitis, carotid bruits.

Heart: Heart murmur; irregular rhythm (atrial fibrillation, renal emboli).

Abdomen: Tenderness, masses, costovertebral angle tenderness (renal calculus or pyelonephritis), abdominal

bruits, nephromegaly, suprapubic tenderness. Genitourinary: Urethral lesions, discharge, condyloma,

foreign body, cervical malignancy; prostate tenderness, nodules, or enlargement (prostatitis, prostate cancer).

Extremities: Peripheral edema (nephrotic syndrome), arthritis, ecchymoses, petechiae, unequal peripheral pulses (aortic dissection).

Labs: UA with microscopic exam of urine, CBC, KUB, intravenous pyelogram, ultrasound. Streptozyme panel, ANA, INR/PTT.

Indicators of Significant Hematuria: (1) >3 RBC's per high-power field on 2 of 3 specimens; (2) >100 RBC's

per HPF in 1 specimen; (3) gross hematuria The patient should abstain from exercise for 48 hours prior to urine collection, and urine should not be col-

### lected during menses.

- **Differential Diagnosis** A. Medical Hematuria is caused by a glomerular lesion; plasma proteins filter into urine out of proportion to the amount of hematuria. It is characterized by glomerular RBCs that are distorted with crenated membranes and an uneven hemoglobin distribution and casts. Microscopic hematuria and
  - a urine dipstick test of 2+ protein is more likely to have a medical cause. B. Urologic Hematuria is caused by a urologic lesion, such as a urinary stone or carcinoma; it is characterized by minimal proteinuria, and protein appears in urine proportional to the amount of whole blood present. RBCs are disk shaped with an even hemoglobin distribution; there is an absence of casts.

# **Nephrolithiasis**

Chief Compliant: The patient is a 40 year old white female who complains of flank pain for 8 hours. History of the Present Illness: Severe, colicky, intermit-

tent,, lower abdominal pain; flank pain, hematuria, fever, dysuria; prior history of renal stones. Abdominal pain may radiate laterally around abdomen to groin, testicles or labia. History of low fluid intake, urinary tract infection, parenteral nutrition. Excessive calcium administration, immobilization, furosemide.

Past Medical History: Chemotherapy, inflammatory bowel disease, ileal resection. Diet high in oxalate:

Spinach, rhubarb, nuts, tea, cocoa. Medications: Excess vitamin C, hydrochlorothiazide, indinavir, unusual dietary habits.

Family History: Kidney stones.

**Physical Examination** General Appearance: Signs of dehydration, septic appearance. Note whether the patient appears ill, well,

or lethargic. Abdomen: Costovertebral angle tenderness, suprapubic tenderness; enlarged kidney. Gyn: Cervical motion tenderness, adnexal tenderness,

cysts. Labs: Serum electrolytes, calcium, phosphorus,

creatinine, uric acid. Urine cystine, UA microscopic (hematuria), urine culture, KUB, intravenous pyelogram.

PTH levels (if hypercalcemia), 24-hour urine calcium, phosphate, urate, oxalate, citrate, Cr, sodium, urea nitrogen, and cystine. Differential Diagnosis: Nephrolithiasis, appendicitis,

hemorrhage, bladder obstruction, prostatitis, prostate cancer, endometriosis, ectopic pregnancy, colonic obstruction, carcinoma (colon, prostrate, cervix, blad-

cystitis, pyelonephritis, diverticulitis, salpingitis, torsion of hernia, ovarian torsion, ovarian cyst rupture or

Causes of Nephrolithiasis: Hypercalcemia, hyperuricosuria, hyperoxaluria, cystinuria, renal tubular acidosis, Proteus mirabilis urinary tract infection (staghorn calculi).

### Hyperkalemia

- Chief Compliant: The patient is a 50 year old white male with hypertension who presents with an elevated serum potassium on routine screening.
- History of the Present Illness: Serum potassium >5.5 mMol/L (repeat test to exclude lab error); muscle weakness, syncope, lightheadedness, palpitations, oliguria; oral or intravenous potassium, salt substitutes, potassium sparing diuretics, angiotensin converting enzyme inhibitors; nonsteroidal anti-inflammatory drugs, beta-blockers, heparin, digoxin, cyclosporine, succinylcholine; muscle trauma, chemotherapy (tumor lysis syndrome). Plasma renin activity, urine potassium.
- Past Medical History: Renal disease, diabetes, adrenal insufficiency (Addison's syndrome). History of episodic paralysis precipitated by exercise (familial hyperkalemic periodic paralysis).
- **Medications:** Potassium sparing diuretics, angiotensin converting enzyme inhibitors; nonsteroidal anti-inflammatory drugs.

#### **Physical Examination**

- **General Appearance:** Dehydration. Note whether the patient appears ill, well, or malnourished.
- **Skin:** Hyperpigmentation (Addison's disease), hematomas.
- **HEENT:** Extraocular movements, pupils equally reactive. **Abdomen:** Suprapubic tenderness. **Neuro:** Muscle weakness, diminished deep tendon
- reflexes, cranial nerves 2-12. **Labs:** Potassium, platelets, bicarbonate, chloride, anion gap, LDH, 24 hour urine K, pH. Serum aldosterone,
- ECG: Tall peaked, precordial T waves; diminished QT interval; widened QRS complex, prolonged PR interval, P wave flattening, AV block, ventricular arrhythmias, sine wave, asystole.

### Differential Diagnosis

plasma renin activity.

- Inadequate Excretion: Renal failure, adrenal insufficiency (Addison's syndrome), potassium sparing diuretics (spironolactone), urinary tract obstruction, lupus, hypoaldosteronism, ACE inhibitors, NSAIDs, heparin.
- Increased Potassium Production: Hemolysis, rhabdomyolysis, muscle crush injury, internal hemorrhage, drugs (succinylcholine, digoxin overdose, beta blockers), acidosis, hyperkalemic periodic paralysis, hyperosmolality.
- Excess Intake of Potassium: Oral or IV potassium supplements, salt substitutes.
- Pseudo-hyperkalemia: Hemolysis after collection of blood, use of excessively small needle, excessive shaking of sample, delayed transport of blood to lab, thrombocytosis, leukocytosis, prolonged tourniquet use.

### Hypokalemia

- Chief Compliant: The patient is a 50 year old white male with hypertension who presents with a low serum potassium on routine screening.
- History of the Present Illness: Potassium <3.5 mMol/L (repeat test to exclude lab error), hyperglycemia, diuretics, diarrhea, vomiting, laxative abuse; poor intake of potassium containing foods (fruits, vegetables, meats); . Conn's syndrome (hyperaldosteronism). Urine potassium.
- **Associated Symptoms:** Muscle weakness, cramping pain, nausea, vomiting, constipation, palpitations, paresthesias, polyuria.
- Past Medical History: Renal disease, stress

dialysis. Medications: Corticosteroids, nephrotoxins, bicarbonate, beta-agonists, vitamin B12, Kayexalate ingestion, excessive licorice ingestion, chewing tobacco, clay

(catecholamine release); biliary drainage, enteric fistula,

ingestion.

### **Physical Examination**

General Appearance: Signs of dehydration. Note whether the patient appears ill, well, or malnourished.

Vital Signs: BP (hypotension), pulse, temperature, respiratory rate.

Heart: Irregular rhythm.

Abdomen: Hypoactive bowel sounds (ileus), abdominal tenderness. Neuro: Weakness, hypoactive deep tendon reflexes.

Labs: Serum potassium. 24 hour urine potassium >20 mEq/day indicates excessive urinary K loss. If <20 mEq/d, low K intake or nonurinary K loss is the cause. Electrolytes, BUN, creatinine, glucose, magnesium,

CBC, plasma renin activity, aldosterone. Urine specific ECG: Flattening and inversion of T-waves (II, V3), ST

segment depression, U waves (II, V1, V2, V3); first or second degree block, QT interval prolongation, premature atrial or ventricular contractions, supraventricular tachycardia, ventricular tachycardia

Differential Diagnosis of Hypokalemia Cellular Redistribution of Potassium: Intracellular shift of potassium by insulin (exogenous or glucose load), beta2 agonist; thyrotoxic periodic paralysis; alkalosis; familial periodic paralysis, vitamin B12 treatment, hypothermia; acute myeloid leukemia.

Nonrenal Potassium Loss:

or fibrillation.

villous adenoma, biliary drainage, enteric fistula, potassium binding resin ingestion Non-gastrointestinal Loss. Sweating, low potassium

Gastrointestinal Loss. Diarrhea, laxative abuse,

ingestion, dialysis Renal Potassium Loss:

### Hypertensive High Renin States. Malignant hyper-

tension, renal artery stenosis, renin-producing Hypertensive Low Renin, High Aldosterone States. Primary hyperaldosteronism (adenoma or hyper-

plasia). Hypertensive Low Renin, Low Aldosterone States.

Congenital adrenal hyperplasia, Cushing's syndrome, exogenous mineralocorticoids (Florinef, licorice, chewing tobacco), Liddle's syndrome Normotensive. Renal tubular acidosis (type I or II),

metabolic alkalosis with a urine chloride <10 mEq/day is caused by vomiting; metabolic alkalosis with a urine chloride >10 mEq/day is caused by Bartter's syndrome, diuretics, magnesium depletion, normotensive hyperaldosteronism.

# Hyponatremia

Chief Compliant: The patient is a 50 year old white male with hypertension who presents with a low serum sodium on routine screening.

History of the Present Illness: Serum sodium <135 mMol/L (repeat test to exclude lab error); confusion, agitation, irritability, lethargy, anorexia, nausea, vomiting, headache, muscle weakness or tremor, cramps, seizures; decreased output of dark urine (dehydration); polydipsia (water intoxication); diarrhea.

Past Medical History: Renal, CNS, or pulmonary disease (syndrome of inappropriate antidiuretic hormone); heart failure, cirrhosis, hypothyroidism, hyperlipidemia (pseudo-hyponatremia).

Medications: Steroid withdrawal hypotonic IV fluids, psychotropic medications, chemotherapeutic agents.

Physical Examination

General Appearance: Signs of dehydration. Note whether the patient appears ill, well, or malnourished.

Vital Signs: BP (hypotension), pulse (tachycardia), temperature, respiratory rate.

Skin: Decreased skin turgor, delayed capillary refill; hyperpigmentation (Addison's disease), moon-face,

truncal obesity (hypocortisolism with steroid withdrawal). **HEENT:** Decreased ocular and oral moisture. Chest: Cheyne-Stokes respirations, crackles.

Heart: Irregular rhythm. Premature ventricular contrac-

tions.

Abdomen: Ascites, tenderness.

Extremities: Edema.

Neuro: Confusion, irritability, motor weakness, ataxia, positive Babinski's sign, muscle twitches; hypoactive deep tendon reflexes, cranial nerve palsies.

Labs: Electrolytes, BUN, creatinine, cholesterol, triglycerides, glucose, protein, serum osmolality, albumin; urine sodium, urine osmolality, chest X-ray, ECG.

Differential Diagnosis of Hyponatremia Based on **Urine Osmolality** A. Low Urine Osmolality (50-180 mOsm/L). Primary

excessive water intake (psychogenic water drinking). B. High Urine Osmolality (urine osmolality >serum

osmolality)

High Urine Sodium (>40 mEq/L) and Volume Contracted. Renal fluid loss caused by exces-

sive diuretic use, salt-wasting nephropathy, Addison's disease, or osmotic diuresis.

High Urine Sodium (>40 mEq/L) and Normal Volume. Water retention caused by carbamazepine or cyclophosphamide,

antidiuretic hormone secretion.

3. Low Urine Sodium (<20 mEq/L) and Volume Contraction. Extrarenal source of fluid loss (vomiting, burns).

hypothyroidism, syndrome of inappropriate

Low Urine Sodium (<20 mEq/L) and Volumeexpanded, Edematous. Heart failure, cirrhosis with ascites, nephrotic syndrome.

### Hypernatremia

Chief Compliant: The patient is a 50 year old white male with hypertension who presents with an elevated serum sodium on routine screening.

History of the Present Illness: Serum sodium >145 mEq/L (repeat test to exclude lab error). History of dehydration due to fever, vomiting, burns, heat expo-

sure, diarrhea, elevated glucose, salt ingestion, administration of hypertonic fluids (sodium bicarbonate, sodium chloride), sweating, impaired access to water (elderly), adipsia (lack of thirst); head injury. Altered mental status, lethargy, agitation, polyuria, an-

orexia, muscle twitching, renal disease. Recent fluid Past Medical History: Pancreatitis, diarrhea, diabetes,

Medications Associated with Hypernatremia:

Amphotericin, phenytoin, lithium, aminoglycosides.

#### Physical Examination General Appearance: Lethargy, obtundation, stupor.

ataxia.

creatinine. Differential Diagnosis:

Note whether the patient appears ill, well, or malnourished.

(hypoadrenal crisis, steroid withdrawal).

dry oral mucosa, flat neck veins,.

Hypernatremia with Hypovolemia

tis, respiratory water loss.

of excessive antidiuretic hormone).

Vital Signs: BP (orthostatic hypotension), pulse (tachycardia), temperature (fever), respiratory rate; decreased

urine output.

Skin: Decreased skin turgor ("doughy" consistency),

delayed capillary refill, hyperpigmentation (Conn's

syndrome), moon-face, truncal obesity, stria

HEENT: Decreased eye moisture, decreased eye turgor,

Neuro: Decreased muscle tone, tremor, hyperreflexia; extensor plantar reflex (Babinski's sign), spasticity,

Labs: Increased hematocrit; sodium, BUN, creatinine, urine and serum, osmolality. Spot urine sodium,

A. Extrarenal Loss of Water (urine sodium >20 mMol/L). Vomiting, diarrhea, sweating, pancreati-

B. Renal loss of water (urine sodium <10 mMol/L). Diuretics, hyperglycemia, renal failure. Euvolemic Hypernatremia with Renal Water Losses. Diabetes insipidus (central or nephrogenic secretion

Hypernatremia with Hypervolemia (urine sodium >20 mMol/L): Hypertonic solutions of sodium chloride or sodium bicarbonate, hyperaldosteronism, Cushing's, syndrome, congenital adrenal hyperplasia.

### Endocrinologic Disorders

#### Diabetic Ketoacidosis

- Chief Compliant: The patient is a 12 year old male with diabetes who presents with an elevated serum glucose and ketoacidosis.
- History of the Present Illness: Initial glucose level, ketones, anion gap. Polyuria, polyphagia, polydipsia, fatigue, lethargy, nausea, vomiting, weight loss; non-compliance with insulin, hypoglycemic agents; blurred vision, infection, dehydration, abdominal pain (appendicitis), dyspnea.
- Cough, fever, chills, ear pain (otitis media), dysuria, frequency (urinary tract infection); back pain (pyelonephritis), chest pain; frequent Candida or bacterial infections.
- Factors that May Precipitate Diabetic Ketoacidosis. New onset of diabetes, noncompliance with insulin, infection, pancreatitis, myocardial infarction, stress, trauma, stroke, pregnancy.
- Past Medical History: Renal disease, prior ketoacidosis, sensory deficits in extremities (diabetic neuropathy), retinopathy, hypertension.

Medications: Insulin, oral hypoglycemics.

#### Physical Examination

- General Appearance: Somnolence, Kussmaul respirations (deep sighing breathing). Signs of dehydration, toxic appearance. Note whether the patient appears ill, well, or malnourished.
- Vital Signs: BP (hypotension), pulse (tachycardia), temperature (fever or hypothermia), respiratory rate (tachypnea).
- **Skin:** Decreased skin turgor, delayed capillary refill; hyperpigmented atrophic macules on legs (shin spots); intertriginous candidiasis, erythrasma, localized fat atrophy (insulin injections).
- HEENT: Diabetic retinopathy (neovascularization, hemorrhages, exudates); acetone breath odor (musty, apple odor), decreased visual acuity, low oral moisture (dehydration), tympanic membrane inflammation (otitis media); flat neck veins, neck rigidity.

Chest: Rales, rhonchi.

- **Abdomen:** Hypoactive bowel sounds (ileus), abdominal tenderness, costovertebral angle tenderness (pyelonephritis), suprapubic tenderness (urinary tract infection).
- Extremities: Decreased pulses (atherosclerotic disease), foot ulcers, cellulitis.
- **Neuro:** Delirium, confusion, peripheral neuropathy (decreased proprioception and sensory deficits in feet), hypotonia, hyporeflexia.
- **Labs:** Glucose, sodium, potassium, bicarbonate, chloride, BUN, creatinine, anion gap; triglycerides, phosphate, CBC, serum ketones; UA (proteinuria, ketones). Chest X-ray, ECG.

#### **Differential Diagnosis**

**Ketosis-Causing Conditions.** Alcoholic ketoacidosis or starvation.

#### **Acidosis-Causing Conditions**

- **Increased Anion Gap Acidoses.** DKA, uremia, and salicylate or methanol poisoning.
- Non-Anion Gap Acidoses. Renal or gastrointestinal bicarbonate losses due to diarrhea or renal tubular acidosis.
- **Hyperglycemia-Causing Conditions.** Hyperosmolar nonketotic coma.
- Diagnostic Criteria for DKA. Glucose ≥250, pH <7.3, bicarbonate <15, ketone positive >1:2 dilutions.

# Hypothyroidism and Myxedema Coma

- Chief Compliant: The patient is a 50 year old white female with hypothyroidism who presents with weakness for 5 days.
- History of the Present Illness: Fatigue, cold intolerance, constipation, weight gain or inability to lose weight, muscle weakness; thyroid swelling or mass; dyspnea on exertion; mental slowing, dry hair and skin, deepening of voice; carpal tunnel syndrome, amenorrhea. Somnolence, apathy, depression, paresthesias.
- Myxedema madness: Agitation, disorientation, delusions, hallucinations, paranoia, restlessness, lethargy.
- Factors Predisposing to Myxedema Coma. Cold exposure, infection, trauma, surgery, anesthesia, narcotics, phenothiazines, phenytoin, sedatives, propranolol, alcohol.
- **Past Medical History:** Hyperthyroidism, thyroid testing, thyroid surgery.
- **Medications:** Radioactive iodine treatment, antithyroid medication, lithium.

#### **Physical Examination**

- **General Appearance:** Hypoactivity, confusion, somnolence, coarse, deep voice; dull, expressionless face. Signs of dehydration.
- Vital Signs: Bradycardia, hypotension, hypothermia.
- **Skin:** Cool, dry, pale, rough, doughy skin; thin, brittle dry nails with longitudinal ridges; yellowish skin without scleral icterus (carotenemia). Hyperkeratosis of elbows and knees.
- **HEENT:** Thin, dry, brittle hair, alopecia; macroglossia (enlarged tongue), puffy face and eyelids; loss of lateral third of eyebrows, papilledema, thyroid surgery scar. Jugulovenous distention (pericardial effusion).
- Chest: Dullness to percussion (pleural effusion).
  Heart: Muffled heart sounds (pericardial effusion); displacement of lateral heart border, bradycardia.
- **Abdomen:** Hypoactive bowel sounds (ileus), myxedematous ascites.
- Extremities: Diminished muscle strength and power. Myxedema: transient local swelling after tapping a muscle.
- **Neuro:** Visual field deficits, cranial nerve palsies (pituitary tumor), hypoactive tendon reflexes with delayed return phase. Decreased mental status, stupor, ataxia; weakness, sensory impairment.
- Labs: Thyroid stimulating hormone, CBC, electrolytes, hypercholesterolemia, hypertriglyceridemia, creatinine phosphokinase, LDH.
- **ECG:** Bradycardia, low voltage QRS complexes; flattened or inverted T waves, prolonged Q-T interval.

Differential Diagnosis of Hypothyroidism		
Cause	Clues to Diagnosis	
Autoimmune thyroiditis (Hashimoto's disease)	Family or personal history of autoimmune thyroiditis or goiter	
latrogenic: Ablation, medi- cation, surgery	History of thyroidectomy, irradiation with iodine 131, or thioamide drug therapy	
Diet (high levels of iodine)	Kelp consumption	
Subacute thyroiditis (viral)	History of painful thyroid gland or neck pain	
Postpartum thyroiditis	Symptoms of hyperthyroidism followed by hypothyroidism 6 months postpartum	

### Hyperthyroidism and **Thyrotoxicosis**

Chief Compliant: The patient is a 50 year old white male

who presents with tremor and restlessness for 4 days. History of the Present Illness: Tremor, nervousness, hyperkinesis (restlessness), fever, heat intolerance,

palpitations, diaphoresis, irritability, insomnia; thyroid enlargement, masses, thyroid pain, amenorrhea.

Weight loss with increased appetite; dyspnea and fatigue

after slight exertion; softening of the skin; fine, silky hair texture; proximal muscle weakness (especially thighs when climbing stairs), hyperdefecation. Atrial fibrillation; diplopia, reduced visual acuity, eye discomfort or pain, lacrimation; recent upper respiratory infection. Previous thyroid function testing.

Past Medical History: Factors Precipitating Thyroid Storm: Infection, surgery, diabetic ketoacidosis, pulmonary embolus, excess hormone medication, cerebral

vascular accident, myocardial infarction, labor and delivery, iodine-131 or iodine therapy. Family History: Thyroid disease.

### **Physical Examination**

General Appearance: Restless, anxious, hyperactive; delirium. Signs of dehydration.

Vital Signs: Widened pulse pressure (difference between systolic and diastolic pressure), hyperpyrexia (>104°F),

tachycardia, hypertension. Skin: Moist, warm, velvety skin, diaphoresis; palmar erythema, fine silky hair. Plummer's nails (distal

onycholysis, separation of fingernail from nail bed), clubbing of fingers and toes (acropachy). Loss of subcutaneous fat and muscle mass. HEENT: Exophthalmos (forward displacement of the

eyeballs), proptosis (lid elevation), widened palpebral fissures; lid lag, infrequent blinking.

Ophthalmoplegia (restricted extraocular movements), chemosis (edema of conjunctiva), conjunctival injection, corneal ulcers; periorbital edema or ecchymoses; optic

nerve atrophy, impaired visual acuity, difficulty with convergence. Painless, diffusely enlarged thyroid without masses; thyroid thrill and bruit. Heart: Irregular rhythm (atrial fibrillation), systolic murmur

(mitral or tricuspid regurgitation, flow murmur), displacement of apical impulse. Accentuated first heart sound. Extremities: Fine tremor; non-pitting pre-tibial edema (Grave's disease).

Neuro: Proximal muscle weakness, hyperreflexia (rapid return phase of deep tendon reflexes); rapid, pressured speech, anxiety. Labs: Free T4, TSH, beta-HCG pregnancy test.

ECG: Sinus tachycardia, atrial fibrillation.

Differential Diagnosis: Grave's disease, toxic

multinodular goiter, acute thyroiditis, thyrotoxicosis

factitia (ingestion of thyroid hormone), trophoblastic tumor (molar pregnancy), TSH-producing pituitary adenoma, postpartum thyroiditis, struma ovarii, functional follicular carcinoma, thyroid adenoma or carcinoma.

# Hematologic and Rheumatologic Disorders

### **Deep Venous Thrombosis**

Chief Compliant: The patient is a 50 year old white male with an paraplegia who complains of left calf pain for 6 hours.

History of the Present Illness: Sudden onset of unilateral calf pain, swelling, and redness; exacerbation of pain by walking and flexing of foot, dyspnea.

### **Risk Factors for Deep Venous Thrombosis**

- A. Venous stasis risk factors include prolonged immobilization, stroke, myocardial infarction, heart failure, obesity, anesthesia, age >65 years old.
  - B. Endothelial injury risk factors include surgery, trauma, central venous access catheters, pacemaker wires, previous thromboembolic event.
  - C. Hypercoagulable state risk factors include malignant disease, high estrogen level (pregnancy, oral contraceptives).
  - D. Hematologic Disorders. Polycythemia, leukocytosis, thrombocytosis, antithrombin III deficiency, protein C deficiency, protein S deficiency, antiphospholipid syndrome.

Past Medical History: Peptic ulcer, melena, surgery.

#### **Physical Examination**

**General Appearance:** Dyspnea, respiratory distress. Note whether the patient appears ill, well, or malnourished.

Vital Signs: BP, pulse, respiratory rate (tachypnea if pulmonary embolus), temperature (low-grade fever).

Chest: Breast masses.

Abdomen: Distention, tenderness, masses.

**Genitourinary:** Testicular or pelvic masses, inguinal lymphadenopathy.

Rectal: Occult fecal blood, prostate masses.

Extremities: >2 cm difference in calf circumference, redness, cyanosis; mottling, tenderness; Homan's sign (tenderness with dorsiflexion of foot); warmth, dilated varicose veins.

**Labs:** Doppler studies, venogram; INR/PTT, CBC, electrolytes, BUN, creatinine; ECG, UA, chest X-ray.

Differential Diagnosis: Thrombophlebitis, ruptured Baker's cyst, lymphatic obstruction, cellulitis, muscle injury, hematoma, plantaris tendon rupture.

#### Low Back Pain and Sciatica

Chief Compliant: The patient is a 50 year old female who presents with low back pain for 1 week.

History of the Present Illness: Onset of pain (eg, time of day, activity); location of pain (eg, site, radiation of pain to thigh or calf); type and character of pain (sharp, dull), duration of pain. Aggravating and relieving factors. Psychosocial stressors at home or work.

"Red flags": Age greater than 50 years, fever, weight loss.

Hip pain, joint pain, weakness, numbness, tingling; morning stiffness, night pain, bone pain, abdominal pain, leg pain. Difficult urination, incontinence of bladder or bowel, impotence, constipation.

Past Medical History: Previous injuries, trauma, severe falls, occupational injuries, cancer. Previous therapy and efficacy.

**Social History:** Drug or alcohol abuse; functional impact of the pain on the patient's work and activities.

Medications: NSAIDs, acetaminophen, corticosteroids.

General Appearance: Note whether the patient appears ill or well. Informal observation (eg, patient's posture, expressions, pain behavior). Painful grimacing with movements.

Vital Signs: BP, pulse, respirations, temperature

Skin: Discoid lesions (erythematous plaques), redness. HEENT: Malar rash (erythematous rash in "butterfly"

pattern on the face). Chest: Pleural friction rub (pleuritis).

Heart: Cardiac friction rubs. Abdomen: Abdominal tenderness.

Back: Palpation of spinous processes and interspinous ligaments for tenderness. Range of motion, mobility (patient sits, lies down and stands up).

Extremities: Joint tenderness, muscle weakness. Rectal: Decreased anal sphincter tone, anal reflex,

perianal sensation Neuro: Posture, gait, deep tendon reflexes. Pinprick sensation in lower extremities.

Muscle strength is graded from zero (no evidence of contractility) to 5 (complete range of motion against gravity, with full resistance). Straight leg raise test. Resistance to hip flexion, quadriceps strength, heel

walking. Great toe dorsiflexion strength. Trendelenburg test: The patient to stands on one leg. A

pelvis drop is a positive test. Labs: ESR, CBC, rheumatoid factor. X-Rays, MRI. Electromyography, nerve conduction studies.

Differential Diagnosis: Back strain, acute disc herniation, osteoarthritis or spinal stenosis, spondylolisthesis, ankylosing spondylitis, infection, malignancy.

### Connective Tissue Diseases

Chief Compliant: The patient is a 50 year old female who presents with joint pain and rash for 2 weeks. History of the Present Illness: Joint pain, fatigue,

malaise, weight loss, fever, skin rashes; swelling of upper and lower extremities, morning joint stiffness, photosensitivity, muscle aches, weakness.

Hip and back pain, oral ulcers, renal disease; anemia, psychiatric illness, dysphagia, pleurisy, positional chest pain (pericarditis), Raynaud's syndrome (cyanosis of hands when exposed to cold)

Past Medical History: Migraine headaches, stroke, seizures, depression, hypertension.

Medications Associated with Lupus: Procainamide, isoniazid, hydralazine, methyldopa (Aldomet).

### **Physical Examination**

General Appearance: Note whether the patient appears ill, well, or malnourished.

Vital Signs: Hypertension, pulse, respiratory rate, temper-

Skin: Skin fibrosis (thickening, scleroderma),

telangiectasias, discoid lesions (erythematous plaques), purpura, skin ulcers, rheumatoid nodules, livedo reticularis.

HEENT: Keratoconjunctivitis sicca (dry inflammation of conjunctiva), malar rash ("butterfly" rash on the face), oral ulcers. Episcleritis or scleritis, xerophthalmia (dry eyes), parotid enlargement.

Chest: Pleural friction rub (pleuritis), fine rales (interstitial fibrosis).

Heart: Cardiac friction rubs (pericarditis).

Abdomen: Hepatosplenomegaly, abdominal tenderness.

Extremities: Joint tenderness, lymphadenopathy sclerodactyly (thickening of digital subcutaneous tissue), nodules.

Neuro: Mental status, extraocular movements, cranial

nerves, muscle weakness, sensory deficits. Labs: Electrolytes, creatinine, ANA, anti-Smith antibody, anti-DNA antibody, antineutrophilic cytoplasmic antibody, LE cell prep, rheumatoid factor, RPR, ESR, CBC,

UA, ECG, complement. UA (proteinuria, casts).

Diagnostic Criteria for Rheumatoid Arthritis: Four or more of the following.

- 1. Morning stiffness (>6 weeks)
  - 2. Arthritis in 3 or more joints (>6 weeks)
  - 3. Arthritis of hand joints (>6 weeks)
  - 4. Symmetric arthritis (>6 weeks)
  - 5. Rheumatoid nodules
  - 6. Positive rheumatoid factor 7. X-ray abnormalities: Erosions, bony decalcification (especially in hands/wrist).

### Diagnostic Criteria for Systemic Lupus

Erythematosus: Four or more of the following.

- 1. Malar rash 2. Discoid rash
  - 4. Oral or nasopharyngeal ulcers
  - 5. Nonerosive arthritis 6. Pleuritis or pericarditis
  - 7. Persistent proteinuria

3. Photosensitivity

- 8. Seizures or psychosis
- 9. Hemolytic anemia 10. Positive lupus erythematosus cell, positive anti-DNA antibody, Smith antibody, false positive VDRL.
- 11. Positive ANA

### Psychiatric Disorders

### Clinical Evaluation of the Psychiatric Patient

### I. Psychiatric history

- A. Identifying information. Age, sex, marital status, race, referral source.
  - B. Chief complaint (CC). Reason for consultation; the reason is often a direct quote from the patient.
  - C. History of present illness (HPI)
    - **1.** Current symptoms: date of onset, duration and course of symptoms.
    - Previous psychiatric symptoms and treatment.
       Recent psychosocial stressors: stressful life
    - events which may have contributed to the patient's current presentation.
    - 4. Reason the patient is presenting now.5. This section provides evidence that supports or
    - rules out relevant diagnoses. Therefore documenting the absence of pertinent symptoms is also important.
    - **6.** Historical evidence in this section should be relevant to the current presentation.

#### D. Past psychiatric history

- 1. Previous and current psychiatric diagnoses.
- 2. History of psychiatric treatment, including outpatient and inpatient treatment.
- 3. History of psychotropic medication use.
- 4. History of suicide attempts and potential lethality.

#### E. Past medical history

- 1. Current and/or previous medical problems.
- 2. Type of treatment, including prescription, overthe-counter medications, home remedies.
- F. Family history. Relatives with history of psychiatric disorders, suicide or suicide attempts, alcohol or substance abuse.

#### G. Social history

- 1. Source of income.
- Level of education, relationship history (including marriages, sexual orientation, number of children); individuals that currently live with patient.
- 3. Support network.
- Current alcohol or illicit drug usage.
- Occupational history.
   Developmental history. Family structure during
- childhood, relationships with parental figures and siblings; developmental milestones, peer relationships, school performance. Mental status exam. The mental status exam is an
- II. Mental status exam. The mental status exam is an assessment of the patient at the present time. Historical information should not be included in this section.

### A. General appearance and behavior

- **1.** Grooming, level of hygiene, characteristics of clothing.
- 2. Unusual physical characteristics or movements.
- 3. Attitude. Ability to interact with the interviewer.
- 4. Psychomotor activity. Agitation or retarda-
- 5. Degree of eye contact.

### B. Affect

- Definition. External range of expression, described in terms of quality, range and appropriateness.
- 2. Types of affect
  - a. Flat. Absence of all or most affect.
  - **b. Blunted or restricted.** Moderately reduced range of affect.
  - c. Labile. Multiple abrupt changes in affect.d. Full or wide range of affect. Generally
- appropriate.

  C. Mood. Internal emotional tone of the patient (ie,
  - c. Mood. Internal emotional tone of the patient (ie, dysphoric, euphoric, angry, euthymic, anxious).

### D. Thought processes

- 1. Use of language. Quality and quantity of speech. The tone, associations and fluency of
- speech should be noted.
- E. Thought content 1. Definition. Hallucinations, delusions and other
- perceptual disturbances.
- F. Cognitive evaluation Level of consciousness.
  - 2. Orientation: Person, place and date.
  - 3. Attention and concentration: Repeat 5 digits forwards and backwards or spell a five-letter
  - word ("world") forwards and backwards.
  - 4. Short-term memory: Ability to recall 3 objects
  - after 5 minutes.

  - 5. Fund of knowledge: Ability to name past five presidents, five large cities, or historical dates.
  - 6. Calculations. Subtraction of serial 7s. simple math problems. 7. Abstraction. Proverb interpretation and similar-
  - ities. Insight. Ability of the patient to display an
- G. understanding of his current problems, and the ability to understand the implication of these problems.

H. Judgment. Ability to make sound decisions re-

- garding everyday activities. Judgement is best evaluated by assessing a patient's history of decision making, rather than by asking hypotheti-
- cal questions. III. DSM-IV multiaxial assessment diagnosis
- Axis I: Clinical disorders
- Other conditions that may be a focus of clinical attention.
- Axis II: Personality disorders
- Mental retardation Axis III: General medical conditions Axis IV: Psychosocial and environmental problems

Axis V: Global assessment of functioning

Treatment plan. This section should discuss pharmacologic treatment and other psychiatric therapy, including hospitalization.

## Mini-mental Status Examination

- Orientation: What is the year, season, day of week, date,
- month? 5 points What is the state, county, city, hospital, floor ? - 5 points

Registration: Repeat: 3 objects: apple, book, coat. - 3

Attention/Calculation: Spell "WORLD" backwards - 5 points

points

- Memory: Recall the names of the previous 3 objects: 3
- points Language: Name a pencil and a watch - 2 points
- Repeat, "No ifs, and's or buts" 1 point Three stage command: "Take this paper in your right
- hand, fold it in half, and put it on the floor." 3 points Written command: "Close your eyes." - 1 point
- Write a sentence. 1 point Visual Spacial: Copy two overlapping pentagons - 1 point **Total Score**
- Normal: 25-30 Mild intellectual impairment: 20-25 Moderate intellectual impairment: 10-20
  - Severe intellectual impairment: 0-10

### Attempted Suicide and Drug Overdose

- Chief Compliant: The patient is a 50 year old white male with depression who presents after overdosing on antidepressants 3 hours prior to admission.
- History of the Present Illness: Time suicide was attempted and method. Quantity of pills; motive for attempt. Alcohol intake, other medications; place where medication was obtained; last menstrual period.
- Symptoms of Tricyclic Antidepressant Overdose: Dry mouth, hallucinations, seizures, agitation, visual changes.
- Psychiatric History: Previous suicide attempts or threats, family support, marital conflict, family conflict, alcohol or drug abuse, job stress, school stress. Availability of other dangerous medications or weapons.
- Precipitating factor for suicide attempt (death, divorce, humiliating event, unemployment, medical illness); further desire to commit suicide; is there a definite plan? Was action impulsive or planned?
- Detailed account of events 48-hours prior to suicide attempt and after. Feelings of sadness, guilt, hopelessness, helplessness. Reasons that a patient has to wish to go on living. Did the patient believe that he would succeed in suicide? Is the patient upset that he is still alive?
- Past Medical History: Prior suicide attempts, emotional, physical, or sexual abuse.
- Family History: Depression, suicide, psychiatric disease, emotional, physical, or sexual abuse.

### Physical Examination

- **General Appearance:** Demeanor, affect, level of consciousness, confusion, delirium; presence of potentially dangerous objects or substances (belts, shoe laces).
- Vital Signs: BP (hypotension), pulse (bradycardia), temperature (hyperpyrexia), respiratory rate.
- **HEENT:** Signs of trauma; pupil size and reactivity, mydriasis, nystagmus.
- Chest: Abnormal respiratory patterns, rhonchi (aspiration).
- Heart: Irregular rhythm.
- **Abdomen:** Wounds, decreased bowel sounds, tenderness.
- Extremities: Needle marks, wounds, ecchymoses.
- Neuro: Mental status exam, mood, affect, depressed mood, rapid-pressured speech; tremor, clonus, hyperactive reflexes.
- ECG Signs of Antidepressant Overdose: QRS widening, PR or QT prolongation, AV block, ventricular tachycardia, Torsades de pointes ventricular arrhythmia.
- **Labs:** Electrolytes, BUN, creatinine, glucose; ABG. Alcohol, acetaminophen levels; chest X-ray, urine toxicology screen.

### **Alcohol Withdrawal**

- Chief Compliant: The patient is a 50 year old white male with alcoholism who presents with tremor and agitation after discontinuing alcohol 12 hours prior to admission.
- History of the Present Illness: Determine the amount and frequency of alcohol use and other drug use in the past month, week, and day. Time of last alcohol consumption; tremors, anxiety, nausea, vomiting; diaphoresis, agitation, fever, abdominal pain, headaches; hematemesis, melena, past withdrawal reactions; history of delirium tremens, hallucinations, chest pain. Age of onset of heavy drinking.
- Determine whether the patient ever consumes five or more drinks at a time (binge drinking). Drug abuse. Effects of the alcohol or drug use on the patient's life,

Past Medical History: Gastritis, ulcers, GI bleeding; hepatitis, cirrhosis, pancreatitis, drug abuse. Family History: Alcoholism. Physical Examination

General Appearance: Poor nutritional status, slurred

Neuro: Mood, affect, speech patterns, depressed mood. Cranial nerves 2-12, reflexes, ataxia. Asterixis, decreased vibratory sense (peripheral neuropathy). Wernicke's Encephalopathy: Ophthalmoplegia, ataxia,

Korsakoff's Syndrome: Retrograde or antegrade amne-

Labs: Electrolytes, magnesium, glucose, liver function tests, CBC, mean corpuscular volume, gammaglutamyltransferase, aspartate aminotransferase (AST), alanine aminotransferase (ALT), carbohydrate-deficient

Differential Diagnosis of Altered Mental Status: Alcohol intoxication, hypoglycemia, narcotic overdose, meningitis, drug overdose, head trauma, alcoholic ketoacidosis, anticholinergic poisoning, sedativehypnotic withdrawal, intracranial hemorrhage.

transferrin (CDT). UA; chest X-ray; ECG.

History of blackouts or motor vehicle crashes.

including problems with health, family, job or financial

speech, disorientation, diaphoresis.

Vital Signs: BP (hypertension), pulse (tachycardia),

respiratory rate, temperature (hyperthermia). HEENT: Signs of head trauma, ecchymoses. Conjunctival

status or the legal system.

injection, icterus, nystagmus, extraocular movements,

pupil reactivity.

Rectal: Occult blood.

ridge to ring finger).

sia, confabulation.

confusion (thiamine deficiency).

(cirrhosis).

Chest: Rhonchi, crackles (aspiration), gynecomastia

Heart: Irregular rhythm, murmurs. Abdomen: Liver tenderness, hepatomegaly or liver atrophy, liver span, splenomegaly, ascites. Genitourinary: Testicular atrophy, hernias.

Skin: Jaundice, spider angiomas (stellate arterioles with

branching capillaries), palmar erythema, muscle atrophy (stigmata of liver disease); needle tracks.

Extremities: Dupuytren's contracture (fibrotic palmar

### Commonly Used Formulas

A-a gradient =  $[(P_B-PH_2O) FiO_2 - PCO_2/R] - PO_2$  arterial = (713 x FiO<sub>2</sub> - pCO<sub>2</sub>/0.8) -pO<sub>2</sub> arterial

 $P_B$  = 760 mmHg;  $PH_2O$  = 47 mmHg ;  $R \approx 0.8$ 

normal Aa gradient <10-15 mmHg (room air)

Arterial oxygen capacity =(Hgb(gm)/100 mL) x 1.36 mL O<sub>2</sub>/gm Hgb

Arterial  $O_2$  content = 1.36(Hgb)(SaO<sub>2</sub>)+0.003(PaO<sub>2</sub>)= NL 20 vol%

O<sub>2</sub> delivery = CO x arterial O<sub>2</sub> content = NL 640-1000 mL O<sub>2</sub>/min

Cardiac output = HR x stroke volume

Normal CO = 4-6 L/min SVR = MAP - CVP x 80 = NL 800-1200 dyne/sec/cm<sup>2</sup> CO<sub>L/min</sub>

 $PVR = PA - PCWP \times 80 = NL 45-120 dyne/sec/cm^2$ 

CO <sub>L/min</sub> 

85 (females) x serum Cr (mg/dL) Normal creatinine clearance = 100-125 mL/min(males),

85-105(females) Fractional excreted Na = U Na/ Serum Na x 100 = NL<1% U Cr/ Serum Cr

Anion Gap = Na - (CI + HCO3) For each 100 mg/dL increase in glucose, Na+ decrease

Ideal body weight males = 50 kg for first 5 feet of height +

2.3 kg for each additional inch.

Ideal body weight females = 45.5 kg for first 5 feet + 2.3 kg for each additional inch.

Females=655+(9.6 x actual weight Kg)+(1.7 x height)cm)-(4.7 x age) Nitrogen Balance = Gm protein intake/6.25 - urine urea

Males=66 + (13.7 x actual weight Kg) + (5 x height -

nitrogen - (3-4 gm/d insensible loss) Predicted Maximal Heart Rate = 220 - age

0.12-0.20

0.31-0.41 0.29-0.38 0.28-0.36 0.27-0.35

Normal ECG Intervals (sec)

PR

70

80 90 100

by 1.6 mEq/L.

Basal energy expenditure (BEE):

cm)-(6.8 x age)

0.06-0.08 Heart rate/min Q-T 60 0.33-0.43

QRS

Commonly Used Drug Levels			
Drug	Therapeutic Range		
Amikacin  Amiodarone Amitriptyline Carbamazepine Desipramine Digoxin Disopyramide Doxepin Flecainide Gentamicin  Imipramine Lidocaine Lithium Mexiletine Nortriptyline Phenobarbital Phenytoin Procainamide Quinidine Salicylate Streptomycin Theophylline Tocainide Valproic acid Vancomycin	Therapeutic Range  Peak 25-30; trough <10 mc-g/mL 1.0-3.0 mcg/mL 100-250 ng/mL 4-10 mcg/mL 150-300 ng/mL 0.8-2.0 ng/mL 2-5 mcg/mL 75-200 ng/mL 0.2-1.0 mcg/mL Peak 6.0-8.0; trough <2.0 mcg/mL 150-300 ng/mL 150-300 ng/mL 2-5 mcg/mL 150-300 ng/mL 0.5-1.4 mEq/L 1.0-2.0 mcg/mL 10-30 mcg/mL 10-30 mcg/mL 4-08.0 mcg/mL 4-25 mcg/mL 4-08.0 mcg/mL 4-08.0 mcg/mL 55-50 mcg/mL 15-25 mg/dL Peak 10-20; trough <5 mcg/mL 8-20 mcg/mL 4-10 mcg/mL 50-100 mcg/mL Peak 30-40; trough <10 mc-		

### **Commonly Used Abbreviations**

Oomin	only osed Abbreviations
½ NS	0.45% saline solution
ac	ante cibum (before meals)
ABG	arterial blood gas
ac ACTH	before meals adrenocorticotropic hormone
ad lib	ad libitum (desired)
ADH	antidiuretic hormone
AFB	acid-fast bacillus
alk phos ALT	alkaline phosphatase alanine aminotransferase
am	morning
AMA	against medical advice
amp AMV	ampule assisted mandatory ventilation; assist mode
	ventilation
ANA ante	antinuclear antibody before
AP	anteroposterior
ARDS	adult respiratory distress syndrome
ASA	acetylsalicylic acid
AST bid	aspartate aminotransferase bis in die (twice a day)
B-12	vitamin B-12 (cyanocobalamin)
BM	bowel movement
BP BUN	blood pressure blood urea nitrogen
C/O	complaint of
С	cum (with)
C and S	culture and sensitivity
C Ca	centigrade calcium
cap	capsule
CBC	complete blood count; includes hemoglobin,
	hematocrit, red blood cell indices, white blood cell count, and platelets
CC	cubic centimeter
CCU	coronary care unit
cm CMF	centimeter cyclophosphamide, methotrexate, fluorouracil
CNS	central nervous system
CO <sub>2</sub>	carbon dioxide
COPD	chronic obstructive pulmonary disease
CPK-MB CPR	myocardial-specific CPK isoenzyme cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CT	computerized tomography
CVP CXR	central venous pressure Chest X-ray
d/c	discharge; discontinue
D5W	5% dextrose water solution; also D10W,
DIC	D50W disseminated intravascular coagulation
diff	differential count
DKA	diabetic ketoacidosis
dL DOSS	deciliter docusate sodium sulfosuccinate
DTs	delirium tremens
ECG	electrocardiogram
ER ERCP	emergency room endoscopic retrograde
LIXOI	cholangiopancreatography
ESR	erythrocyte sedimentation rate
ET ETOH	endotracheal tube alcohol
FEV <sub>1</sub>	forced expiratory volume (in one second)
FiO <sub>2</sub>	fractional inspired oxygen
g GC	gram(s) gonococcal; gonococcus
GFR	glomerular filtration rate
GI	gastrointestinal
gm	gram
gt gtt	drops
h	hour
H <sub>2</sub> 0	water
HBsAG HCO <sub>3</sub>	hepatitis B surface antigen bicarbonate
Hct	hematocrit
HDL	high-density lipoprotein
Hg Hgb	mercury hemoglobin concentration
HIV	human immunodeficiency virus
hr	hour
hs IM	hora somni (bedtime, hour of sleep)
I and O	intramuscular intake and outputmeasurement of the pa-
	tient's intake and output

IU	international units
icu	intensive care unit
IgM IMV	immunoglobulin M
INH	intermittent mandatory ventilation isoniazid
INR	International normalized ratio
IPPB IV	intermittent positive-pressure breathing intravenous or intravenously
IVP	intravenous pyelogram; intravenous piggy-
K⁺	back
kcal	potassium kilocalorie
KCL	potassium chloride
KPO₄ KUB	potassium phosphate X-ray of abdomen (kidneys, ureters, bowels)
L	liter
LDH LDL	lactate dehydrogenase low-density lipoprotein
liq	liquid
LLQ	left lower quadrant
LP LR	lumbar puncture, low potency lactated Ringer's (solution)
MB	myocardial band
MBC mcg	minimal bacterial concentration microgram
mEq	milliequivalent
mg Mg	milligram magnesium
MgSO₄	Magnesium Sulfate
MI	myocardial infarction
MIC mL	minimum inhibitory concentration milliliter
mm	millimeter
MOM MRI	Milk of Magnesia magnetic resonance imaging
Na	sodium
NaHCO <sub>3</sub> Neuro	sodium bicarbonate neurologic
NG	nasogastric
NKA	no known allergies
NPH NPO	neutral protamine Hagedorn (insulin) nulla per os (nothing by mouth)
NS	normal saline solution (0.9%)
NSAID O <sub>2</sub>	nonsteroidal anti-inflammatory drug oxygen
OD	right eye
oint OS	ointment left eye
Osm	osmolality
OT	occupational therapy
OTC OU	over the counter each eye
OZ	ounce
p, post pc	after post cibum (after meals)
PA	posteroanterior; pulmonary artery
PaO <sub>2</sub> pAO <sub>2</sub>	arterial oxygen pressure partial pressure of oxygen in alveolar gas
PB	phenobarbital
pc pCO <sub>2</sub>	after meals partial pressure of carbon dioxide
PEEP	positive end-expiratory pressure
per	by
pH PID	hydrogen ion concentration (H+) pelvic inflammatory disease
pm	afternoon
PO pO₂	orally, per os partial pressure of oxygen
polys	polymorphonuclear leukocytes
PPD PR	purified protein derivative per rectum
prn	pro re nata (as needed)
PT PTCA	physical therapy; prothrombin time percutaneous transluminal coronary
1 10/1	angioplasty
PTT PVC	partial thromboplastin time premature ventricular contraction
q	quaque (every) q6h, q2h every 6 hours;
aid	every 2 hours
qid qAM	quarter in die (four times a day) every morning
qd	quaque die (every day)
qh qhs	every hour every night before bedtime
qid	4 times a day
qOD qs	every other day quantity sufficient
R/O	rule out
RA Resn	rheumatoid arthritis; room air; right atrial
Resp RL	respiratory rate Ringer's lactated solution (also LR)
	·

ROM	range of motion
rt	right
S	sine (without)
s/p	status post
sat	saturated
SBP	systolic blood pressure
SC	subcutaneously
SIADH	syndrome of inappropriate antidiuretic hor-
CI.	mone
SL	sublingually under tongue
SLE SMA-12	systemic lupus erythematosus
SIVIA-12	sequential multiple analysis; a panel of 12 chemistry tests. Tests include Na <sup>+</sup> , K <sup>+</sup> , HCO3
	, chloride, BUN, glucose, creatinine, bilirubin,
	calcium, total protein, albumin, alkaline phos-
	phatase.
SMX	sulfamethoxazole
sob	shortness of breath
sol	solution
SQ	under the skin
SS	one-half
STAT	statim (immediately)
susp	suspension
tid .	ter in die (three times a day)
T4	Thyroxine level (T4)
tab	tablet
TB	tuberculosis
Tbsp	tablespoon
Temp	temperature
TIA	transient ischemic attack
tid	three times a day
TKO	to keep open, an infusion rate (500 mL/24h)
	trimethoprim-sulfamethoxazole combination
TPA	tissue plasminogen activator
TSH	thyroid-stimulating hormone
tsp	teaspoon
U UA	units
URI	urinalysis upper respiratory infection
Ut Dict	as directed
UTI	urinary tract infection
VAC	vincristine, adriamycin, and
	cyclophosphamide
vag	vaginal
vč	vital capacity
VDRL	Venereal Disease Research Laboratory
VF	ventricular function
V fib	ventricular fibrillation
VLDL	very low-density lipoprotein
Vol	volume
VS	vital signs
VT	ventricular tachycardia
W	water
WBC	white blood count
Х	times