1. An 82-year-old woman was brought to the emergency department because she fell in the snow and was unable to get up. It is not clear how long she had lain on the snow before a neighbor found her. Her medications are nortriptyline, recently started for depression, a multivitamin, docusate, and occasional acetaminophen. She is admitted for a pulse of 46/min and a temperature of 35.5 degrees C. Shortly after admission, she became agitated and was successfully treated with haloperidol, but subsequently she has become progressively obtunded and unresponsive.

On physical examination, she is comatose, cyanotic, and hypoventilating. Her face and eyelids are puffy, and her skin is dry and yellowish. Neurologic examination demonstrates myoclonic jerking in multiple muscles and generalized hyporeflexia. Tapping on a muscle with a reflex hammer produces a transient swelling that resolves spontaneously.

Which of the following is most likely to improve this patient’s condition?

A. Lactulose  
B. Phenytoin  
C. Potassium  
D. Pyridostigmine  
E. Thyroxine

2. A 79-year-old woman who lives in a nursing home develops abdominal distention and emesis. She has no history of abdominal complaints, change in appetite, or weight loss. Medical problems include Parkinson’s disease, immobility, hypertension, heart failure, and hypothyroidism. Current medications are a calcium channel blocker, a diuretic, digoxin, levothyroxine, and carbidopa-levodopa.

Temperature is 36.3 degrees C. Pulse rate is 72 per minute. Blood pressure is 170/90 mm Hg. The abdomen is distended but nontender. Bowel sounds are hypoactive. Hard feces are present in the rectal vault; a fecal specimen tests negative for occult blood. Abdominal radiographs reveal a slightly dilated colon. Results of a CBC, electrolytes, creatinine, liver function studies, and urinalysis are normal.

Which of the following is the most appropriate next step?

A. Abdominal ultrasonography  
B. Colonoscopy  
C. Discontinue the calcium channel blocker  
D. Administration of enemas  
E. Addition of a promotility agent

3. A 70-year-old man comes to the emergency department because he has increased difficulties with urination, including poor stream, straining to void, and incontinence. History includes transient ischemic attack, hypertension, diabetes mellitus type 2 with neuropathy, and osteoarthritis. Current medications include clopidogrel 75 mg/day, lisinopril 10 mg/day, glipizide 10 mg/day, naproxen 500 mg q 12 hours, and nortriptyline 50 mg/day (increased 2 weeks ago from 25 mg for peripheral neuropathy). He does not have insurance for his medications and has a history of not filling prescriptions if they “cost too much.” A urinalysis performed today shows 0-5 WBCs and is negative for bacteria and leukocyte esterase.

Which of the following is the most appropriate next step?

A. Discontinue naproxen  
B. Discontinue nortriptyline  
C. Begin oxybutynin  
D. Assess postvoid residual urine  
E. Order a prostate-specific antigen test
4. An 84-year-old woman comes to the emergency department because she has fatigue and weakness, especially in the morning. At times she finds herself stumbling and veering while walking, and she has to sit to recover her equilibrium. She has twice had to sit down to avoid falling, but she denies feeling lightheaded. History includes hypertension, urinary incontinence, and osteoarthritis. Medications include hydrochlorothiazide 25 mg/d, oxybutynin 10 mg at bedtime, lisinopril 10 mg/d, calcium carbonate 500 mg q 8 h, and acetaminophen 1000 q 8 h.

On examination, blood pressure while sitting is 118/70 mmHg in her right arm; pulse is 80 and regular. Her movements are slow. She has a mild resting tremor in her hands, greater in the right than in the left. She rises from a chair slowly but without using her arms. She walks stooped forward, with decreased arm swing. She turns carefully but without losing balance. She is unable to stand on one leg.

Which of the following is most likely to yield information that would help reduce her risk of falling?

A. Testing her visual acuity
B. Administering the Berg balance test
C. Measuring her blood pressure when she is lying down and standing
D. Ordering MRI of the brain

5. A 74-year-old man comes to the emergency department because he has pain in his right arm. He had a stroke with right hemiparesis 4 months ago and underwent 2 weeks of inpatient rehabilitation. On examination of the right arm, he has trace muscle strength at the shoulder. Muscle tone is slightly spastic. Passive range of motion of the shoulder and elbow is complete but elicits pain. There is swelling over the hand and slight erythema of the hand and forearm. The skin is sensitive to touch. There are no lesions on the hand or arm. Vital signs are normal.

Which of the following is the next step in management of this patient?

A. Physical therapy consultation
B. Elevation of patient’s arm on a pillow while sleeping
C. Diagnostic ultrasonography of the arm
D. Nighttime elastic wrapping of right hand and forearm
E. Empiric antibiotic treatment

6. A 60-year-old man is brought to the emergency department by his family because he has difficulty walking and is becoming increasingly confused. He has a history of alcoholism. On examination, he is unable to move his eyes horizontally, and he has upbeat nystagmus, dysmetria of the extremities, and severe ataxia.

Which of the following vitamins is most likely to be deficient in this patient?

A. Vitamin B₁
B. Vitamin B₆
C. Vitamin B₁₂
D. Vitamin E
E. Vitamin K
7. An 83-year-old man with mild dementia lives alone in a suburban area not served by public transportation. He continues to drive despite having had one moving violation and one minor accident in the past year. His nearest family member lives more than 40 minutes away. He has a score of 27 on the Mini-Mental State Examination. When a discussion is initiated about his driving, he says he is a good driver and that forcing him to stop would be like “cutting off my legs.” He limits his driving to local stores and does not drive at night or on the highway any more. His family agrees that he is a safe driver. His corrected visual acuity is better than 20/40, he does not have any physical limitations, and he does not drink alcohol or use any medications that might affect his alertness.

Which of the following is the most appropriate next step in assessing this patient’s safety as a driver?

A. No further assessment is necessary  
B. He should stop driving  
C. He should have formal neuropsychologic testing  
D. He should have a formal driving evaluation

8. In older adults, benzodiazepines that are metabolized by oxidation have a decreased clearance, thus a prolonged half-life. Which of the following benzodiazepines is principally metabolized by this route?

A. Clonazepam  
B. Lorazepam  
C. Oxazepam  
D. Temazepam

9. An 85-year-old man is brought to the emergency room by his family because he sees hallucinations of children and small animals when his is alone in a room. At times he has been disturbed and agitated by these hallucinations. His family also notes that he is having more difficulty walking and at times has had tremors when he sits quietly. He has a 1-year history of short-term memory loss and word-finding difficulties. Examination is unremarkable except for cogwheel rigidity and resting tremors.

Which of the following is the most likely diagnosis?

A. Parkinson’s disease  
B. Alzheimer’s disease  
C. Dementia with Lewy bodies  
D. Huntington’s disease

10. You are asked to evaluate an 82-year-old man who lives in a nursing home and who has a chronic headache. He is hard of hearing but can understand questions with prompting. The patient describes the headache as mild but progressive since its onset several months ago. Neurologic examination reveals no focal findings. He has point tenderness over many bony prominences, and the skull appears to be enlarged. Serum alkaline phosphatase is 900 U/L, and urine hydroxyproline is 250 mg/dL.

Which of the following should you order next?

A. Audiometry  
B. Radiography of the head  
C. MRI of the head  
D. Bone scan  
E. Needle biopsy of bone
11. A frail 91-year-old woman with Alzheimer’s dementia (recent Mini-Mental State Examination score of 12) is transferred to the emergency department from her nursing home for evaluation and management of severe agitation. For the past 2 days, she has been irritable, pacing, and threatening to hit other residents. She has also been having more trouble sleeping and has made vague claims that others are trying to harm her. A few hours ago, she punched another resident. The patient has a history of heart disease and mild chronic obstructive pulmonary disease both currently under good control. She also has a history of recurrent urinary tract infections. In the emergency department, she was cooperative during triage evaluation, which revealed normal vital signs and physical examination. After being placed in a room, she left her bed and walked the hall, seeming confused. When redirected back to her room, she became agitated, insisted that she had to go home, and would not cooperate with testing.

What is the most appropriate next step in the management of this patient?

A. Administer lorazepam 1 mg IM
B. Administer haloperidol 2 mg IM
C. Assign a nurse to spend one-on-one time with her
D. Administer olanzapine 5 mg sublingually
E. Restrain the patient to obtain blood and urine samples for evaluation

12. A 75-year-old man presents at the emergency department because he has had a slight distortion in the vision in this left eye over the past 2 days. The edge of a door seems wavy, not straight. He has a history of hypertension and macular degeneration in his right eye, wears eyeglasses, and has a 50 pack/year smoking history. Visual acuity via Snellen distance chart is 20/40.

Which of the following is the most appropriate recommendation?

A. See an ophthalmologist urgently for evaluation.
B. See an optometrist within 1 week for a full examination.
C. See a primary care physician urgently for blood-pressure control.
D. See an optician at his convenience to straighten his glasses.

13. A 72-year-old man comes to the emergency department because of constant right lower quadrant abdominal pain that has been present for almost 48 hours. He has nausea and anorexia but no fever, chills, vomiting, diarrhea, hematochezia, hematuria, or dysuria.

One physical examination, his abdomen is soft to palpation and tender in the right lower quadrant, with voluntary guarding. Bowel sounds are hypoactive. A fecal sample collected via rectal examination is negative for occult blood.

Laboratory values include hemoglobin of 12.6 g/dL and WBC count of 14,800. Amylase and liver chemistries are normal. Abdominal radiograph reveals a nonspecific has pattern.

What is the most appropriate next step to establish the diagnosis?

A. Ultrasound of the abdomen
B. Gastrografin enema
C. CT of abdomen
D. Small-bowel series
E. Colonoscopy
14. A 92-year old woman is being treated with paroxetine for major depression. Her overall physical and cognitive status is otherwise good. She has mild hypertension and osteoarthritis, and she takes a thiazide diuretic and acetaminophen. Ten days after paroxetine is started, the patient’s daughter calls to report that her mother is lethargic and confused.

Which of the following metabolic disturbances is the most likely cause of this patient’s delirium?

A. Hyponatremia  
B. Hypernatremia  
C. Hypoglycemia  
D. Hyperglycemia

15. The wife of a 79-year-old man tells you that her husband “has not been acting right” since breakfast. He is leaning forward, drooling, and producing large amounts of saliva. Food “comes right back up” when he eats, and he has been coughing but is not short of breath. The patient has severe dementia, and his speech has been garbled ever since he suffered a stroke several years ago. When the wife asks the patient what is wrong, he points to his sternum but cannot describe what he is feeling. The wife notes no change in speech and no new weakness.

Which of the following is the most likely diagnosis?

A. New stroke  
B. Esophageal foreign body  
C. Gastric ulcer with outlet obstruction  
D. Zenker’s diverticulum  
E. Pneumonia

16. An 82-year-old man falls, sustains a right intertrochanteric fracture. The patient has dementia and systolic hypertension and resides in a long-term care facility. He had an uncomplicated myocardial infarction 10 years ago but has had no further clinical manifestations of coronary artery disease. He takes an ACE inhibitor and aspirin. He previously ambulated without assistance and his nutritional status is good. His advance directive requests active treatment of all medical conditions.

The patient is agitated and confused. Pulse rate is 84 per minute, and respirations are 16 per minute. Blood pressure is 150/90 mmHg. Findings of physical examination are normal except for severe pain on rotation of the right leg. Routine laboratory studies and chest radiograph also are normal. ECG shows normal sinus rhythm and no ischemic changes; findings are unchanged from previous tracings. The orthopedic surgeon plans internal fixation and interoperative reduction of the fracture.

Which of the following decisions regarding the timing of surgery is most appropriate?

A. Medical management is indicated  
B. Coronary angiography is indicated before surgery  
C. Surgery should be deferred for 3 to 4 days to permit a more thorough evaluation  
D. Surgery should be deferred to achieve better pain control  
E. Surgery should be performed as soon as possible

17. A 70-year-old patient is evaluated for fever, chills, nausea, vomiting, and headache for 3 days. Over the past 2 days, progressive and prominent weakness of her right leg and some urinary incontinence have developed. The patient is mildly lethargic but without meningismus. Her right leg is flaccid, and she is unable to move it. Mild weakness is evident in the left leg and right arm, but the left arm is normal. Reflexes are absent in the right leg and reduced in the left leg and right arm, but sensation is intact throughout. A mild tremor involving the chin and both arms is also evident.
Which of the following is the most likely diagnosis?

A. Amyotrophic lateral sclerosis  
B. Guillain-Barre syndrome  
C. Hypokalemic periodic paralysis  
D. Poliomyelitis  
E. West Nile virus infection

18. A 79-year-old man comes to the emergency department because he has had a generalized, throbbing, almost constant headache for the past 3 weeks. He has no previous history of headache. No obvious factor precipitated the headache, although the patient notes that chewing food seems to accentuate jaw pain. Two days ago, he lost vision in his left eye for 5 minutes; this resolved spontaneously. Earlier today, he suddenly lost hearing in his left ear. His current medications include aspirin and folic acid. Examination is normal except for the hearing loss. Is this headache of traumatic origin?

Which of the following is the most appropriate treatment?

A. Prednisone  
B. Clopidogrel  
C. Heparin  
D. Phenytoin  
E. Azathioprine

19. An 85-year-old woman has not urinated in 12 hours. Medical history includes heart failure and hypertension. She was seen in the emergency department 4 days ago because of a 1-week history of malaise, nausea, and vomiting. A diagnosis of “possible urinary tract infection” was made, and symptoms responded to the prescribed medication.

The patient reports some muscle aching today. She has lost 2.5 kg over the past 2 months. Pulse rate is 80 per minute sitting and 100 per minute standing; blood pressure is 120/84 mmHg sitting and 110/84 mmHg standing. The patient is “a little dizzy” when she stands. Mental status is at baseline.

Laboratory studies:

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUN</td>
<td>76 mg/dL</td>
</tr>
<tr>
<td>Creatinine</td>
<td>3.0 mg/dL</td>
</tr>
<tr>
<td>Sodium</td>
<td>140 mEq/L</td>
</tr>
<tr>
<td>Potassium</td>
<td>5.8 mEq/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>90 mEq/L</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>28 mEq/L</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>0-3 red blood cells, 0-3 white blood cells per high-power field; granular casts and needle-shaped crystals</td>
</tr>
</tbody>
</table>

Of the following medications taken by this patient, which is the most likely cause of acute renal failure?

A. Digoxin  
B. Diphenhydramine  
C. Hydrochlorothiazide  
D. Lisinopril  
E. Trimethoprim-sulfamethoxazole
20. Which of the following is the strongest predictor for failure to achieve independent ambulation after surgical repair of a hip fracture?

A. Cognitive status  
B. Age  
C. Incontinence  
D. Premorbid functional status  
E. Depression

21. A 71-year-old woman comes to the emergency department for treatment of her anxiety. Her husband died 8 months ago, and she recently moved to the city to be near her daughter. She has a 45-year history of generalized anxiety disorder, for which she has taken diazepam 10 mg/d for the past 30 years. She asks for a prescription to continue the diazepam until she can establish care with a local doctor.

Which of the following is most appropriate at this time?

A. Continue diazepam  
B. Withdraw diazepam  
C. Substitute buspirone for diazepam  
D. Substitute venlafaxine for diazepam

22. A 79-year-old man, who has coronary artery disease and heart failure, comes to the emergency department because of nausea, vomiting, headache, and abdominal pain. Symptoms began 3 days ago. Current medications are warfarin, furosemide, digoxin, captopril, vitamin E, and a multivitamin. The patient had been stable on this regimen for 10 years, until the furosemide dosage was increased last week to better control symptoms of heart failure.

Which of the following toxicities is the most likely cause of this patient’s problems?

A. Digoxin  
B. Furosemide  
C. Warfarin  
D. Vitamin E  
E. Captopril

23. A 79-year-old man is brought to the emergency department because of dense right hemiplegia and mental status changes that were present when he awoke this morning. His wife states that he has been well recently except for increasing headaches during the past few weeks; acetaminophen has provided little relief. His chronic medical problems include mild obesity; type 2 diabetes mellitus, controlled by diet (hemoglobin A1C 7.2%); and essential hypertension, treated with lisinopril. He has not smoked cigarettes in about 50 years, and he rarely drinks alcohol.

Blood pressure is 200/100 mmHg. Temperature is 37.2 C. Pulse rate is 64 per minute, and respirations are 16 per minute. Oxygen saturation is 97%. The liver edge is palpable 2 cm below the right costal margin, and the spleen tip is palpable 6 cm below the left costal margin. The right side is flaccid.

Hematocrit is 58%. WBC count is 10,000 and platelet count is 600,000. Other routine laboratory studies are normal. CT of the head shows a large infarct in the left middle cerebral artery, without hemorrhage.

Which of the following tests should you order next?

A. Peripheral blood film and serum erythropoietin  
B. Red cell mass and serum erythropoietin  
C. Overnight oximetry and arterial blood gas studies  
D. Red cell mass and serum protein electrophoresis  
E. Serum protein electrophoresis and bone marrow biopsy
24. A 65-year-old white woman has the sudden onset of mid-thoracic back pain. Spine films demonstrate a T8 compression fracture. The patient takes calcium 1500 mg/day and vitamin D 800 IU/d. She also has had intermittent courses of prednisone, 5-10 mg/d, for chronic asthma.

Which of the following should you recommend next?

A. An aggressive regimen of weight-bearing exercise
B. Increase calcium to 2000 mg/d and vitamin D to 1000 IU/d
C. Raloxifene
D. Alendronate

25. An 86-year-old woman is brought into the emergency room for confusion. She had been living in a long-term care facility. The patient has osteoarthritis that has been treated intermittently with NSAIDs. She also has residual left-sided weakness after a stroke 10 years ago and ambulates with a walker. Atrial fibrillation was detected at the time of the stroke, and warfarin was begun. Several days ago, INR was 2.0. Her only other complaint is mild forgetfulness. The patient has received amantadine prophylaxis (200 mg/d), as have other residents because of an influenza outbreak.

In the emergency department, she is only minimally responsive to voice commands. Temperature is 37.6 C. Pulse rate is 72 per minute, and rhythm is irregular. Respirations are 16 per minute. Blood pressure is 120/74 mmHg. There is no nuchal rigidity. Lung findings are unremarkable; cardiac examination is normal except for the irregular rhythm. The abdomen is soft, and bowel sounds are normal. No pedal edema or venous cords are present. Except for the blunted sensorium, no new neurologic findings are noted. Cranial nerve examination is normal.

Laboratory studies:
- WBC count: 10,000, normal differential
- BUN: 32 mg/dL
- Creatinine: 2.3 mg/dL
- Serum electrolytes: Normal
- Serum calcium: Normal
- Serum phosphorus: Normal
- Serum magnesium: Normal

Which of the following is the most likely explanation for the patient’s condition?

A. Embolic stroke secondary to atrial fibrillation
B. Intracerebral bleeding
C. Subarachnoid hemorrhage
D. Adverse reaction to amantadine
E. Influenza A encephalitis

26. A 70-year-old woman has fallen several times in the past 6 months. She has chronic agitation and depression that is well controlled with paroxetine and lorazepam. Physical examination reveals no major risk factors for falls.

Which of the following is the most reasonable next step?

A. Substitute nortriptyline for paroxetine
B. Discontinue lorazepam
C. Discontinue paroxetine
D. Discontinue paroxetine and lorazepam
27. A 79-year-old man with a history of prostate cancer comes to the emergency department because he has had worsening back pain for 3 weeks. He recalls no recent accident or injury. The pain limits his ability to dress and bathe himself, and he has become increasingly dependent on his wife. He cannot get comfortable in his bed and has been sleeping in a reclining chair for the past few nights. He took acetaminophen with codeine last night with no relief.

Physical examination is normal except for tenderness on palpation over his lower spine. Previous bone scan demonstrates metastatic disease in the lumbar spine and pelvis.

Which of the following is the most appropriate initial management strategy for this patient’s pain?

A. Immediate-release oxycodone
B. Sustained-release oxycodone
C. Propoxyphene
D. Transdermal fentanyl
E. Acetaminophen with codeine

28. A 78-year-old thin woman comes to the emergency department because she has acute lower back that began when she tried to open a stuck window. The pain is so severe that she has difficulty standing or sitting. The pain lessens when she lies down, and increases when she rolls to the side. The pain does not radiate to her legs.

On physical examination, there is marked tenderness in the mid lumbar spine area and moderate paravertebral muscle spasm in the lumbar region. Bilateral straight leg raise tests are normal. She has full motor strength of the proximal and distal muscles of both lower legs.

Radiography of the lumbar spine shows diffuse disk space narrowing and vertebral osteophytosis throughout the lumbar region.

What is the most likely diagnosis?

A. Herniated lumbar disk at L-4, L-5
B. Instability of the lumbar spine
C. Lumbar spinal stenosis
D. Vertebral compression fracture
E. Ruptured abdominal aortic aneurysm

29. A 74-year-old man is brought to the emergency department because of severe right retromandibular pain and left hemiparesis. Symptoms began suddenly about 6 hours ago and have fluctuated in severity. The patient began having chiropractic treatments twice a week for neck pain after an auto accident 3 weeks ago. Physical examination reveals right ptosis and miosis, as well as mild left hemiparesis and hemisensory deficit. Angiography is most likely to demonstrate which of the following?

A. Cavernous sinus thrombosis
B. Basilar artery thrombosis
C. Pituitary apoplexy
D. Anterior communicating artery aneurysm
E. Carotid artery dissection
30. An 85-year-old woman who lives in a nursing home is found unconscious on the bathroom floor at 9:00 A.M. An hour earlier, she had eaten breakfast and taken her usual medications: aspirin 80 mg, furosemide 40 mg, captopril 25 mg, atenolol 25 mg, isosorbide dinitrate 40 mg, and haloperidol 0.5 mg. She has dementia, hypertension, cerebrovascular disease, chronic heart failure, stable coronary artery disease, and agitation. Recent 24-hour ambulatory ECG monitoring showed intermittent sinus tachycardia.

On evaluation in the emergency department, the patient is alert and cooperative. Pulse rate is 100 per minute and blood pressure is 104/72 mmHg. Mental status is at baseline, and there is no evidence of head trauma. Coarse bibasilar crackles are noted, and a grade 2/6 systolic ejection murmur is audible at the left sternal border. The jugular veins are not distended, and there is no peripheral edema. Neurologic examination is unchanged with slight right-sided hemiparesis and positive Babinski’s reflexes bilaterally. ECG shows sinus tachycardia; old Q waves; ST-segment depression in leads II, III, and AVF; and left ventricular hypertrophy. Chest radiograph shows cardiomegaly but no infiltrates. CBC is normal, as are serum electrolytes and cardiac enzymes. BUN is 40 mg/dL, and serum creatinine is 1.2 mg/dL. Which of the following is the most appropriate next step?

A. Discharge her to the nursing home and discontinue all unnecessary medications.
B. Discharge her to the nursing home and increase B-blocker dosage to maintain pulse rate <80 per minute
C. Discharge her to the nursing home after obtaining CT of the head; order repeat 24-hour Holter monitoring.
D. Admit her to the telemetry unit to monitor for arrhythmias and exclude myocardial infarction
E. Admit her to the hospital for CT of the head, carotid Doppler studies, and tilt testing.