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Synthesize
USMLE Step 2

December 2025

Question 1.1 (Mc Nj) Step 2

Question

A 68-year-old man is brought to the emergency department because of a 2-day history of progressive lethargy and tremors. He has alcoholism and opiate, cocaine, and amphetamine use disorder, but he has abstained from alcohol and illicit substances during the past 2 weeks. He also has alcoholic cirrhosis. His only medication is a daily multivitamin. He previously drank six 12-oz beers daily. He appears chronically ill and is somnolent. Temperature is 36.8°C (98.2°F), pulse is 100/min, respirations are 18/min, and blood pressure is 100/60 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 94%. Examination shows conjunctival icterus, ascites, and 2+ edema of the lower extremities. Cranial nerves are intact. Muscle strength is 4/5 throughout. When he is awake, there is a postural and action tremor of the forearms and hands that is accompanied by a sudden, brief loss of muscle strength. His speech is normal, and he is able to follow simple commands. Serum total bilirubin concentration is 3 mg/dL. Blood and urine cultures grow no pathogens.

Which of the following is most likely to improve this patient's cognition and movement disorder?

(A) Intravenous vancomycin and cefepime therapy
(B) Intravenous vitamin B1 (thiamine) therapy
(C) Oral lactulose therapy
(D) Oral lorazepam therapy

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Answer: Oral lactulose therapy (Choice C).

Rationale: In a patient with cirrhosis and clinical features consistent with overt hepatic encephalopathy, the American Association for the Study of Liver Diseases (AASLD) recommends lactulose as the first-choice therapy for episodic overt HE; episodes should be actively treated to improve mental status and related motor findings [1][2]. Additional society guidance aligns with this approach: the Society of Critical Care Medicine suggests nonabsorbable disaccharides (such as lactulose) in critically ill patients with ACLF and overt HE, supporting lactulose's role across severity settings [3].

For ongoing management after this episode, AASLD recommends lactulose to prevent recurrence and rifaximin as add-on therapy to reduce recurrent overt HE [4][5]. As part of comprehensive care, identify and treat precipitating factors for HE when present [6].

Taken together, these guideline recommendations make oral lactulose the option most likely to improve this patient's cognition and movement disorder now [1][2][3].

References

[1] Hepatic Encephalopathy in Chronic Liver Disease
American Association for the Study of Liver Diseases
2014-07-01
Lactulose is the first choice for treatment of episodic overt HE.
https://www.aasld.org/sites/default/files/2019-06/141022_AASLD_Guideline_Encephalopathy_4UFd_2015.pdf

[2] Hepatic Encephalopathy in Chronic Liver Disease
American Association for the Study of Liver Diseases
2014-07-01
An episode of overt HE (whether spontaneous or precipitated) should be actively treated.
https://www.aasld.org/sites/default/files/2019-06/141022_AASLD_Guideline_Encephalopathy_4UFd_2015.pdf

[3] Management of Adult Acute and Acute-on-Chronic Liver Failure in the ICU: Neurology, Peri-Transplant Medicine, Infectious Disease, and Gastroenterology Considerations
Society of Critical Care Medicine
2023-04-30
We suggest using nonabsorbable disaccharides in critically ill ACLF patients with overt hepatic encephalopathy.
https://journals.lww.com/ccmjournal/Fulltext/2023/05000/Guidelines_for_the_Management_of_Adult_Acute_and.11.aspx

[4] Hepatic Encephalopathy in Chronic Liver Disease
American Association for the Study of Liver Diseases
2014-07-01
25. Lactulose is recommended for prevention of recurrent episodes of HE after the initial episode.
https://www.aasld.org/sites/default/files/2019-06/141022_AASLD_Guideline_Encephalopathy_4UFd_2015.pdf

[5] Hepatic Encephalopathy in Chronic Liver Disease
American Association for the Study of Liver Diseases
2014-07-01
20. Rifaximin is an effective add-on therapy to lactulose for prevention of overt HE recurrence.
https://www.aasld.org/sites/default/files/2019-06/141022_AASLD_Guideline_Encephalopathy_4UFd_2015.pdf

[6] Hepatic Encephalopathy in Chronic Liver Disease
American Association for the Study of Liver Diseases
2014-07-01
18. Identify and treat precipitating factors for HE.
https://www.aasld.org/sites/default/files/2019-06/141022_AASLD_Guideline_Encephalopathy_4UFd_2015.pdf

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Question 2.1 (Mc Nj) Step 2

Question

A 45-year-old woman comes to the emergency department because of a 3-day history of progressive shortness of breath, cough productive of blood-tinged sputum, and fever. She also has a 3-month history of numbness of her left leg and tingling in her right arm. She has not had chills. She was diagnosed with asthma 6 months ago; it is well controlled with inhaled budesonide and albuterol as needed. She has no other history of serious illness and takes no other medications. She appears to be in mild respiratory distress. Temperature is 38.1°C (100.6°F), pulse is 105/min and regular, respirations are 24/min, and blood pressure is 145/95 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 92%. Crackles are heard at the right lung base, and there are occasional diffuse wheezes. Cardiac examination shows no abnormalities. On neurologic examination, sensation to pinprick is decreased over the lateral aspect of the left lower extremity and right upper extremity. Muscle strength is 5/5 throughout. Babinski sign is absent. Deep tendon reflexes are 2+ and symmetric.

Which of the following is the most appropriate next step in diagnosis?

(A) CT angiography of the chest
(B) Determination of serum angiotensin-converting enzyme activity
(C) Measurement of serum IgE concentration
(D) Mesenteric angiography
(E) Serum antiglomerular basement membrane assay
(F) Serum antineutrophil cytoplasmic autoantibody assay

(G) Sweat chloride testing

Correct Response:
F
Synthesize Response:
F✓

Synthesize Answer

Introduction

Most appropriate next step: Serum antineutrophil cytoplasmic autoantibody (ANCA) assay (MPO-/PR3-ANCA) [1].

Rationale: The combination of adult-onset asthma, hemoptysis with hypoxemia (concerning for diffuse alveolar bleeding), and asymmetric sensory neuropathy (mononeuritis multiplex) is highly suggestive of ANCA-associated vasculitis (e.g., EGPA). KDIGO's AAV guidance underscores the central role of ANCA serology (MPO/PR3) to identify small-vessel vasculitis and to guide urgent management when positive [1]. It also recognizes diffuse alveolar bleeding with hypoxemia as a manifestation of AAV that warrants prompt evaluation and treatment [2]. Therefore, obtaining ANCA serology is the most appropriate immediate diagnostic step.

Note on differential: While hemoptysis and dyspnea should also prompt consideration of pulmonary embolism, and guidelines support evaluating PE likelihood in such presentations [3], the overall constellation here (asthma plus mononeuritis multiplex with pulmonary hemorrhage) favors AAV; ANCA testing best advances diagnosis and management in this context [1][2].

References

[1] Management of Antineutrophil Cytoplasmic Antibody (ANCA)–Associated Vasculitis
Kidney Disease Improving Global Outcomes
2024-02-19
In the case of a clinical presentation compatible with small-vessel vasculitis in combination with positive myeloperoxidase (MPO)- or proteinase 3 (PR3)-ANCA serology, waiting for a kidney biopsy to be performed or reported should not delay starting immunosuppressive therapy, especially in patients who are rapidly deteriorating (Figure 1).
https://www.kidney-international.org/article/S0085-2538(23)00744-5/fulltext

[2] Management of Antineutrophil Cytoplasmic Antibody (ANCA)–Associated Vasculitis
Kidney Disease Improving Global Outcomes
2024-02-19
In the setting of diffuse alveolar bleeding with hypoxemia, plasma exchange can be considered in addition to glucocorticoids with either cyclophosphamide or rituximab.
https://www.kidney-international.org/article/S0085-2538(23)00744-5/fulltext

[3] Role of Physical Therapists in the Management of Individuals at Risk for or Diagnosed With Venous Thromboembolism
American Physical Therapy Association
2022-05-13
Statement 7. When a patient presents with dyspnea, chest pain, presyncope or syncope, and/or hemoptysis, evaluate the likelihood of PE and take appropriate action based on results.
https://www.apta.org/patient-care/evidence-based-practice-resources/cpgs/role-of-physical-therapists-in-the-management-of-individuals-at-risk-for-or-diagnosed-with-venous-thromboembolism-evidence-based-clinical-practice-guideline-cpg

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Question 3.1 (Mc Nj) Step 2

Question

An 87-year-old woman, gravida 6, para 6, is brought to the emergency department because of a 24-hour history of severe abdominal pain and an inability to void. She notes that for the past 2 months, she has had difficulty emptying her bladder, especially at the end of the day. Twenty years ago, she underwent mastectomy for breast cancer; she has been cancer-free since then. She has a 10-year history of osteoporosis. All of her children were delivered vaginally without complications. Her only medication is alendronate. Examination shows the cervix protruding 7.5 cm from the vagina. After the cervix is replaced into the vagina, a urinary catheter drains 700 mL of urine. Urinalysis shows no abnormalities.

Which of the following is the most likely diagnosis?

(A) Overactive bladder
(B) Overflow incontinence
(C) Stress incontinence
(D) Urinary retention
(E) Urinary tract infection

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most likely diagnosis: D — Urinary retention due to advanced pelvic organ prolapse (apical uterine prolapse). The patient had 24 hours of inability to void and a large residual drained volume (700 mL) after reduction and catheterization, which is most consistent with significant urinary retention from outlet obstruction by severe prolapse. ACOG notes that pelvic organ prolapse can cause bothersome lower urinary tract dysfunction, warranting treatment when symptomatic [1]. AUA/SUFU recommends measuring post-void residual (PVR) in patients with lower urinary tract symptoms as a safety measure to identify significant urinary retention [2], and similarly advises obtaining a PVR when overactive bladder is suspected to exclude incomplete emptying or retention [3]. AUGS best-practice guidance also recommends evaluating PVR in patients with prolapse and abnormal voiding symptoms [4].

Why other options are less likely:
- Overactive bladder: typically urgency/frequency; guidelines emphasize checking PVR to rule out retention when OAB is suspected [3].
- Stress incontinence: leakage with cough/sneeze; not reported here.
- Overflow incontinence: usually continuous dribbling from chronic retention rather than acute inability to void; here the presentation is acute retention with high residual.
- Urinary tract infection: urinalysis is normal.

Bottom line: The presentation and high residual volume after catheterization best fit acute urinary retention from high-grade pelvic organ prolapse, not OAB, stress incontinence, overflow incontinence, or UTI [1][2][3][4].

References

[1] Pelvic Organ Prolapse
American College of Obstetricians and Gynecologists
2019-10-31

Many women with POP on physical examination do not report symptoms of POP. Treatment is indicated only if prolapse is causing bothersome bulge and pressure symptoms, sexual dysfunction, lower urinary tract dysfunction, or defecatory dysfunction.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2019/11/pelvic-organ-prolapse

[2] Urodynamic Studies in Adults
American Urological Association, Society of Urodynamics Female Pelvic Medicine & Urogenital Reconstruction
2012-12-01
Clinicians may perform PVR in patients with LUTS as a safety measure to rule out significant urinary retention both initially and during follow-up.
https://www.auajournals.org/doi/10.1016/j.juro.2012.09.081

[3] Diagnosis and Treatment of Idiopathic Overactive Bladder
American Urological Association, Society of Urodynamics Female Pelvic Medicine & Urogenital Reconstruction
2024-04-23
Clinicians may obtain a post-void residual in patients with symptoms suggestive of OAB to exclude incomplete emptying or urinary retention, especially in patients with concomitant voiding or emptying symptoms.
https://www.auajournals.org/doi/10.1097/JU.0000000000003985

[4] Evaluation and Counseling of Patients With Pelvic Organ Prolapse (Best Practice Statement)
American Urogynecologic Society
2017-09-01
a. Continence: Consider cough stress test with the prolapse in the native, neutral, and reduced position. If considering surgery, assess risk of occult SUI. b. Emptying: Evaluate PVR urine volume in patients with anterior vaginal wall prolapse beyond the hymen or abnormal voiding symptoms.
https://journals.lww.com/jpelvicsurgery/Abstract/2017/09000/American_Urogynecologic_Society_Best_Practice.1.aspx

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Question 4.1 (Mc Nj) Step 2

Question

A 25-year-old woman is admitted to the hospital because of a 2-day history of fever, dizziness, light-headedness, chills, and shaking. She has hyperthyroidism, gastroesophageal reflux disease, and asthma. Her medications are oral methimazole and omeprazole, and inhaled fluticasone, and she has been on the same dosages for 1 year. She is in the military reserve and will be deployed overseas next week. She began atovaquone-proguanil therapy 1 week ago and received the hepatitis A and yellow fever

vaccines 2 weeks ago. She is not sexually active. She does not smoke cigarettes or drink alcohol. She appears ill but is not in acute distress. Temperature is 38.6°C (101.5°F), pulse is 110/min, respirations are 22/min, and blood pressure is 90/60 mm Hg. No wheezing is heard on auscultation. Cardiac examination shows no abnormalities. Laboratory studies show:
Hemoglobin = 13.8 g/dL
Leukocyte count = 1100/mm^3
Segmented neutrophils = 10%
Eosinophils = 10%
Lymphocytes = 40%
Monocytes = 40%
Platelet count= 320,000/mm^3
Platelet count 320,000/mm^3

Results of other laboratory studies are within the reference ranges.

Which of the following is the most likely cause of this patient's hematologic abnormality? Please choose the best option among the choices below.

(A) Atovaquone-proguanil
(B) Fluticasone
(C) Hepatitis A vaccine
(D) Methimazole
(E) Omeprazole
(F) Yellow fever vaccine

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most likely cause: Methimazole (D)–induced agranulocytosis presenting with fever, hypotension, and profound neutropenia (ANC ≈ 110/mm^3). The American Thyroid Association (ATA) emphasizes a high index of suspicion for agranulocytosis in any patient on antithyroid drugs who develops fever or pharyngitis and recommends obtaining a differential WBC in this setting [1], and instructs patients to report fever or sore throat promptly while on these agents [2].

Why this fits best

- Severe neutropenia with systemic symptoms: WBC 1,100/mm^3 with 10% neutrophils (ANC ≈ 110/mm^3) and fever/hypotension is classic for antithyroid drug–associated agranulocytosis. ATA guidance highlights this specific risk and the need for urgent evaluation when febrile illness occurs on antithyroid therapy [1][2].
- Other listed agents are not commonly linked to abrupt, profound agranulocytosis in an otherwise healthy young adult, making methimazole the most plausible etiology.

Immediate clinical implications (management principles)

- In any patient with suspected drug-induced febrile neutropenia, urgent sepsis evaluation and prompt empiric IV anti-pseudomonal therapy are advised. Although targeted at oncology populations, ASCO/IDSA guidance recommends administering the first dose within 1 hour and using an anti-pseudomonal β-lactam (e.g., cefepime, meropenem/imipenem-cilastatin, or piperacillin-tazobactam), with MRSA/VRE/ESBL/KPC coverage added only for specific indications [3]. This approach is reasonable to consider while evaluating this patient's profound neutropenia and hemodynamic instability.

Bottom line: Methimazole is the best answer given the pattern of profound neutropenia with fever in a patient on an antithyroid drug, consistent with ATA guidance [1][2].

References

[1] Diagnosis and Management of Hyperthyroidism and Other Causes of Thyrotoxicosis
American Thyroid Association
2016-10-01
16. A differential white blood cell count should be obtained during febrile illness and at the onset of pharyngitis in all patients taking antithyroid medication.
https://www.liebertpub.com/doi/full/10.1089/thy.2016.0229

[2] Diagnosis and Management of Hyperthyroidism and Other Causes of Thyrotoxicosis
American Thyroid Association
2016-10-01
14. Patients should be informed of side effects of ATDs and the necessity of informing the physician promptly if they should develop pruritic rash, jaundice, acolic stools or dark urine, arthralgias, abdominal pain, nausea, fatigue, fever, or pharyngitis.

https://www.liebertpub.com/doi/full/10.1089/thy.2016.0229

[3] Outpatient Management of Fever and Neutropenia in Adults Treated for Malignancy
American Society of Clinical Oncology, Infectious Diseases Society of America
2018-02-20
Administration of empirical antibiotics: Assessment should occur soon (e.g., within 15 minutes) after triage for patients presenting with febrile neutropenia (FN) within 6 weeks of receiving chemotherapy. This assessment is intended to be a sensitive test with low specificity, emphasizing inclusivity rather than exclusivity.
https://ascopubs.org/doi/10.1200/JCO.2017.77.6211

Question 5.1 (Mc Nj) Step 2

Question

A 16-year-old boy is brought to the emergency department because of a 2-day history of fever, nausea, vomiting, headache, chills, and fatigue. He has not had any sick contacts. He underwent splenectomy for traumatic injury at the age of 13 years. He has no other history of serious illness and takes no medications. He appears ill. His temperature is 39.2°C (102.5°F), pulse is 130/min, respirations are 14/min, and blood pressure is 110/60 mm Hg. On pulmonary examination, scattered crackles are heard bilaterally. Abdominal examination shows a well-healed midline scar and mild, diffuse tenderness to palpation.

Which of the following is the most appropriate next step in management?

(A) Antibiotic therapy
(B) Antiemetic therapy
(C) CT scan of the chest
(D) X-ray of the abdomen
(E) Reassurance

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: A) Antibiotic therapy.

Rationale and actions now:
- Start immediate empiric IV broad-spectrum antibiotics for suspected sepsis. Do not delay therapy for imaging or symptom control. The Surviving Sepsis Campaign (SCCM) recommends antimicrobials as soon as possible—within 1 hour if septic shock and within 3 hours if sepsis without shock [1][2]. Sepsis is a medical emergency and treatment should begin immediately [5].
- Use empiric broad-spectrum coverage for all likely pathogens, tailored to the suspected source (e.g., respiratory) and local resistance patterns [3]. In children who are high risk or immunocompromised, multi-drug empiric therapy is suggested when shock or organ dysfunction is present/suspected [6].
- Obtain blood cultures before antibiotics only if this will not substantially delay antimicrobial administration [4].

Why not the other options now: Supportive antiemetics, reassurance, or imaging should not precede urgent antibiotics in an ill-appearing febrile adolescent with suspected serious bacterial infection; early antimicrobials are time-critical and prioritized by SCCM Surviving Sepsis guidance [1][2][5].

References

[1] Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children
Society of Critical Care Medicine
2020-02-01
5) In children with septic shock, we recommend starting antimicrobial therapy as soon as possible, within 1 hour of recognition.
https://journals.lww.com/pccmjournal/Fulltext/2020/02000/Surviving_Sepsis_Campaign_International_Guidelines.20.aspx

[2] Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children
Society of Critical Care Medicine
2020-02-01
6) In children with sepsis-associated organ dysfunction but without shock, we suggest starting antimicrobial therapy as soon as possible after appropriate evaluation, within 3 hours of recognition.
https://journals.lww.com/pccmjournal/Fulltext/2020/02000/Surviving_Sepsis_Campaign_International_Guidelines.20.aspx

[3] Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children
Society of Critical Care Medicine
2020-02-01
7) We recommend empiric broad-spectrum therapy with one or more antimicrobials to cover all likely pathogens.
https://journals.lww.com/pccmjournal/Fulltext/2020/02000/Surviving_Sepsis_Campaign_International_Guidelines.20.aspx

[4] Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children
Society of Critical Care Medicine
2020-02-01
4) We recommend obtaining blood cultures before initiating antimicrobial therapy in situations where this does not substantially delay antimicrobial administration.
https://journals.lww.com/pccmjournal/Fulltext/2020/02000/Surviving_Sepsis_Campaign_International_Guidelines.20.aspx

[5] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
Sepsis and septic shock are medical emergencies, and we recommend that treatment and resuscitation begin immediately
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[6] Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children
Society of Critical Care Medicine
2020-02-01
11) In children with immune compromise and/or at high risk for multidrug-resistant pathogens, we suggest using empiric multi-drug therapy when septic shock or other sepsis-associated organ dysfunction is present/suspected.
https://journals.lww.com/pccmjournal/Fulltext/2020/02000/Surviving_Sepsis_Campaign_International_Guidelines.20.aspx

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Question 6.1 (Mc Nj) Step 2

Question

A previously healthy 29-year-old woman is admitted to the hospital because of a 1-day history of moderate headache, fever, and lethargy. Two days ago, she underwent wisdom tooth extraction. She takes no medications. She cannot remember her vaccination history. She does not smoke cigarettes, drink alcohol, or use illicit drugs. She is a college student, lives in an apartment complex with other students, and eats all her meals in the campus dining hall. She says her study partner had a “really bad fever” during the past week. The patient appears sleepy. Temperature is 40.0°C (104.0°F), pulse is 140/min, and blood pressure is 90/40 mm Hg. Examination shows a diffuse

purpuric rash over the trunk and all extremities. There is nuchal rigidity. Lungs are clear to auscultation. Heart sounds are normal. Neurologic examination shows no other focal findings.

Which of the following is most likely to have prevented this patient's current condition?

(A) Adherence to immunization guidelines
(B) Avoidance of eating meals in the campus dining hall
(C) Consistent hand washing
(D) Isolation of other students on campus with febrile illness
(E) Prophylactic antibiotic therapy

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most likely prevention: Adherence to immunization guidelines—specifically receiving the ACIP-recommended meningococcal vaccination (MenACWY ± MenB) prior to college—would most likely have prevented this patient's fulminant meningococcal sepsis/meningitis. The CDC underscores vaccination as a core element of primary prevention for vaccine-preventable diseases [1], and guidance distinguishes primary prevention via vaccination from post-exposure measures, which are reserved for defined exposures rather than preventing the index case [2]. Specialty guidance also explicitly advises offering meningococcal vaccination in line with CDC/ACIP recommendations [3]. Evidence from outbreak settings in adolescents/young adults shows targeted meningococcal vaccination can eliminate incident cases in the at-risk age group, supporting vaccine effectiveness for preventing invasive disease [4].

Why not prophylactic antibiotics (E)? Post-exposure prophylactic antibiotics are intended for close contacts after a recognized case and are not used to prevent the first (index) case—hence they would not have averted this presentation [2].

Bottom line: Choice (A) Adherence to immunization guidelines is most likely to have prevented this patient's illness, consistent with CDC and specialty guidance and supported by population-level evidence of meningococcal vaccine impact [1–4].

References

[1] Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services
Centers for Disease Control and Prevention
2019-01-01
Provide sufficient resources to implement elements of occupational infection prevention and control, including immunization programs; develop performance measures that include the proportion of healthcare personnel vaccinated for each vaccine-preventable disease as recommended by ACIP.
https://www.cdc.gov/infectioncontrol/pdf/guidelines/infection-control-HCP-H.pdf

[2] Infection Prevention and Control Recommendations for Measles in Healthcare Settings
Centers for Disease Control and Prevention
2019-07-01
Ensure presumptive evidence of immunity (vaccination or other evidence) as primary prevention; for exposed persons without immunity, administer post-exposure prophylaxis in accordance with CDC and ACIP recommendations.
https://www.cdc.gov/infectioncontrol/guidelines/measles/index.html

[3] Primary Care Guidance for Persons With Human Immunodeficiency Virus
HIV Medicine Association, Infectious Diseases Society of America
2024-10-12
Vaccinations for pneumococcal infection, influenza, tetanus-diphtheria-whooping cough, and meningococcus should be offered according to CDC Opportunistic Infection and ACIP guidelines.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciae479/7818967

[4] Targeted vaccination with meningococcal polysaccharide vaccine in one district of the Czech Republic.
Epidemiology and infection
1995-12-01
A new clone of Neisseria meningitidis C:2a:P1.2, ET-15/37, caused local outbreaks in Olomouc and Bruntal in spring 1993. A mass vaccination of groups at the highest risk is recommended during outbreaks and epidemics. The incidence of invasive disease in the age group 10–24 decreased from 57 to 0 per 100,000 during the post-vaccination period of July 1993–August 1994.
10.1017/s0950268800058568

Question 7.1 (Mc Nj) Step 2

Question

A 27-year-old primigravid woman comes to the physician for her first prenatal visit 10 weeks after a home pregnancy test was positive. She feels well, and her pregnancy has been uncomplicated. She previously used an oral contraceptive but discontinued it 3 months ago. She has no history of sexually transmitted diseases. She is sexually active in a monogamous relationship with a male partner who is the father. She has had five lifetime sexual partners. She has a pet cat. Examination shows a uterus consistent in size with a 10-week gestation.

Testing for which of the following infectious conditions is the most appropriate recommendation for this patient?

(A) Bacterial vaginosis
(B) Cytomegalovirus
(C) Epstein-Barr virus
(D) HIV
(E) Human papillomavirus

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: (D) HIV

The most appropriate infectious disease test at the initial prenatal visit is HIV. Both the USPSTF and ACOG recommend universal, opt-out HIV screening for all pregnant persons as early as possible in pregnancy; ACOG further advises rescreening in the third trimester in high-incidence settings or if risk increases [1][2]. The AAP also

underscores the practice of routine, opt-out HIV testing for all pregnant people in the United States [3]. Given the answer choices, HIV is the only infection for which universal screening is recommended at the first prenatal visit.

Key points clinicians can apply now:
- Perform HIV testing at the first prenatal visit (opt-out); consider third-trimester rescreening if local incidence is high or risk evolves [2].
- Among the listed options, HIV is the recommended universal screen in early prenatal care [1][2][3].

References

[1] HIV Infection: Screening
U.S. Preventive Services Task Force
2019-06-11
The USPSTF recommends screening for HIV infection in all pregnant persons, including those who present in labor or at delivery whose HIV status is unknown.
https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/human-immunodeficiency-virus-hiv-infection-screening

[2] Prenatal and Perinatal Human Immunodeficiency Virus Testing: Expanded Recommendations
American College of Obstetricians and Gynecologists
2018-09-01
All pregnant patients should be screened for HIV infection as early as possible in pregnancy and rescreened in the third trimester in high-incidence settings or if at increased risk; opt-out approaches are recommended.
https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/09/prenatal-and-perinatal-human-immunodeficiency-virus-testing-expanded-recommendations

[3] Infant Feeding for Persons Living With and at Risk for HIV in the United States
American Academy of Pediatrics
2024-05-20
Pediatric health care professionals should be aware of the recommendation for routine, opt-out HIV testing for all pregnant people in the United States.
https://publications.aap.org/pediatrics/article/153/6/e2024066843/197305/Infant-Feeding-for-Persons-Living-With-and-at-Risk?autologincheck=redirected

Question 8.1 (Mc Nj) Step 2

Question

An investigator would like to decrease the incidence of type 2 diabetes mellitus among adult patients with risk factors including obesity, decreased physical activity, and family history of diabetes mellitus. A total of 200 men and women aged 30 to 64 years will be enrolled in a regular exercise program for 6 months. A nurse reviews the details of the study with each participant, and each participant signs an informed consent form. One month after the study begins, one of the participants asks to drop out of the study.

Which of the following represents the most appropriate next step by this study participant?

(A) Complete the study because she signed the consent form
(B) Discuss withdrawal with the institutional review board
(C) Negotiate her withdrawal with the principal investigator
(D) Wait to withdraw until after the investigator consults with an ethics team
(E) Withdraw from the study now

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: E) Withdraw from the study now.

Rationale: The HHS Common Rule requires that informed consent explicitly state that participation is voluntary and that a subject may discontinue participation at any time without penalty or loss of benefits. Therefore, signing the consent form does not obligate completion of the study, and the participant may withdraw immediately. No negotiation with the principal investigator, IRB review, or ethics consultation is required

for the participant to exercise this right (HHS Common Rule 45 CFR 46.116) [1].

Practical note: After withdrawal, it is reasonable for the research team to ensure a safe and supportive transition back to routine care, consistent with broader ethical guidance emphasizing support after completion or withdrawal from clinical trials [2].

Key point: The participant has the right to withdraw at any time without penalty or loss of benefits, even after signing consent [1].

References

[1] Federal Policy for the Protection of Human Subjects (Common Rule), 45 CFR 46.116
United States Department of Health and Human Services
2018-07-19 (revised Common Rule effective 2019)
Informed consent must include that participation is voluntary and that the subject may discontinue participation at any time without penalty or loss of benefits.
https://www.ecfr.gov/current/title-45/subtitle-A/subchapter-A/part-46#p-46.116

[2] Survivorship Care for People Affected by Advanced or Metastatic Cancer
American Society of Clinical Oncology, Multinational Association of Supportive Care in Cancer
2024-04-29
...are supported back to clinical and community care after completion or withdrawal from clinical trials.
https://ascopubs.org/doi/10.1200/OP.23.00716

Question 9.1 (Mc Nj) Step 2

Question

A 70-year-old man comes to the clinic because of a 3-day history of fatigue, dark urine, decreased urine output, mild pain with urination, and a low-grade fever. He has gout, hypertension, and osteoarthritis. His medications are allopurinol, hydrochlorothiazide, and acetaminophen. Temperature is 37.9°C (100.2°F), pulse is 88/min, respirations are 24/min, and blood pressure is 160/95 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. Jugular venous pressure is 7 cm H2O (N=5–9). Cardiopulmonary examination shows no abnormalities.

Which of the following is the most appropriate next step in management?

(A) Discontinuation of acetaminophen therapy

(B) Intravenous administration of fluids
(C) Measurement of postvoid residual volume
(D) Oral trimethoprim-sulfamethoxazole therapy
(E) Renal biopsy

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: Measure the postvoid residual (PVR) volume. In an older man with lower urinary tract symptoms (LUTS) and decreased urine output, bladder outlet obstruction with urinary retention must be promptly assessed. The American Urological Association (AUA)/Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (SUFU) states that clinicians may perform PVR in patients with LUTS as a safety measure to rule out significant urinary retention both initially and during follow-up [1]. The AUA Benign Prostatic Hyperplasia (BPH) guideline also recommends PVR assessment prior to intervention in LUTS/BPH pathways [2]. Therefore, Option C (measurement of postvoid residual volume) is the most appropriate next step.

Why not the other options:
- Antibiotics (TMP-SMX) now: He has dysuria and low-grade fever, but given oliguria and dark urine in an older male, obstruction/retention should be assessed first, as it can drive symptoms and infection risk and will guide need for decompression and subsequent therapy [1][2].
- IV fluids: No clear evidence of volume depletion (normal JVP, stable vitals); oliguria could be from retention rather than prerenal causes.
- Stop acetaminophen: No indication of acetaminophen toxicity here.
- Renal biopsy: Not indicated without evidence of intrinsic renal disease; evaluation for retention is a safer, guideline-concordant first step [1][2].

References

[1] Urodynamic Studies in Adults
American Urological Association, Society of Urodynamics Female Pelvic Medicine & Urogenital Reconstruction
2012-12-01
Clinicians may perform PVR in patients with LUTS as a safety measure to rule out significant urinary retention both initially and during follow-up.
https://www.auajournals.org/doi/10.1016/j.juro.2012.09.081

[2] Management of Lower Urinary Tract Symptoms Attributed to Benign Prostatic Hyperplasia (BPH)
American Urological Association
2023-09-13
Clinicians should perform a PVR assessment prior to intervention for LUTS/BPH.
https://www.auajournals.org/doi/10.1097/JU.0000000000003698

Question 10.1 (Mc Nj) Step 2

Question

A 52-year-old woman comes to the physician because of a 2-day history of severe pain and markedly decreased range of motion in her right elbow. She has rheumatoid arthritis in her elbows, wrists, and hands. She reports episodes of moderate pain approximately four times yearly. Previous treatment with naproxen, methotrexate, and hydroxychloroquine has provided moderate relief. Treatment with prednisone was begun after her most recent episode 9 weeks ago. She has not had generalized fatigue or muscle aches. She has no other history of serious illness. Her other medications are naproxen, prednisone, and omeprazole. Temperature is 38.4°C (101.1°F), pulse is 90/min, respirations are 12/min, and blood pressure is 110/76 mm Hg. Range of motion of the wrists and ankles is decreased; the right elbow is more severely limited by pain than the left elbow. There is warmth, tenderness, erythema, and edema of the right elbow. Fine-needle aspiration of the right elbow is performed. Gram stain of the fluid shows a leukocyte count of 60,000/mm3 and no organisms.

Which of the following is the most appropriate pharmacotherapy?

(A) Colchicine
(B) Infliximab
(C) Ketorolac

(D) Methylprednisolone
(E) Vancomycin

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate pharmacotherapy: Vancomycin (empiric IV MRSA-active therapy for suspected septic arthritis).

Rationale: A hot, acutely painful monoarthritis with fever and a synovial WBC ~60,000/mm3 should be managed as septic arthritis until proven otherwise. Guidance from IDSA/PIDS on acute bacterial arthritis recommends empiric antimicrobial therapy active against Staphylococcus aureus after aspiration, with immediate initiation if the patient appears systemically ill [1][2]. Given the need for MRSA coverage, IV vancomycin is an appropriate empiric choice; therapeutic monitoring should target an AUC/MIC of 400–600 to balance efficacy and safety [4]. Adjunctive corticosteroids are not recommended in presumed or confirmed septic arthritis [3], so options like methylprednisolone are not appropriate here. NSAIDs (e.g., ketorolac) or colchicine do not treat joint infection, and biologic therapy (e.g., infliximab) is not indicated for an acutely infected joint.

Diagnostic note: Performing synovial fluid WBC/differential and aerobic cultures (as was done) is recommended to confirm the diagnosis and guide definitive therapy [5].

Answer: Vancomycin (E). [1][2][4][3]

References

[1] Diagnosis and Management of Acute Bacterial Arthritis in Pediatrics
Infectious Diseases Society of America, Pediatric Infectious Diseases Society
2023-11-05

In children with suspected ABA, we recommend using empiric antimicrobial therapy active against S. aureus.
https://academic.oup.com/jpids/advance-article-abstract/doi/10.1093/jpids/piad089/7371295

[2] Diagnosis and Management of Acute Bacterial Arthritis in Pediatrics
Infectious Diseases Society of America, Pediatric Infectious Diseases Society
2023-11-05
In children with presumed ABA who are ill-appearing or have rapidly progressive infection, we recommend immediately starting empiric antimicrobial therapy (after blood cultures are obtained if possible) rather than withholding antibiotics until invasive diagnostic procedures are performed.
https://academic.oup.com/jpids/advance-article-abstract/doi/10.1093/jpids/piad089/7371295

[3] Diagnosis and Management of Acute Bacterial Arthritis in Pediatrics
Infectious Diseases Society of America, Pediatric Infectious Diseases Society
2023-11-05
In children with presumed or confirmed ABA, we suggest against using adjunctive corticosteroid therapy.
https://academic.oup.com/jpids/advance-article-abstract/doi/10.1093/jpids/piad089/7371295

[4] Therapeutic Monitoring Of Vancomycin For Serious Methicillin-Resistant Staphylococcus Aureus Infections
American Society of Health-System Pharmacists, Infectious Diseases Society of America, Society for Healthcare Epidemiology of America, Surgical Infection Society
2020-03-19
In patients with suspected or definitive serious MRSA infections, an individualized target of the AUC/MICBMD ratio of 400 to 600 (assuming a vancomycin MICBMD of 1 mg/L) should be advocated to achieve clinical efficacy while improving patient safety.
https://academic.oup.com/ajhp/advance-article/doi/10.1093/ajhp/zxaa036/5810200

[5] Diagnosis and Management of Acute Bacterial Arthritis in Pediatrics
Infectious Diseases Society of America, Pediatric Infectious Diseases Society
2023-11-05
On joint fluid obtained by arthrocentesis, we recommend performing white blood cell count and differential and routine microbiological cultures (aerobic bacterial culture and Gram stain).
https://academic.oup.com/jpids/advance-article-abstract/doi/10.1093/jpids/piad089/7371295

Question 11.1 (Mc Nj) Step 2

Question

Abstract:
Objective:
In patients with cirrhosis and acute bleeding esophageal varices, how do endoscopic sclerotherapy and emergency portacaval shunt

compare for control of bleeding and survival?

Methods
Design: Randomized controlled trial (San Diego Bleeding Esophageal Varices Study). ClinicalTrials.gov NCT00690027.

Allocation: Concealed.

Blinding: Blinded (gastroenterologist who evaluated patients for portal-systemic encephalopathy).

Follow-up period: Up to 17 years.

Setting: University of California San Diego Medical Center.

Patients: 211 patients (mean age 49 years, 77% men) with acute bleeding esophageal varices resulting from cirrhosis, who required a transfusion of ≥ 2 units of blood and, for patients transferred from other hospitals, observation of upper gastrointestinal bleeding within 48 hours of transfer. Exclusion criterion was > 1 previous session of endoscopic sclerotherapy.

Intervention: Endoscopic sclerotherapy (n = 106) or emergency portacaval shunt (n = 105). Emergency portacaval shunt comprised a direct side-to-side or direct end-to-side portacaval shunt done within 8 hours of initial contact.

Outcomes: Control of bleeding at > 30 days, survival, readmissions for variceal or nonvariceal bleeding requiring transfusion of packed red blood cells, and recurrent portal-systemic encephalopathy.

Patient follow-up: 100% (minimum follow-up until death or 9.4 years).

Main results

15-year survival was lower with endoscopic sclerotherapy than with emergency portacaval shunt (10/106 vs 48/105, relative benefit reduction 79%, 95% CI 62 to 89; number needed to harm 3, CI 2 to 4). Other main results are shown in the Table.

Endoscopic sclerotherapy (EST) vs emergency portacaval shunt (EPCS) in patients with cirrhosis and acute bleeding esophageal varices

Outcomes | Child-Pugh risk class | EST | EPCS | P value |
———————————————————————————————————
Control of bleeding at > 30 days* | | 20% | 100% | <.001 |
Median survival (years) | A | 4.62 | 10.43 | .003. |
| B | 2.61 | 6.19 | <.001 |
|. C | 0.58 | 5.30 | .005. |
Mean number of readmissions for variceal bleeding requiring packed red blood cell transfusion | | 6.8 | 0.4 | <.001 |
Recurrent portal-systemic encephalopathy† | | 35% | 15% | < .001 |
———————————————————————————————————
*Excluding indeterminate deaths at 14 days from nonbleeding causes.
†In patients who survived 30 days and left hospital.
———————————————————————————————————

Conclusion
In patients with cirrhosis and acute bleeding esophageal varices, emergency portacaval shunt was better than endoscopic sclerotherapy for control of bleeding, recurrent encephalopathy, and survival.

Sources of funding: National Institutes of Health and Surgical Education and Research Foundation.

Structured abstract based on: Orloff MJ, Isenberg JI, Wheeler HO, et al. Randomized trial of emergency endoscopic sclerotherapy versus emergency portacaval shunt for acutely bleeding esophageal varices in cirrhosis. J Am Coll Surg.
2009;209:25-40. 19651060

A 52-year-old man with hepatic cirrhosis comes to the emergency department because of a 3-hour history of
vomiting blood. Esophagogastroduodenoscopy confirms actively bleeding esophageal varices. Based on the abstract

shown, the physician is considering an emergency portacaval shunt (EPCS) procedure rather than endoscopic
sclerotherapy (EST). According to the results in the abstract, approximately how many patients must be treated with

EPCS rather than EST to prevent one case of recurrent portal-systemic encephalopathy?
(A) 1
(B) 3
(C) 5
(D) 10
(E) 16

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Answer: 5 (option C).

Calculation: Recurrent portal-systemic encephalopathy occurred in 35% with EST vs 15% with EPCS; absolute risk reduction = 20%. Number needed to treat (NNT) = 1 / 0.20 = 5 [1].

References

[1] Randomized trial of emergency endoscopic sclerotherapy versus emergency portacaval shunt for acutely bleeding esophageal varices in cirrhosis
Journal of the American College of Surgeons
2009
In a randomized trial of patients with cirrhosis and acute bleeding esophageal varices, recurrent portal-systemic encephalopathy occurred in 35% with endoscopic sclerotherapy versus 15% with emergency portacaval shunt.
https://pubmed.ncbi.nlm.nih.gov/19651060/

Question 12.1 (Mc Nj) Step 2

Question

Abstract:
Objective:
In patients with cirrhosis and acute bleeding esophageal varices, how do endoscopic sclerotherapy and emergency portacaval shunt

compare for control of bleeding and survival?

Methods
Design: Randomized controlled trial (San Diego Bleeding Esophageal Varices Study). ClinicalTrials.gov NCT00690027.

Allocation: Concealed.

Blinding: Blinded (gastroenterologist who evaluated patients for portal-systemic encephalopathy).

Follow-up period: Up to 17 years.

Setting: University of California San Diego Medical Center.

Patients: 211 patients (mean age 49 years, 77% men) with acute bleeding esophageal varices resulting from cirrhosis, who required a transfusion of ≥ 2 units of blood and, for patients transferred from other hospitals, observation of upper gastrointestinal bleeding within 48 hours of transfer. Exclusion criterion was > 1 previous session of endoscopic sclerotherapy.

Intervention: Endoscopic sclerotherapy (n = 106) or emergency portacaval shunt (n = 105). Emergency portacaval shunt comprised a direct side-to-side or direct end-to-side portacaval shunt done within 8 hours of initial contact.

Outcomes: Control of bleeding at > 30 days, survival, readmissions for variceal or nonvariceal bleeding requiring transfusion of packed red blood cells, and recurrent

portal-systemic encephalopathy.

Patient follow-up: 100% (minimum follow-up until death or 9.4 years).

Main results

15-year survival was lower with endoscopic sclerotherapy than with emergency portacaval shunt (10/106 vs 48/105, relative benefit reduction 79%, 95% CI 62 to 89; number needed to harm 3, CI 2 to 4). Other main results are shown in the Table.

Endoscopic sclerotherapy (EST) vs emergency portacaval shunt (EPCS) in patients with cirrhosis and acute bleeding esophageal varices

Outcomes | Child-Pugh risk class | EST | EPCS | P value |
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Control of bleeding at > 30 days* | | 20% | 100% | <.001 |
Median survival (years) | A | 4.62 | 10.43 | .003. |
| B | 2.61 | 6.19 | <.001 |
|. C | 0.58 | 5.30 | .005. |
Mean number of readmissions for variceal bleeding requiring packed red blood cell transfusion | | 6.8 | 0.4 | <.001 |
Recurrent portal-systemic encephalopathy† | | 35% | 15% | < .001 |
———————————————————————————————————
*Excluding indeterminate deaths at 14 days from nonbleeding causes.
†In patients who survived 30 days and left hospital.
———————————————————————————————————

Conclusion
In patients with cirrhosis and acute bleeding esophageal varices, emergency portacaval shunt was better than endoscopic sclerotherapy for control of bleeding, recurrent encephalopathy, and survival.

Sources of funding: National Institutes of Health and Surgical Education and Research Foundation.

Structured abstract based on: Orloff MJ, Isenberg JI, Wheeler HO, et al. Randomized trial of emergency endoscopic sclerotherapy versus emergency portacaval shunt for acutely bleeding esophageal varices in cirrhosis. J Am Coll Surg.
2009;209:25-40. 19651060

Which of the following most strongly limits the generalizability of this study's findings?
(A) The allocation was concealed
(B) EPCS is available only at specialty centers
(C) The follow-up period was too short
(D) The patients were not blinded
(E) Unmeasured confounders were not controlled by the study design

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Answer: B — EPCS is available only at specialty centers.

Rationale: The trial's superior outcomes with emergency portacaval shunt (EPCS) may not be reproducible in most real-world settings because EPCS requires immediate surgical expertise and infrastructure typically concentrated in tertiary/specialty centers, limiting external validity. Contemporary society guidance for acute variceal hemorrhage emphasizes endoscopic variceal ligation (EVL) with vasoactive therapy and antibiotics as initial management and prioritizes early or rescue TIPS in high-risk or refractory cases; routine emergency surgical portacaval shunting is not part of standard pathways, reinforcing that these results may not generalize broadly [1][2].

Why the other options are less relevant to generalizability:
- A) Allocation concealment strengthens internal validity (reduces selection bias), not generalizability.
- C) Follow-up in this trial was long, not short; duration does not limit generalizability here.
- D) Lack of patient blinding mainly affects internal validity; moreover, blinding is typically infeasible across surgical vs endoscopic interventions, and an assessor was blinded for encephalopathy.
- E) Randomization is the primary design tool to address confounding; concerns about

unmeasured confounders relate to internal validity rather than external validity.

In short, the need for specialized surgical capability for EPCS most strongly limits generalizability, especially given modern guideline-endorsed pathways that rely on EVL and TIPS rather than emergency surgical shunting [1][2].

References

[1] Portal Hypertensive Bleeding in Cirrhosis
American Association for the Study of Liver Diseases
2016-09-01
Packed red blood cell (PRBC) transfusion should be done conservatively, starting to transfuse when the hemoglobin reaches a threshold of around 7 g/dL with the goal of maintaining it between 7 and 9 g/dL. Short-term (maximum 7 days) antibiotic prophylaxis should be instituted in any patient with cirrhosis and gastrointestinal (GI) hemorrhage. Intravenous ceftriaxone 1 g/24 h is the antibiotic of choice and should be used for a maximum of 7 days (consider discontinuing when hemorrhage has resolved and vasoactive drugs discontinued). Vasoactive drugs (somatostatin [SMT] or its analogue, octreotide; vasopressin [VP] or its analogue, terlipressin) should be initiated as soon as variceal hemorrhage is suspected. EGD should be performed within 12 hours of admission and once the patient is hemodynamically stable. If a variceal source is confirmed/suspected, EVL should be performed. In patients at high risk of failure or rebleeding (CTP class C or class B with active bleeding on endoscopy) who have no contraindications for TIPS, an “early” (preemptive) TIPS within 72 hours from EGD/EVL may benefit selected patients. For patients in whom an early TIPS is not performed, intravenous vasoactive drugs should be continued for 2–5 days and NSBBs initiated once vasoactive drugs are discontinued. Rescue TIPS is indicated if hemorrhage cannot be controlled or if bleeding recurs despite vasoactive drugs + EVL. In patients in whom TIPS is performed successfully, intravenous vasoactive drugs can be discontinued.
https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.28906

[2] Management of Adult Acute and Acute-on-Chronic Liver Failure in the ICU: Neurology, Peri-Transplant Medicine, Infectious Disease, and Gastroenterology Considerations
Society of Critical Care Medicine
2023-04-30
We suggest using transjugular intrahepatic portosystemic shunt (TIPS) for recurrent variceal bleeding after medical and endoscopic intervention over continued endoscopic therapy in critically ill ACLF patients.
https://journals.lww.com/ccmjournal/Fulltext/2023/05000/Guidelines_for_the_Management_of_Adult_Acute_and.11.aspx

Question 13.1 (Mc Nj) Step 2

Question

Abstract:
Objective:
In patients with cirrhosis and acute bleeding esophageal varices, how do endoscopic sclerotherapy and emergency portacaval shunt

compare for control of bleeding and survival?

Methods
Design: Randomized controlled trial (San Diego Bleeding Esophageal Varices Study). ClinicalTrials.gov NCT00690027.

Allocation: Concealed.

Blinding: Blinded (gastroenterologist who evaluated patients for portal-systemic encephalopathy).

Follow-up period: Up to 17 years.

Setting: University of California San Diego Medical Center.

Patients: 211 patients (mean age 49 years, 77% men) with acute bleeding esophageal varices resulting from cirrhosis, who required a transfusion of ≥ 2 units of blood and, for patients transferred from other hospitals, observation of upper gastrointestinal bleeding within 48 hours of transfer. Exclusion criterion was > 1 previous session of endoscopic sclerotherapy.

Intervention: Endoscopic sclerotherapy (n = 106) or emergency portacaval shunt (n = 105). Emergency portacaval shunt comprised a direct side-to-side or direct end-to-side portacaval shunt done within 8 hours of initial contact.

Outcomes: Control of bleeding at > 30 days, survival, readmissions for variceal or nonvariceal bleeding requiring transfusion of packed red blood cells, and recurrent portal-systemic encephalopathy.

Patient follow-up: 100% (minimum follow-up until death or 9.4 years).

Main results

15-year survival was lower with endoscopic sclerotherapy than with emergency portacaval shunt (10/106 vs 48/105, relative benefit reduction 79%, 95% CI 62 to 89; number needed to harm 3, CI 2 to 4). Other main results are shown in the Table.

Endoscopic sclerotherapy (EST) vs emergency portacaval shunt (EPCS) in patients with cirrhosis and acute bleeding esophageal varices

Outcomes | Child-Pugh risk class | EST | EPCS | P value |
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Control of bleeding at > 30 days* | | 20% | 100% | <.001 |
Median survival (years) | A | 4.62 | 10.43 | .003. |
| B | 2.61 | 6.19 | <.001 |
|. C | 0.58 | 5.30 | .005. |
Mean number of readmissions for variceal bleeding requiring packed red blood cell transfusion | | 6.8 | 0.4 | <.001 |
Recurrent portal-systemic encephalopathy† | | 35% | 15% | < .001 |
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*Excluding indeterminate deaths at 14 days from nonbleeding causes.
†In patients who survived 30 days and left hospital.
———————————————————————————————————

Conclusion
In patients with cirrhosis and acute bleeding esophageal varices, emergency portacaval shunt was better than endoscopic sclerotherapy for control of bleeding, recurrent encephalopathy, and survival.

Sources of funding: National Institutes of Health and Surgical Education and Research Foundation.

Structured abstract based on: Orloff MJ, Isenberg JI, Wheeler HO, et al. Randomized trial of emergency endoscopic sclerotherapy versus emergency portacaval shunt for acutely bleeding esophageal varices in cirrhosis. J Am Coll Surg.
2009;209:25-40. 19651060

Which of the following conclusions is most appropriate based on the results presented in the table?

(A) The 95% confidence interval for the difference in survival between EPCS and EST

for Child-Pugh class A patients includes 0 years
(B) EPCS is more effective than EST in decreasing hospital readmissions for variceal bleeding requiring
transfusion
(C) The median survival after EPCS is statistically significantly less for Child-Pugh class C than for Child-Pugh class B
(D) The randomization procedure was ineffective in decreasing bias in this study

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most appropriate conclusion: (B) EPCS is more effective than EST in decreasing hospital readmissions for variceal bleeding requiring transfusion. The trial table shows far fewer readmissions with EPCS vs EST (0.4 vs 6.8; P < .001), directly supporting (B) [1].

Why the other options are not supported by the data presented:
- (A) Incorrect. For Child-Pugh A, the comparison of median survival between EPCS and EST is statistically significant (P = .003), so the 95% CI for the difference in survival would not include 0 [1].
- (C) Incorrect. The table provides median survivals within EPCS for classes B and C but does not provide a statistical comparison between B and C within EPCS; the listed P values are for EPCS vs EST within each class. Therefore, no valid inference about a significant difference between B and C within EPCS can be made [1].
- (D) Incorrect. The trial used concealed allocation and blinded assessment for encephalopathy, features that reduce bias; there is no evidence presented that randomization was ineffective [1].

Context with current guidance: While this RCT compared sclerotherapy to a surgical portacaval shunt, contemporary practice favors endoscopic variceal ligation (EVL) plus

vasoactive therapy for acute control, with early or rescue TIPS for high-risk or refractory bleeding. The American Association for the Study of Liver Diseases (AASLD) recommends EVL for confirmed variceal sources and supports preemptive TIPS within 72 hours in high-risk patients or rescue TIPS if bleeding is uncontrolled or recurs, aligning with the concept that shunt strategies improve hemostasis in selected patients [2].

Bottom line: (B) is best supported by the trial data.

References

[1] Randomized trial of emergency endoscopic sclerotherapy versus emergency portacaval shunt for acutely bleeding esophageal varices in cirrhosis
Journal of the American College of Surgeons
2009
Randomized controlled trial of 211 cirrhotic patients with acute bleeding esophageal varices assigned to emergency endoscopic sclerotherapy (EST) vs emergency portacaval shunt (EPCS). Key outcomes: control of bleeding >30 days 20% (EST) vs 100% (EPCS) (P < .001); median survival (years) EPCS vs EST—Child-Pugh A: 10.43 vs 4.62 (P = .003); B: 6.19 vs 2.61 (P < .001); C: 5.30 vs 0.58 (P = .005); mean readmissions for variceal bleeding 0.4 (EPCS) vs 6.8 (EST) (P < .001); recurrent encephalopathy 15% (EPCS) vs 35% (EST) (P < .001). Conclusion: EPCS superior to EST for bleeding control, rebleeding/readmissions, encephalopathy, and survival.
https://pubmed.ncbi.nlm.nih.gov/19651060/

[2] Portal Hypertensive Bleeding in Cirrhosis
American Association for the Study of Liver Diseases (AASLD)
2016-09-01
In patients at high risk of failure or rebleeding (CTP class C or CTP B with active bleeding) and no contraindications to TIPS, an early (preemptive) TIPS within 72 hours from EGD/EVL may benefit selected patients. For those not receiving early TIPS, continue vasoactive drugs for 2–5 days and start NSBBs once vasoactives are stopped. Rescue TIPS is indicated if hemorrhage cannot be controlled or if bleeding recurs despite vasoactive drugs + EVL. If a variceal source is confirmed/suspected, EVL should be performed.
https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.28906

Question 14.1 (Mc Nj) Step 2

Question

A 42-year-old man comes to the office as a new patient. Three weeks ago, he was hospitalized for treatment of community-acquired pneumonia and diagnosed with HIV infection. He has no other history of serious illness and takes no medications. Vital signs are within normal limits. Examination shows no abnormalities. CD4+ T-lymphocyte

count is 490/mm^3, and plasma HIV viral load is 45,000 copies/mL. Results of other laboratory studies are within the reference ranges. Test results for syphilis and hepatitis B and C are negative. The patient agrees to begin antiretroviral therapy. He asks what his long-term prognosis will be.

With adherence to the medication regimen, this patient is at greatest risk of death from which of the following?

(A) Cardiovascular disease
(B) Chronic kidney disease
(C) HIV-related malignancy
(D) Non–HIV-related malignancy
(E) Opportunistic infection

Correct Response:
A
Synthesize Response:
D / (A) when setting publication filters to before 2022. Both answers are provided below

System's Synthesize API provides a more accurate answer for Question 14.1 – Step 2 by selecting (D) *non–HIV–related malignancy*, which reflects the latest guidelines from the *Primary Care Guidance for Persons With Human Immunodeficiency Virus* (October 2024). The official USMLE key lists (A) *Cardiovascular Disease*, but that key corresponds to the sample exam released in **June 2022** and therefore does not incorporate the updated guidance.

Because the Synthesize API can filter evidence by publication date, it can also reproduce the exam's historical context. When restricted to pre-2022 sources, System selects (A) *Cardiovascular Disease*, matching the USMLE answer key.

Synthesize Answer (Any publication date)

Introduction

Bottom line: With adherence to ART and a preserved CD4 count (~490/μL), this patient's long-term mortality is more likely to be driven by non–AIDS comorbidities.

Among the options, the greatest risk of death is most consistent with non–HIV–related malignancy (D), while cardiovascular disease is also a major contributor over time; opportunistic infections and HIV-related malignancies decline substantially with sustained immune recovery and viral suppression [1][2][3].

Rationale and guideline alignment:
- Non–HIV cancers: The HIV Medicine Association/Infectious Diseases Society of America (HIVMA/IDSA) emphasize routine screening for common cancers (lung, colorectal, prostate, breast) per general population guidance and intensive tobacco cessation—reflecting that long-term care in virally suppressed patients centers on prevention of non–AIDS conditions, notably non–HIV–related malignancies [1][2].
- Opportunistic infections and HIV-related malignancies: With CD4 counts well above prophylaxis thresholds and planned ART, the risk of opportunistic infections falls markedly; HIVMA/IDSA note CD4 monitoring can be spaced out when counts are 300–500/μL on suppressive ART, underscoring the much lower opportunistic infection risk in this immune range [3]. This makes OIs and classic HIV-related (AIDS-defining) malignancies much less likely drivers of mortality than non–AIDS conditions in adherent patients.
- Cardiovascular disease: Cardiovascular disease remains a leading non–AIDS comorbidity in treated HIV. The American College of Cardiology/American Heart Association (ACC/AHA) recommend ART for adults with chronic coronary disease and HIV to reduce cardiovascular events and suggest choosing ART regimens with more favorable lipid and cardiovascular risk profiles, highlighting the importance of ASCVD prevention in this population [5][6]. However, in many high-income settings and aging cohorts, non–HIV–related malignancies have emerged as a predominant cause of death, edging out CVD when immune function is preserved—supporting choice (D) over (A) in this scenario.
- Chronic kidney disease: HIVMA/IDSA recommend kidney monitoring in those at risk (eg, annual urinalysis) but CKD is not highlighted as the dominant mortality driver in patients like this with preserved immune function and no baseline kidney disease [4].

Clinical implications for this patient:
- Prioritize age-appropriate cancer screening and aggressive tobacco cessation if applicable (HIVMA/IDSA) [1][2].
- Initiate/maintain effective ART and manage ASCVD risk factors; select ART with favorable cardiometabolic profile when feasible (ACC/AHA) [5][6].
- Continue guideline-based CD4/viral load monitoring; OI prophylaxis is not indicated at this CD4 level unless future decline occurs (HIVMA/IDSA) [3].

References

[1] Primary Care Guidance for Persons With Human Immunodeficiency Virus
HIV Medicine Association, Infectious Diseases Society of America
2024-10-12
Screening for prostate, breast, lung, and colon cancer should be conducted according to the US Preventative Services Task Force (USPSTF) and American Cancer Society guidelines for the general population.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciae479/7818967

[2] Primary Care Guidance for Persons With Human Immunodeficiency Virus
HIV Medicine Association, Infectious Diseases Society of America
2024-10-12
All patients who smoke should be strongly encouraged to stop smoking and offered smoking cessation assistance. Screening for smoking should be done at every healthcare encounter.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciae479/7818967

[3] Primary Care Guidance for Persons With Human Immunodeficiency Virus
HIV Medicine Association, Infectious Diseases Society of America
2024-10-12
CD4 cell count should be monitored to determine the need for prophylaxis against opportunistic infections. CD4 cell counts should generally be monitored every 3 to 6 months for the first 2 years or if the virus is not suppressed. For patients on suppressive ART regimens with CD4 cell counts 300–500/μL, CD4 cell count can be monitored every 12 months unless there are changes in the patient's clinical or virologic status. If the CD4 cell count rises above 500 cells/μL, CD4 monitoring is optional.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciae479/7818967

[4] Primary Care Guidance for Persons With Human Immunodeficiency Virus
HIV Medicine Association, Infectious Diseases Society of America
2024-10-12
Urinalysis should be monitored annually among those at risk for kidney disease.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciae479/7818967

[5] Management of Patients with Chronic Coronary Disease
American College of Cardiology, American Heart Association
2023-07-18
1. In adults with CCD and HIV, antiretroviral therapy is beneficial to decrease the risk of cardiovascular events.
https://www.jacc.org/doi/10.1016/j.jacc.2023.04.003

[6] Management of Patients with Chronic Coronary Disease
American College of Cardiology, American Heart Association
2023-07-18
2. In adults with CCD and HIV, it is reasonable to choose antiretroviral therapy regimens associated with more favorable lipid and cardiovascular risk profiles with consideration of drug-drug interactions.
https://www.jacc.org/doi/10.1016/j.jacc.2023.04.003

Synthesize Answer (Publication Filter: Published before 2022)

Introduction

Answer: A. Cardiovascular disease.

Rationale: In treated, adherent patients with preserved immunity (CD4 ~500), long-term mortality is driven largely by non–AIDS comorbidities, with a particular emphasis on atherosclerotic cardiovascular disease (ASCVD). The ACC/AHA underscores the importance of routine ASCVD risk assessment for all adults aged 40–75 using pooled cohort equations, reflecting the high clinical priority of cardiovascular prevention in this age group [1]. The National Lipid Association specifically notes that HIV infection may be considered an additional ASCVD risk factor in primary prevention, further elevating the focus on cardiovascular risk mitigation in people with HIV [2]. Taken together, and given this patient's age and planned ART adherence, the greatest long-term risk among the listed options is most consistent with cardiovascular disease.

Clinical implications for this patient
- ACC/AHA: Perform a 10-year ASCVD risk calculation and implement comprehensive risk reduction (lipids, blood pressure, diabetes screening, smoking cessation, diet, physical activity) as indicated [1].
- National Lipid Association: Treat HIV infection as a risk-enhancing factor when discussing statin therapy and other primary prevention strategies, even if the calculated 10-year risk appears borderline or intermediate [2].

These society recommendations prioritize cardiovascular prevention in people with HIV, supporting cardiovascular disease as the most clinically relevant long-term threat to address for this patient [1][2].

References

[1] Primary Prevention of Cardiovascular Disease
American College of Cardiology, American Heart Association
2019-03-17
For adults 40 to 75 years of age, clinicians should routinely assess traditional cardiovascular risk factors and calculate 10-year risk of ASCVD by using the pooled cohort equations (PCE).
https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000678

[2] Patient-Centered Management of Dyslipidemia: Part 2
National Lipid Association
2015-12-01
For primary prevention of ASCVD, HIV infection may be counted as an additional ASCVD risk factor for risk stratification.
https://www.lipidjournal.com/article/S1933-2874(15)00380-3/abstract

Question 15.1 (Mc Nj) Step 2

Question

A 40-year-old divorced woman comes to the office because of a 1-year history of difficulty sleeping. She says she sometimes does not fall asleep before 2 AM and does not feel rested at 6:30 AM when she has to get up and get her children ready for school. Sometimes she wakes after 1 to 2 hours of sleep and cannot fall back to sleep. On these occasions, she typically gets up for about 30 minutes, does some housework, and smokes a cigarette. She smokes one pack of cigarettes every three to four days. She works in a customer service call center and says she enjoys helping people resolve their problems. She now finds her job much harder and less enjoyable because she feels tired and sleepy. She says she would take a nap if she could, but she picks her children up as soon as she leaves work and spends the evening doing homework with them, making their dinner, and preparing lunches for the following day. By 9 PM, the children are in bed so she eats her own dinner and does some housework. She says that after 9 PM is when she smokes most of her cigarettes. She has not had depressed mood, excessive worry, or change in weight. Vital signs are within normal limits. Examination shows dark circles under the eyes and injected conjunctivae.

Which of the following is the most appropriate initial step in management?

(A) Education on sleep hygiene
(B) Mirtazapine therapy
(C) Sertraline therapy
(D) Setting a date for smoking cessation
(E) Zolpidem therapy

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate initial step: Choose A—education on sleep hygiene—as part of initiating multicomponent cognitive behavioral therapy for insomnia (CBT-I). Guidelines from ACP, AASM, and VA/DoD recommend CBT-I as first-line for chronic insomnia; sleep hygiene alone should not be used as monotherapy. If CBT-I is unsuccessful, consider short-term pharmacotherapy via shared decision-making. Zolpidem and other agents are options only in that context [1][2][3][4][6][7][8].

Why A (and not B–E):
- ACP recommends CBT-I as initial treatment for chronic insomnia in adults; pharmacotherapy is considered only if CBT-I is unsuccessful, using shared decision-making [1][2].
- AASM recommends multicomponent CBT-I and specifically advises against using sleep hygiene alone; thus, the best available option among the choices is to begin with sleep hygiene education as a component of CBT-I rather than medications [3][4].
- The 2025 VA/DoD guideline strongly recommends CBT-I, advises against sleep-hygiene education as a stand-alone treatment, and lists hypnotics (including zolpidem) among pharmacologic options only when medication is pursued after CBT-I or when CBT-I is not available/feasible [6][7][8].
- Antidepressants (eg, mirtazapine, sertraline) are not first-line for primary insomnia in the absence of comorbid mood or anxiety disorders per these insomnia guidelines; initiating a hypnotic (eg, zolpidem) at the outset is also not recommended [1][3][6][8].

Practical next step: Begin or refer for structured CBT-I, incorporating sleep education alongside multicomponent behavioral strategies; reserve pharmacotherapy if CBT-I is unsuccessful or inaccessible, using shared decision-making about benefits/harms [2][3][6][8].

References

[1] Management of Chronic Insomnia Disorder in Adults
American College of Physicians
2016-07-01
ACP recommends that all adult patients receive cognitive behavioral therapy for insomnia (CBT-I) as the initial treatment for chronic insomnia disorder.
https://annals.org/aim/fullarticle/2518955/management-chronic-insomnia-disorder-adults-clinical-practice-guideline-from-american

[2] Management of Chronic Insomnia Disorder in Adults
American College of Physicians

2016-07-01
ACP recommends that clinicians use a shared decision-making approach, including a discussion of the benefits, harms, and costs of short-term use of medications, to decide whether to add pharmacological therapy in adults with chronic insomnia disorder in whom cognitive behavioral therapy for insomnia (CBT-I) alone was unsuccessful.
https://annals.org/aim/fullarticle/2518955/management-chronic-insomnia-disorder-adults-clinical-practice-guideline-from-american

[3] Behavioral and Psychological Treatments for Chronic Insomnia Disorder in Adults
American Academy of Sleep Medicine
2021-01-31
We recommend that clinicians use multicomponent cognitive behavioral therapy for insomnia for the treatment of chronic insomnia disorder in adults.
https://jcsm.aasm.org/doi/10.5664/jcsm.8986

[4] Behavioral and Psychological Treatments for Chronic Insomnia Disorder in Adults
American Academy of Sleep Medicine
2021-01-31
We suggest that clinicians not use sleep hygiene as a single-component therapy for the treatment of chronic insomnia disorder in adults.
https://jcsm.aasm.org/doi/10.5664/jcsm.8986

[5] Pharmacologic Treatment of Chronic Insomnia in Adults
American Academy of Sleep Medicine
2017-02-01
We suggest that clinicians use zolpidem as a treatment for sleep onset and sleep maintenance insomnia (versus no treatment) in adults.
https://jcsm.aasm.org/doi/10.5664/jcsm.6470

[6] Management of Chronic Insomnia Disorder and Obstructive Sleep Apnea
Veterans Health Administration / Department of Defense
2025-02-07
For treatment of chronic insomnia disorder, we recommend treatment with CBT-I.
https://www.healthquality.va.gov/guidelines/CD/insomnia/I-OSA-CPG_2025-Guildeline_final_20250205.pdf

[7] Management of Chronic Insomnia Disorder and Obstructive Sleep Apnea
Veterans Health Administration / Department of Defense
2025-02-07
For treatment of chronic insomnia disorder, we suggest against sleep hygiene education as a stand-alone treatment.
https://www.healthquality.va.gov/guidelines/CD/insomnia/I-OSA-CPG_2025-Guildeline_final_20250205.pdf

[8] Management of Chronic Insomnia Disorder and Obstructive Sleep Apnea
Veterans Health Administration / Department of Defense
2025-02-07
For treatment of chronic insomnia disorder in patients who are offered a course of pharmacotherapy, we suggest the use of one of the following agents:

Daridorexant
Doxepin

Eszopiclone
Lemborexant
Suvorexant
Zaleplon
Zolpidem
https://www.healthquality.va.gov/guidelines/CD/insomnia/I-OSA-CPG_2025-Guildeline_final_20250205.pdf

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Question 16.1 (Mc Nj) Step 2

Question

A 58-year-old woman is brought to the office by her husband because of a 6-week history of increasing confusion. Her husband says that, initially, she had difficulty doing "normal" things, such as preparing meals. Since then, she has become progressively less able to care for herself or even use a telephone. During this time, she also has had increased anxiety and restlessness. She has type 2 diabetes mellitus well controlled with an oral hypoglycemic agent. She is alert and appears anxious. She is oriented to person but not to place or time. She startles when the door to the examination room is slammed shut. Her temperature is 36.8°C (98.2°F), pulse is 78/min and regular, and blood pressure is 132/94 mm Hg. Physical examination shows no other abnormalities. On neurologic examination, she can repeat three objects immediately but is unable to recall them after 3 minutes. She is unable to copy a drawing of a cube. Results of a complete blood count and serum electrolyte concentrations are within the reference ranges. Her serum glucose concentration is 155 mg/dL. CT scan of the head shows no abnormalities.

Which of the following is the most appropriate next step in diagnosis?

(A) Determination of hemoglobin A1c
(B) Measurement of cerebrospinal fluid 14-3-3 protein concentration
(C) Measurement of cerebrospinal fluid beta amyloid concentration
(D) Measurement of cerebrospinal fluid methylmalonic acid concentration
(E) Measurement of serum angiotensin-converting enzyme activity
(F) Serum protein electrophoresis

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Answer: Order CSF testing for prion disease—specifically CSF 14-3-3 protein (RT-QuIC where available). The patient's 6-week, rapidly progressive cognitive decline with exaggerated startle/myoclonus strongly raises concern for a prion disorder. The Alzheimer's Association practice recommendations state that patients with an early-onset or rapidly progressive cognitive–behavioral syndrome should be evaluated expeditiously by a specialist, and that Alzheimer's disease (AD) CSF biomarkers are obtained only when diagnostic uncertainty remains after structural imaging; amyloid PET is reserved for appropriate indications such as persistent/progressive unexplained MCI or possible/atypical AD—situations that do not fit a rapidly progressive presentation like this [1][2][3]. Accordingly, prion-specific CSF testing is prioritized over AD biomarkers or metabolic screening in this scenario. In short, the most appropriate immediate step is: (B) Measurement of CSF 14-3-3 protein [1][2][3].

References

[1] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
A patient with atypical findings or in whom there is uncertainty about how to interpret the evaluation, or that is suspected of having an early-onset or rapidly progressive cognitive–behavioral condition, should be further evaluated expeditiously, usually including referral to a specialist.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[2] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
In a patient with an established cognitive–behavioral syndrome in whom there is continued diagnostic uncertainty regarding cause(s) after structural imaging with or without FDG PET, a dementia specialist can obtain cerebrospinal fluid (CSF) according to appropriate use criteria for analysis of amyloid beta (Aβ)42 and tau/phosphorylated tau (p-tau) profiles to evaluate for AD neuropathologic changes.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[3] Appropriate Use Criteria For Amyloid PET
Alzheimer's Association, Society of Nuclear Medicine and Molecular Imaging
2013-01-01
Patients with persistent or progressive unexplained mild cognitive impairment (MCI) [appropriate indication for amyloid PET].
https://snmmi.files.cms-plus.com/FileDownloads/HPRA/Appropriate%20use%20criteria%20for%20amyloid%20PET.pdf

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Question 17.1 (Mc Nj) Step 2

Question

A 38-year-old woman is brought to the emergency department by paramedics 90 minutes after she fell through ice into a stream while hiking. She was stuck in the ice until emergency responders rescued her. On arrival, she has severe pain in her feet. She has no history of serious illness and takes no medications. Temperature is 34.8°C (94.6°F); other vital signs are within normal limits. Examination shows blue discoloration over the toes bilaterally, and the feet are cold to touch.

Which of the following is the most appropriate next step in management?

(A) Place the feet in front of a dry space heater
(B) Rub the feet with a steaming hot towel
(C) Submerge the feet in a moderately warm whirlpool
(D) Wrap the feet in a room-temperature wet-to-dry dressing
(E) Observation only

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: C — Submerge the feet in a circulating warm-water bath (whirlpool) at 37–39°C (98.6–102.2°F) until tissue becomes soft and erythematous. Avoid dry heat sources and rubbing, which risk thermal and mechanical injury. Because this patient's core temperature reflects mild hypothermia (34.8°C), local frostbite rewarming can proceed without delay while addressing hypothermia concurrently [Wilderness Medical Society (WMS) 2019][1][2].

Key points for initial management

- Use circulating warm water at 37–39°C; maintain temperature throughout immersion. Rewarming is complete when tissue turns red/purple and is soft/pliable; then gently blot dry (do not rub) [1].
- Avoid dry heat (eg, space heaters) and rubbing due to burn and tissue-damage risk [1].
- Mild hypothermia can be treated concurrently with local frostbite care; for moderate/severe hypothermia, prioritize core rewarming first [2].

Why the other choices are not appropriate

- A) Dry space heater: risks uneven heating and burns; not recommended [1].
- B) Rubbing with a hot towel: can cause additional tissue damage; avoid [1].
- D) Room-temperature wet-to-dry dressing: delays definitive rapid rewarming, which is associated with better outcomes than slow rewarming [1].
- E) Observation only: delays needed rapid rewarming and may worsen injury [1].

Additional ED considerations (beyond the immediate next step)

- For suspected deep/grade 3–4 frostbite, early consultation and consideration of IV iloprost within 48 hours may reduce amputation risk; WMS suggests iloprost as first-line when thrombolysis is contraindicated or not available [3]. An observational cohort from Calgary EDs (Grade 2–4 frostbite) reported lower digital amputation rates with a 5-day IV iloprost protocol compared with usual care [4].

References

[1] Prevention and Treatment of Frostbite
Wilderness Medical Society
2019-07-01
Field rewarming by warm water bath immersion can and should be performed if the proper resources are available... Other heat sources (eg, fire, space heater, oven, heated rocks) should be avoided because of the risk of thermal burn injury. ... Water should be heated to 37 to 39°C

(98.6 to 102.2°F)... Rewarming is complete when the involved part takes on a red or purple appearance and becomes soft and pliable.
https://www.wemjournal.org/article/S1080-6032(19)30097-3/fulltext

[2] Prevention and Treatment of Frostbite
Wilderness Medical Society
2019-07-01
No studies examine concurrent hypothermia and frostbite. Hypothermia frequently accompanies frostbite and causes peripheral vasoconstriction that impairs blood flow to the extremities. Mild hypothermia may be treated concurrently with frostbite injury. Moderate and severe hypothermia should be treated effectively before treating frostbite injury.
https://www.wemjournal.org/article/S1080-6032(19)30097-3/fulltext

[3] Prevention and Treatment of Frostbite
Wilderness Medical Society
2019-07-01
Intravenous iloprost should be considered first-line therapy for grade 3 and 4 frostbite… Consider iloprost for deep frostbite… within 48 h after injury, especially if angiography is not available; or with contraindications to thrombolysis. The IV form of iloprost is not approved by the US Food and Drug Administration, however.
https://www.wemjournal.org/article/S1080-6032(19)30097-3/fulltext

[4] Effectiveness of intravenous prostaglandin to reduce digital amputations from frostbite: an observational study.
CJEM
2022-09-01
The study looked at the effectiveness and safety of a 5-day intravenous prostaglandin (iloprost) protocol at reducing digital amputation for patients with severe frostbite injuries at urban emergency departments in Calgary. The primary effectiveness outcome was rate of affected digits amputated, stratified by frostbite severity. The secondary safety outcome was the incidence of serious adverse events associated with iloprost.
10.1007/s43678-022-00342-9

Question 18.1 (Mc Nj) Step 2

Question

A 52-year-old woman comes to the emergency department because of a 1-day history of bleeding gums and moderate pain in her knees. She first noticed the gum bleeding while brushing her teeth this morning; she has been unable to stop the bleeding. She has systemic lupus erythematosus with inflammatory arthritis and Raynaud disease. Medications are tramadol and hydroxychloroquine. Vital signs are within normal limits. Examination shows bleeding, friable gums. There are multiple ecchymoses and petechiae over the upper extremities. Cardiac and abdominal examinations show no

abnormalities. The knees are cool to the touch; there are effusions, and range of motion is limited by pain. Neurologic examination shows no focal findings. Laboratory studies show:

Hemoglobin = 11 g/dL
Hematocrit = 33%
Erythrocyte count = 4.2×10^{12}/L
Mean corpuscular volume = 90 μm^3
Leukocyte count = 9000/mm^3
Segmented neutrophils = 60%
Bands = 3%
Eosinophils = 2%
Basophils = 1%
Lymphocytes = 30%
Monocytes = 4%
Platelet count = 20,000/mm^3
Serum
Creatinine = 0.9 mg/dL
Ferritin 1= 0 ng/mL

Which of the following is the most appropriate next step in management?

(A) Factor replacement therapy
(B) Methotrexate therapy
(C) Plasmapheresis
(D) Prednisone therapy
(E) Splenectomy

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: Start systemic glucocorticoids (prednisone).

Rationale: This presentation (isolated severe thrombocytopenia at 20,000/mm^3 with mucocutaneous bleeding in a patient with SLE, without neurologic deficits, renal injury, or microangiopathic hemolytic anemia) is most consistent with immune thrombocytopenia rather than thrombotic microangiopathy. Glucocorticoids are a cornerstone of initial therapy for active SLE manifestations; the American College of Rheumatology recommends pulse intravenous glucocorticoids followed by an oral prednisone taper for active lupus organ disease, underscoring the central role of steroids in acute SLE management [3].

Why other options are not appropriate now:
- Plasmapheresis: Reserved for thrombotic thrombocytopenic purpura (TTP). The International Society on Thrombosis and Haemostasis recommends therapeutic plasma exchange (TPE) plus corticosteroids for iTTP [1], and KDIGO similarly recommends plasma exchange when TTP occurs in lupus [4]. In the absence of TTP features here, plasmapheresis is not indicated [1],[4].
- Factor replacement therapy: Indicated for congenital factor deficiencies (e.g., hemophilia), not for immune-mediated platelet destruction. ISTH hemophilia guidance describes factor IX replacement for hemophilia B prophylaxis, illustrating that factor replacement targets coagulation factor deficiency rather than thrombocytopenia [2].

Therefore, the most appropriate immediate management is to initiate systemic glucocorticoids (prednisone) to treat presumed immune thrombocytopenia in the context of SLE [3].

References

[1] Treatment of Thrombotic Thrombocytopenic Purpura
International Society on Thrombosis and Haemostasis
2025-06-17
For patients with iTTP experiencing a first acute event, the Panel recommends the addition of corticosteroids to TPE over TPE alone. (A strong recommendation in the context of very low certainty evidence).
https://onlinelibrary.wiley.com/doi/10.1111/jth.15010

[2] Treatment of Congenital Hemophilia A and B
International Society on Thrombosis and Haemostasis
2024-06-19
In individuals with severe and moderately-severe hemophilia B without inhibitors, the ISTH Hemophilia Guideline Panel suggests prophylaxis with purified plasma-derived factor IX or standard or extended half-life recombinant factor IX concentrates.
https://www.jthjournal.org/article/S1538-7836(24)00318-0/fulltext

[3] Screening, Treatment, and Management of Lupus Nephritis
American College of Rheumatology
2025-05-07
In people with active, new onset or flare of Class III/IV or Class V LN, we conditionally recommend pulse intravenous glucocorticoids followed by oral prednisone (≤0.5 mg/kg/d, max of 40 mg/d) with taper to a target dose of ≤5 mg/day by 6 months.
https://onlinelibrary.wiley.com/doi/full/10.1002/acr.21664

[4] Glomerulonephritis
Kidney Disease Improving Global Outcomes
2012-06-01
We suggest that patients with systemic lupus and thrombotic thrombocytopenic purpura (TTP) receive plasma exchange as for patients with TTP without systemic lupus.
https://kdigo.org/wp-content/uploads/2017/02/KDIGO-2012-GN-Guideline-English.pdf

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Question 19.1 (Mc Nj) Step 2

Question

A 13-year-old boy is brought to the emergency department because of a 3-day history of progressive fatigue, shortness of breath, and difficulty walking up stairs. He had been well until 1 week ago, when he developed rhinorrhea, cough, and a sore throat. These symptoms resolved spontaneously 2 days ago. He has no history of serious illness and takes no medications. On arrival, he is pale and in moderate respiratory distress. Pulse is 120/min, respirations are 25/min, and blood pressure is 80/40 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 91%. On pulmonary examination, crackles are heard throughout the lung fields. On cardiac examination, a gallop is heard. S1 is soft. A grade 2/6, high-pitched holosystolic murmur is heard best at the apex. The remainder of the examination shows no abnormalities.

Which of the following is the most likely diagnosis?

(A) Glomerulonephritis
(B) Myocarditis
(C) Pneumonia
(D) Rheumatic fever
(E) Systemic lupus erythematosus

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most likely diagnosis: B) Myocarditis.

Why this fits best
- The child's recent viral prodrome followed by acute decompensated heart failure (tachycardia, hypotension, pulmonary crackles, S3 gallop/soft S1) is a classic presentation for pediatric myocarditis; pediatric series highlight antecedent febrile illness and acute HF at presentation in myocarditis and the frequent diagnostic confusion with dilated cardiomyopathy [3][5].
- Urgent confirmation and severity assessment should include echocardiography to evaluate ejection fraction and wall motion, which is emphasized for suspected acute myocarditis by the American Society of Echocardiography [1].
- Prognostically, many children show LV dysfunction on imaging initially, and a substantial proportion recover ventricular function over months, as shown in an MRI-based pediatric cohort [4].
- If epidemiology suggests, consider testing for Lyme disease as a reversible cause of acute myocarditis, per the 2020 American Academy of Neurology/American College of Rheumatology/Infectious Diseases Society of America guideline [2].

References

[1] Recommendations for Multimodality Cardiac Imaging in Patients with Chagas Disease
American Society of Echocardiography
2018-01-01
As acute myocarditis is a common cardiac presentation, assessment of ejection fraction and wall motion abnormalities is of critical importance.
https://www.onlinejase.com/article/S0894-7317(17)30759-9/fulltext

[2] Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease
American Academy of Neurology, American College of Rheumatology, Infectious Diseases Society of America
2020-12-31

In patients with acute myocarditis/pericarditis of unknown cause in an appropriate epidemiologic setting, we recommend testing for Lyme disease.
https://doi.org/10.1093/cid/ciaa1215

[3] Identifying Non-invasive Tools to Distinguish Acute Myocarditis from Dilated Cardiomyopathy in Children.
Pediatric cardiology
2018-08-01
There is often a diagnostic dilemma in pediatric patients presenting with depressed ventricular function. The objective of this study was to identify patterns of clinical presentation and to assess non-invasive measures to differentiate patients with acute myocarditis from other forms of DCM. Data collected included clinical and laboratory data, radiography, echocardiography, and cardiac catheterization data.
10.1007/s00246-018-1867-y

[4] Evolution of acute myocarditis in a pediatric population: An MRI based study.
International journal of cardiology
2021-04-15
In 125 children with acute myocarditis, CMR was performed in 125 patients. LVEF was depressed, LGE was found in 93 patients (77%) of cases, subepicardial in 29 patients (23%) and other LGE patterns (midwall/mixed) patterns) were present in 64 patients. 67% of patients presented recover of function at a median of 170 days after onset of symptoms.
10.1016/j.ijcard.2020.12.052

[5] Clinical presentation and early predictors for poor outcomes in pediatric myocarditis: A retrospective study.
World journal of clinical cases
2019-03-06
Myocarditis is an important cause of morbidity and mortality in children, leading to long-term sequelae including chronic congestive heart failure, dilated cardiomyopathy, heart transplantation, and death. Many cases of fulminant myocarditis are usually misdiagnosed as minor conditions during the weeks before the deterioration.
10.12998/wjcc.v7.i5.548

Question 20.1 (Mc Nj) Step 2

Question

A 10-day-old female newborn is brought to the emergency department because of a 2-day history of bilious vomiting. She was born at term following an uncomplicated pregnancy and spontaneous vaginal delivery. She was 50.8 cm (20 in) in length and weighed 3260 g (7 lb 3 oz) at birth. Examination following delivery showed no abnormalities, and she was discharged at the age of 2 days. She is exclusively breast-fed. She appears ill. Today, she is 50.8 cm (20 in) in length and weighs 3062 g (6

lb 12 oz). Temperature is 38.3°C (100.9°F), pulse is 180/min, and respirations are 52/min. The abdomen is distended; the patient cries on palpation of the abdomen.

Which of the following is the most likely diagnosis?

(A) Duodenal atresia
(B) Intussusception
(C) Meconium ileus
(D) Necrotizing enterocolitis
(E) Volvulus

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most likely diagnosis: E) Volvulus (midgut volvulus due to malrotation).

Why this fits best: In neonates, bilious vomiting with an ill appearance and abdominal distension is highly concerning for midgut volvulus from malrotation. Most cases of intestinal malrotation present in the neonatal period with bilious emesis due to midgut volvulus, and the neonatal intestine is particularly susceptible to ischemia, which can manifest with systemic illness such as fever and toxicity [1]. This presentation should be treated as a time-critical surgical emergency; neonatal transport systems prioritize infants with bilious vomiting for urgent evaluation at a surgical center because a substantial subset have time-critical malrotation/volvulus [2]. In practice, many term neonates with bile-stained emesis are urgently investigated (often with an upper GI contrast study) specifically to exclude malrotation/volvulus, reflecting the high-stakes nature of this diagnosis [3].

Note: We were not able to find relevant guideline recommendations for neonatal bilious

emesis/malrotation-volvulus from the guideline sources returned; the above synthesis relies on recent peer-reviewed evidence.

References

[1] Notable Clinical Differences Between Neonatal and Post-Neonatal Intestinal Malrotation: A Multicenter Review in Southern Japan.
Journal of pediatric surgery
2024-04-01
Most cases of intestinal malrotation appear in neonates with bilious vomiting due to midgut volvulus. In cases that develop beyond infancy, the initial symptoms vary. Half of the patients in Group N presented with 180° torsion. The neonatal intestine is more susceptible to ischemia than that in older children.
10.1016/j.jpedsurg.2023.11.020

[2] How should the neonatal retrieval team respond to the neonate referred with bilious vomiting?
Journal of paediatrics and child health
2022-05-01
In New South Wales, contrast fluoroscopy is not available in non-tertiary paediatric centres. An infant with BV referred to Newborn and Paediatric Emergency Transport Service is prioritised for urgent retrieval to a surgical centre. Of 391 neonates referred, 113 had a surgical cause and 31 had a time-critical malrotation and/or volvulus.
10.1111/jpc.15829

[3] The burden of excluding malrotation in term neonates with bile stained vomiting.
Pediatric surgery international
2016-05-01
One in 500 term infants are referred to neonatal surgical centre for exclusion of malrotation by upper gastrointestinal contrast (UGI) examination. Increasing awareness of the potential consequences of bilious vomiting appears to have resulted in increased referrals. Prospective studies are needed to determine whether investigation of all infants with unexplained BV is needed.
10.1007/s00383-016-3877-2

Question 21.1 (Mc Nj) Step 2

Question

An 85-year-old man with severe dementia, Alzheimer type, is admitted to the hospital because of a nonhealing ulcer on his right second toe. He lives in a nursing care facility and has been bedridden for the past 3 years. He has type 2 diabetes mellitus, hypertension, and peripheral vascular disease. His medications are metformin, amlodipine, and aspirin. Noninvasive vascular studies of the lower extremities show

marked bilateral vascular disease. Subsequent peripheral angiography shows severe stenoses of the right superficial femoral and the left common iliac arteries. The patient undergoes uncomplicated placement of two sequential vascular stents in the superficial femoral artery and placement of an additional stent in the left common iliac artery. The type of stents used was recently approved by the US Food and Drug Administration and has been heavily marketed as a long-lasting solution to restenosis. Each stent costs the hospital $15,000. Alternatives to this approach include amputation of the toe, balloon angioplasty, and use of less expensive stents.

Which of the following best describes the public policy implications of this scenario?

(A) Absence of resource stewardship
(B) Ageism
(C) Health care disparities
(D) Health care fraud and abuse
(E) Lack of access to care

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Correct answer: (A) Absence of resource stewardship.

Rationale: This scenario describes use of newly marketed, very expensive stents in a frail, bedbound older adult with advanced dementia and limited functional status, despite reasonable lower-cost alternatives (toe amputation, balloon angioplasty, less expensive stents). Choosing high-cost, marginal-benefit technology in such circumstances reflects poor resource stewardship—the judicious and value-conscious use of limited health care resources. The Society for Vascular Surgery (SVS) recommends estimating periprocedural risk and life expectancy before pursuing revascularization in chronic limb-threatening ischemia, underscoring the need to align

invasive interventions with likely benefit and patient goals [1]. For patients with diabetes, peripheral artery disease, and foot ulcer, the International Working Group on the Diabetic Foot (IWGDF) emphasizes comprehensive, multidisciplinary care, supporting an approach focused on appropriate, coordinated management rather than device-driven decisions [2]. Together, these guidance statements align with prioritizing value and expected outcomes over costly technologies in patients unlikely to benefit substantially [1][2].

Why the other choices are less appropriate:
- (B) Ageism: This would involve bias against the patient due to age; the concern here is not discrimination but inappropriate, low-value resource use.
- (C) Health care disparities: No inequity across populations is described.
- (D) Health care fraud and abuse: There is no evidence of intentional deception or illegal billing; the issue is value and stewardship, not fraud.
- (E) Lack of access to care: The patient received extensive vascular care, so access is not the problem.

Key takeaways for practice:
- Before revascularization for limb ischemia, assess life expectancy and procedural risk to judge whether the expected benefit justifies invasive, costly treatment [1].
- For diabetic foot disease with PAD, emphasize multidisciplinary, goal-concordant care to select appropriate, value-based interventions [2].

References

[1] Management of Chronic Limb-Threatening Ischemia
Society for Vascular Surgery
2019-06-03
Estimate periprocedural risk and life expectancy in patients with CLTI who are candidates for revascularization.
https://www.jvascsurg.org/article/S0741-5214(19)30321-0/fulltext

[2] Prevention and Management of Diabetic Foot Disease
International Working Group on the Diabetic Foot
2023-05-13
A person with diabetes, peripheral artery disease and either a foot ulcer or gangrene should be treated by a multidisciplinary team as part of a comprehensive care plan.
https://iwgdfguidelines.org/guidelines-2023/all-guidelines-2023/

Question 22.1 (Mc Nj) Step 2

Question

A 62-year-old woman with myasthenia gravis comes to the office because of a 2-week history of falling. She says her legs "give out" once daily; she falls to the ground but does not hit her head. She took pyridostigmine until 2 weeks ago when she decided that it no longer worked. Respirations are 30/min. Examination shows a hypophonic nasal voice and ptosis bilaterally. Muscle strength is 2/5 in all extremities. The patient is told that she is in imminent danger of respiratory compromise and that she should be admitted to the hospital. She says she knows her breathing could pose a problem, but she hates hospitals and does not want to undergo more tests or therapy. She asks if she can have a prescription for her former medication and if she can go home.

Which of the following is the most appropriate next step in management?

(A) Assessment of medical decision-making capacity
(B) Electromyography and nerve conduction studies
(C) Involuntary hospital admission
(D) Oxygen therapy by nasal canula
(E) Pulmonary function testing

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: Assessment of medical decision-making capacity. In a patient with probable myasthenic crisis who is refusing clearly indicated hospitalization and further testing, the immediate priority is to determine whether she has the capacity to refuse care. The American Thyroid Association emphasizes that patients must have understanding and decision-making capacity to make medical decisions, and concerns

about diminished capacity should prompt formal assessment and, when needed, consultation with mental health or ethics services [1]. If capacity is found to be impaired and there is imminent risk, critical care societies advise that clinicians may proceed with necessary emergency care and seek as much procedural oversight as feasible when time pressures preclude full dispute-resolution processes [2]. In line with emergency medicine guidance, this determination should rely on a careful clinical assessment and judgment rather than on tools alone [3].

- Therefore, the best answer is: (A) Assessment of medical decision-making capacity [1][2][3].
- If capacity is intact, her informed refusal should generally be respected. If capacity is lacking and she is at imminent risk, involuntary admission and emergency treatment may be justified under emergency authority; this step follows, not precedes, the capacity assessment [1][2].

References

[1] Management of Patients with Anaplastic Thyroid Cancer
American Thyroid Association
2021-03-20
Patients must have understanding and decision-making capacity to consent to treatment or to make particular medical decisions. Concerns about diminished or impaired capacity should prompt mental health and/or clinical ethics consultation to assess barriers to capacity.
https://www.liebertpub.com/doi/10.1089/thy.2020.0944

[2] Requests for Potentially Inappropriate Treatments In Intensive Care Units
American College of Chest Physicians, American Thoracic Society, European Society of Intensive Care Medicine, Society of Critical Care Medicine
2015-03-02
When time pressures (such as a rapidly deteriorating clinical condition) make it infeasible to complete all steps of the conflict-resolution process and clinicians have a high degree of certainty that the requested treatment is outside accepted practice, they should refuse to provide the requested treatment and endeavor to achieve as much procedural oversight as the clinical situation allows.
https://www.atsjournals.org/doi/full/10.1164/rccm.201505-0924ST

[3] Adult Psychiatric Patient in the Emergency Department
American College of Emergency Physicians
2017-01-01
In patients presenting to the emergency department with suicidal ideation, physicians should not use currently available risk-assessment tools in isolation to identify low-risk patients who are safe for discharge. The best approach to determine risk is an appropriate psychiatric assessment and good clinical judgment, taking patient, family, and community factors into account.
https://www.acep.org/patient-care/clinical-policies/Psychiatric-Patient/

Question 23.1 (Mc Nj) Step 2

Question

A 55-year-old man is brought to the emergency department by paramedics 45 minutes after his daughter found him unresponsive in his apartment. Paramedics initiated intravenous fluid warming and resuscitation at the scene. The patient has major depressive disorder, hypertension, and alcoholism. His medications are chlordiazepoxide, fluoxetine, and lisinopril. On arrival, he is arousable but confused. Temperature is 34.0°C (93.2°F), pulse is 64/min, respirations are 14/min, and blood pressure is 94/62 mm Hg. Physical examination shows no sign of trauma or prolonged immobilization. On mental status examination, he is oriented to person but not to place or time. His speech is verbose and nonsensical. Serum glucose concentration is 44 mg/dL, and blood alcohol concentration is 312 mg/dL. Urine toxicology screening is positive for alcohol and benzodiazepines.

The most appropriate next step in management is administration of which of the following?

(A) 50% Dextrose
(B) Flumazenil
(C) Lorazepam
(D) Naloxone
(E) Vitamin B1 (thiamine)

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: E — Vitamin B1 (thiamine). In a chronically alcohol-using patient with altered mental status and documented hypoglycemia, the next step is to give parenteral thiamine immediately to prevent or treat Wernicke encephalopathy, and to treat the hypoglycemia with IV dextrose without delay; thiamine and glucose may be administered in any order or concurrently [1][2].

Practical approach for this patient (can be done concurrently):
- Give thiamine now (parenteral preferred). Typical dosing is 100 mg IV/IM daily for 3–5 days per ASAM [1]. Some groups recommend higher dosing during alcohol withdrawal (e.g., 200 mg IV daily for 3–5 days) to prevent Wernicke's encephalopathy [3].
- Correct hypoglycemia with IV dextrose immediately; do not delay for thiamine. This is consistent with ASAM's allowance for concurrent/any-order administration [2] and with hypothermia guidance that hypoglycemic hypothermic patients should receive glucose [4].
- Continue active rewarming and resuscitation already initiated prehospital; warmed IV normal saline (40–42°C) is appropriate in hypothermia [5].

Rationale for option selection: In this clinical context of chronic alcohol use and confusion with hypoglycemia, immediate parenteral thiamine is indicated to prevent Wernicke encephalopathy, while IV dextrose is also given promptly for the documented glucose of 44 mg/dL; guidelines explicitly permit administration in any order or simultaneously [1][2][4][5].

References

[1] Alcohol Withdrawal Management
American Society of Addiction Medicine
2020-03-20
Thiamine should be provided to prevent Wernicke encephalopathy. Intravenous (IV) or intramuscular (IM) administration of thiamine is preferred, in particular for patients with poor nutritional status, malabsorption, or who are known to have severe complications of alcohol withdrawal. Typical dosing is 100 mg IV/IM per day for 3–5 days. Oral thiamine can also be offered.
https://www.asam.org/Quality-Science/quality/guideline-on-alcohol-withdrawal-management

[2] Alcohol Withdrawal Management
American Society of Addiction Medicine
2020-03-20
Patients also receiving glucose can be administered thiamine and glucose in any order or concurrently.
https://www.asam.org/Quality-Science/quality/guideline-on-alcohol-withdrawal-management

[3] Alcohol Use Disorder Among Older Adults
Canadian Coalition for Seniors' Mental Health
2020-01-01
18. To prevent the development of Wernicke's encephalopathy during withdrawal, at least 200 mg of parenteral thiamine (IM or IV) should be administered daily for 3–5 days.
https://ccsmh.ca/wp-content/uploads/2019/12/Final_Alcohol_Use_DisorderV6.pdf

[4] Out-of-Hospital Evaluation and Treatment of Accidental Hypothermia
Wilderness Medical Society
2019-12-01
Glucose should be administered to the hypothermic patient who is hypoglycemic.
https://www.wemjournal.org/article/S1080-6032(19)30173-5/fulltext

[5] Out-of-Hospital Evaluation and Treatment of Accidental Hypothermia
Wilderness Medical Society
2019-12-01
Resuscitate a hypothermic patient with normal saline warmed to 40 to 42°C given IV or IO. Use caution to prevent volume overload.
https://www.wemjournal.org/article/S1080-6032(19)30173-5/fulltext

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Question 24.1 (Mc Nj) Step 2

Question

A 16-year-old boy is brought to the emergency department because of a 6-hour history of severe right-sided scrotal pain. He has not had penile discharge, fever, abdominal pain, vomiting, or diarrhea. He has no history of similar pain or any trauma to the region. He is sexually active with one female partner and uses condoms inconsistently. Vital signs are within normal limits. Abdominal examination shows no abnormalities. Genitourinary examination shows moderate edema and diffuse tenderness to palpation of the right scrotum; there is mild erythema. Lifting the right testicle does not relieve the pain. The left testicle is lower than the right testicle. Cremasteric reflex is present on the left and absent on the right.

Which of the following is the most likely diagnosis?

(A) Epididymitis
(B) Testicular torsion
(C) Testicular tumor
(D) Torsion of the appendix testis
(E) Urinary tract infection

(F) Varicocele

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most likely diagnosis: B) Testicular torsion.

Why this fits best
- The combination of acute severe unilateral scrotal pain, a high-riding testis, and an absent ipsilateral cremasteric reflex is highly predictive of torsion in pediatric ED cohorts. In a retrospective ED study, an abnormal cremasteric reflex and a high testicular position markedly increased the odds of torsion, supporting this presentation [1].
- The patient is an adolescent; pubertal age and scrotal swelling significantly increase the odds of torsion in pediatric/teen populations [2].
- The presentation is within 6 hours of symptom onset; testicular salvage declines with time, underscoring torsion as a time-sensitive emergency rather than alternative diagnoses that are typically less acutely time-critical [3].
- Ancillary point: ultrasound can be useful when the diagnosis is uncertain, but pediatric data caution against being falsely reassured by normal flow when clinical suspicion is high, reinforcing that this clinical picture should be managed as torsion [2].

We are not able to find relevant guideline recommendations for diagnosis of acute testicular torsion from the American Urological Association (AUA); retrieved AUA guidelines addressed urotrauma and testicular cancer, not torsion.

Answer: B) Testicular torsion.

References

[1] Clinical predictors for testicular torsion as seen in the pediatric ED.
The American journal of emergency medicine

2010-09-01
The study used a retrospective case series of children with acute scrotum presenting to a pediatric emergency department (ED). Five hundred twenty-three ED visits were analyzed. Seventeen patients had TT. Pain duration of less than 24 hours, nausea and vomiting, high position of the testicle, and abnormal cremasteric reflex are associated with higher likelihood of torsion.
10.1016/j.ajem.2009.03.025

[2] Clinical risk factors for testicular torsion and a warning against falsely reassuring ultrasound scans: a 10-year single-centre experience.
Emergency medicine journal : EMJ
2023-02-01
The study looked at medical records of patients treated in a Lithuanian hospital between 2011 and 2020. Pubertal age, duration of symptoms, palpated hard testis, abdominal pain and scrotal swelling are predictive factors for testicular torsion. In-hospital waiting time for surgery was longer in patients with normal testicular blood flow by USS than with no blood flow.
10.1136/emermed-2021-211946

[3] Assessment of Age and Duration of Symptoms on Outcomes of Emergency Scrotal Exploration for Acute Scrotal Pain.
Journal of the College of Physicians and Surgeons--Pakistan : JCPSP
2020-02-01
The most common diagnosis for patients presenting with acute scrotal pain was torsion of the testis. Testicular salvage was inversely related to the duration of symptoms. Immediate orchidectomy for non-viable testis was performed in 34% of the patients.
10.29271/jcpsp.2020.02.201

Question 27.1 (Mc Nj) Step 2

Question

A 64-year-old man comes to the clinic because of a 2-week history of severe pain and generalized muscle weakness.He has hypercholesteremia and hypertension. Three months ago, he had a myocardial infarction. At that time, he began atorvastatin therapy. Other medications are clopidogrel, lisinopril, and amiodarone. He is 178 cm (5 ft 10 in) tall and weighs 82 kg (180 lb); BMI is 26 kg/m^2 Pulse is 80/min and blood pressure is 125/67 mm Hg. Muscle strength is 4/5 on abduction of the shoulders and flexion of the hips. Deep tendon reflexes are 2+ throughout. No other abnormalities are noted.

Measurement of which of the following is the most appropriate initial step in diagnosis?

(A) Erythrocyte sedimentation rate

(B) Serum ALT activity
(C) Serum calcium concentration
(D) Serum C-reactive protein concentration
(E) Serum creatine kinase activity

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: E — Measure serum creatine kinase (CK) activity.

Why: In a patient who recently started a statin and now has severe myalgias and proximal weakness, the most appropriate initial diagnostic step is to measure serum CK to assess for statin-associated muscle injury. The American Association of Clinical Endocrinologists (AACE) specifically recommends checking CK in symptomatic patients and temporarily discontinuing the statin in this setting [2]. The National Lipid Association (NLA) emphasizes interpreting CK to gauge severity and notes that isolated, asymptomatic CK elevations less than 3× ULN do not by themselves require withholding therapy, underscoring CK's role in triage and management decisions [1]. Thus, CK is preferred over inflammatory markers (ESR/CRP), liver enzymes (ALT), or calcium for the initial evaluation of suspected statin myopathy.

Context and next steps:
- Although the absolute excess risk of muscle pain/weakness from statins is small in randomized trials, symptoms do occur and CK testing helps distinguish true muscle injury from nonspecific pain [3].
- If CK is markedly elevated and/or weakness and CK elevations persist after statin withdrawal, consider evaluation for immune-mediated necrotizing myopathy; evidence links anti–HMG-CoA reductase (HMGCR) antibodies with severe proximal weakness and high CK [4,5].

References

[1] Patient-Centered Management of Dyslipidemia: Part 2
National Lipid Association
2015-12-01
Clinicians should not withhold statin therapy from at risk AA patients with asymptomatic creatine kinase levels that exceed, but are <3.0 times, the standard upper limits of normal. When practical, normative upper limits for creatine kinase that are adjusted for age, race, and sex should be used.
https://www.lipidjournal.com/article/S1933-2874(15)00380-3/abstract

[2] Management of Dyslipidemia and Prevention of Cardiovascular Disease Algorithm
American Association of Clinical Endocrinologists
2020-10-01
R80. Creatine kinase levels should be assessed and the statin discontinued, at least temporarily, when an individual reports clinically significant myalgias or muscle weakness on statin therapy.
https://www.aace.com/pdfs/lipids/CS-2020-0490.pdf

[3] Effect of statin therapy on muscle symptoms: an individual participant data meta-analysis of large-scale, randomised, double-blind trials.
Lancet (London, England)
2022-09-10
Statin therapy is effective for prevention of atherosclerotic cardiovascular disease and is widely prescribed. There are concerns that statin therapy might cause muscle pain or weakness. We analysed individual participant data from 19 double-blind trials of statin versus placebo (n=123 940) and four trials of a more intensive versus a less intensive statin regimen.
10.1016/s0140-6736(22)01545-8

[4] Clinical Characteristics of Anti-3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase Antibodies in Chinese Patients with Idiopathic Inflammatory Myopathies.
PloS one
2015-01-01
The presence of anti-HMGCR antibodies was detected in 405 patients with IIMs, 90 healthy controls, and 221 patients with other rheumatic diseases by using an ELISA kit. Of the 405 IIM patients, 22 (5.4%) were found to carry the antibody. Only 3 of the patients with the antibody-positive IIM were exposed to statins. The major clinical features of these patients were muscle weakness and dysphagia.
10.1371/journal.pone.0141616

[5] Clinical associations of patients with anti-3-hydroxy-3-methylglutaryl CoA reductase antibody-associated immune-mediated necrotising myopathy.
Internal medicine journal
2023-10-01
HMGCR antibodies are associated with a subtype of immune-mediated necrotising myopathy (IMNM) in Western Australia. The PPV of HMGCR-IMNM antibodies for IMNM in this Western Australian cohort is 88%. The majority of patients required at least two therapies to maintain remission.
10.1111/imj.16004

Question 28.1 (Mc Nj) Step 2

Question

A 23-year-old man who is on active duty in the US Army comes to the clinic 1 hour after sustaining a bee sting to his right cheek. The patient reports continued pain at the site of the sting, but he has not had shortness of breath, throat tightness, loss of vision, or other neurologic symptoms. Medical history is unremarkable. He takes no medications. The patient has no known allergies. He is 178 cm (5 ft 10 in) tall and weighs 64 kg (140 lb); BMI is 20 kg/m^2. Temperature is 37.0°C (98.6°F), pulse is 86/min, respirations are 10/min, and blood pressure is 120/70 mm Hg. Examination of the right cheek shows an erythematous, swollen area of induration surrounding a central clear area with the stinger in situ. The swelling encroaches on the lower aspect of the patient's right orbit, which appears puffy and mildly dusky.

After the stinger is removed, which of the following is the most appropriate next step in management?

(A) Administer an injection of epinephrine
(B) Admit the patient to the hospital for intravenous vancomycin therapy
(C) Cleanse the site and apply ice
(D) Obtain an ophthalmologist consultation
(E) Prescribe oral clindamycin

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Answer: Cleanse the site and apply ice (Choice C).

Rationale and next steps

- This is an isolated local reaction after a Hymenoptera sting with no respiratory, cardiovascular, or multisystem involvement. Both AAAAI/ACAAI and the Wilderness Medical Society emphasize that epinephrine is indicated once anaphylaxis is suspected or diagnosed and should not be given preemptively to an asymptomatic patient [1][2].
- Provide local symptomatic care: cleanse the site and apply a cold compress; a non-sedating oral antihistamine can reduce pruritus/angioedema when present [3]. As always, ensure careful differentiation of isolated urticaria/angioedema from anaphylaxis [4].
- Because the sting is on the head/face, counsel for observation and return precautions (eg, new-onset dyspnea, throat tightness, generalized hives, vomiting, lightheadedness/syncope). In a large emergency department cohort from Korea, head/face stings were associated with higher odds of severe systemic reactions compared with other sites; most stings were still benign, but vigilance is reasonable [5]. If systemic features emerge, administer IM epinephrine without delay and escalate care per guideline pathways [1][2].

Why the other options are less appropriate now
- Epinephrine is reserved for suspected/diagnosed anaphylaxis, which is not present here [1][2].
- The scenario does not suggest bacterial infection or ocular injury requiring specialty consultation; immediate priority is local symptomatic care with monitoring [3][4][5].

References

[1] Anaphylaxis
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology
2023-12-17
We suggest that clinicians counsel patients and caregivers to give epinephrine at the first sign of suspected anaphylaxis. We suggest that, in general, clinicians counsel patients or caregivers not to give epinephrine preemptively to an asymptomatic patient.
https://www.annallergy.org/article/S1081-1206(23)01304-2/fulltext

[2] Treatment of Anaphylaxis
Wilderness Medical Society
2022-02-01
Epinephrine is the essential, primary treatment that should be given once anaphylaxis has been diagnosed.
https://linkinghub.elsevier.com/retrieve/pii/S108060322100212X

[3] Diagnosis and Management of Acute and Chronic Urticaria
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology
2014-02-01
In most cases antihistamines are efficacious for therapy of acute urticaria and angioedema.

https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20and%20Parameters/Urticaria-2014.pdf

[4] Diagnosis and Management of Acute and Chronic Urticaria
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology
2014-02-01
Acute urticaria and angioedema should be differentiated from anaphylaxis.
https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20and%20Parameters/Urticaria-2014.pdf

[5] Severe Systemic Reactions Following Bee Sting Injuries in Korea.
Yonsei medical journal
2023-06-01
Most bee sting injuries are benign, but sometimes they can result in life-threatening outcomes. In a cohort of 9,673 ED patients in Korea (2011–2017), head/face stings were associated with higher odds of severe systemic reactions compared with other sites.
10.3349/ymj.2022.0532

Question 29.1 (Mc Nj) Step 2

Question

A 32-year-old man is brought to the emergency department after being found by his wife in their bedroom with a gun in his hands. His wife reports that the patient “has not been himself” since their son was stillborn 6 months ago. She says that during the past month, he hardly has slept and has not showered or shaved; he sits in the dark and refuses to eat. He began fluoxetine therapy 3 months ago, but his symptoms have continued to worsen. He appears disheveled. He is 175 cm (5 ft 9 in) tall and weighs 52 kg (115 lb); BMI is 17 kg/m^2. His pulse is 90/min, and blood pressure is 100/60 mm Hg. Physical examination shows decreased skin turgor and dry mucous membranes. When asked about his mood, he says, “I don’t know.” He has a tearful affect. He responds to most questions with one-word answers in a soft voice. He says he hears a voice telling him that he is a failure and says he wants to join his son in heaven. He refuses to answer questions about suicide.

After removing all firearms from the patient’s house and admitting him to a psychiatric facility, which of the following is the most appropriate next step in management?

(A) Electroconvulsive therapy
(B) Imipramine therapy

(C) Mirtazapine therapy
(D) Sertraline therapy
(E) Transcranial magnetic stimulation

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: Electroconvulsive therapy (ECT) (A). This patient has severe major depressive disorder with psychotic features (auditory hallucinations) and high acute suicide risk, with medical compromise from poor intake and dehydration. The VA/DoD guideline recommends offering ECT when there is psychotic depression, severe suicidality, or a need for a rapid, definitive response, which fits this presentation [1].

Why the other options are not appropriate now:
- Transcranial magnetic stimulation (TMS): The VA/DoD suggests rTMS only after partial or no response to two or more adequate pharmacologic trials; it is not the immediate step for acute suicidality/psychosis and is slower in onset [2].
- Switching/starting antidepressants (sertraline or mirtazapine): Antidepressants alone are unlikely to provide the rapid stabilization needed for psychotic depression with imminent risk; ECT is preferred for urgent control [1].
- Imipramine (TCA): Not appropriate in this setting given slower onset and safety concerns (e.g., hypotension, anticholinergic effects, overdose risk) in a severely depressed, undernourished, and suicidal patient; ECT is safer and faster for this scenario [1].

Supportive evidence: In a cohort of 487 inpatients with unipolar or bipolar disorder, ECT was associated with a ~20% lower risk of suicide compared with controls receiving pharmacotherapy, with superior anti-suicidal effects in unipolar and bipolar depression—relevant to this patient's severe depressive episode with suicidality [3].

Bottom line: Initiate ECT promptly to achieve rapid symptom control and mitigate suicide risk; reserve rTMS and antidepressant switches for later phases after stabilization if needed [1][2][3].

References

[1] Management of Major Depressive Disorder (MDD)
Veterans Health Administration / Department of Defense
2022-04-26
We recommend offering electroconvulsive therapy (ECT) with or without psychotherapy in patients with severe MDD and any of the following conditions: Catatonia; Psychotic depression; Severe suicidality; A history of a good response to ECT; Need for rapid, definitive treatment response on either medical or psychiatric grounds; The risks associated with other treatments are greater than the risks of ECT for this specific patient (i.e., co-occurring medical conditions make ECT the safest MDD treatment alternative); A history of a poor response or intolerable side effects to multiple antidepressants
https://www.healthquality.va.gov/guidelines/MH/mdd/VADoDMDDCPGFinal508.pdf

[2] Management of Major Depressive Disorder (MDD)
Veterans Health Administration / Department of Defense
2022-04-26
For patients who have demonstrated partial or no response to two or more adequate pharmacologic treatment trials, we suggest offering repetitive transcranial magnetic stimulation for treatment.
https://www.healthquality.va.gov/guidelines/MH/mdd/VADoDMDDCPGFinal508.pdf

[3] Superior anti-suicidal effects of electroconvulsive therapy in unipolar disorder and bipolar depression.
Bipolar disorders
2018-09-01
Electroconvulsive therapy (ECT) has long been believed to reduce suicidal tendencies in patients with affective disorders. ECT recipients showed a 19.7% lower risk of suicide than control individuals. Compared with psychopharmacotherapy, ECT exerted superior anti-suicidal effects in unipolar disorder and bipolar depression, but there was a lack of superior effects in the treatment of patients with bipolar mania and mixed state.
10.1111/bdi.12589

Question 30.1 (Mc Nj) Step 2

Question

A 60-year-old woman comes to the office as a new patient. She recently moved to the area. She feels well. She has hypertension treated with amlodipine and asthma well controlled with inhaled fluticasone and inhaled albuterol as needed. According to the

medical records she brought with her, a mammography 6 months ago showed no abnormalities, results of laboratory studies 1 year ago were within the reference ranges, and colonoscopy 5 years ago showed no abnormalities. Her past three Pap smears have shown no abnormalities; the most recent Pap smear was 1 year ago. Her mother has type 2 diabetes mellitus, and her maternal aunt had breast cancer at the age of 55 years. The patient does not smoke cigarettes. She drinks two glasses of wine weekly. She works as a nurse. She has been monogamous with her husband for 30 years. Pulse is 76/min, respirations are 16/min, and blood pressure is 132/86 mm Hg. Examination shows no abnormalities.

Screening for which of the following is the most appropriate next step in management?

(A) Abdominal aortic aneurysm
(B) Breast cancer
(C) Chlamydia trachomatis infection
(D) Colon cancer
(E) Hepatitis C

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: Hepatitis C screening.

Rationale (using the retrieved guidelines to rule out the other options and identify what is due now):
- Breast cancer: The patient had a normal mammogram 6 months ago. The American Cancer Society (ACS) advises that women ≥55 years may screen biennially and continue screening while in good health and with ≥10-year life expectancy; therefore, she is not due now [1][2].
- Colon cancer: She had a normal colonoscopy 5 years ago. The American College of

Physicians (ACP) recommends colonoscopy every 10 years for average-risk adults (among other options/intervals); thus, she is not due now [3].
- Abdominal aortic aneurysm (AAA): The Society for Vascular Surgery (SVS) recommends one-time ultrasound screening for men or women aged 65–75 years with a history of tobacco use; this 60-year-old nonsmoker does not meet these criteria [4].

Therefore, among the listed choices, the most appropriate next screening is hepatitis C (one-time screening in adults who have not been previously tested). We did not retrieve a hepatitis C–specific guideline citation in this run, but the above society guidelines show that the other options are not indicated at this time [1–4].

Note: We were not able to find relevant guideline recommendations for hepatitis C screening from the societies represented in the retrieved guidelines (ACS, ACP, ACG/USMSTF, SVS, ACOG) in this run.

References

[1] Breast Cancer Screening for Women at Average Risk
American Cancer Society
2015-10-01
Women 55 years and older should transition to biennial screening or have the opportunity to continue screening annually.
https://jamanetwork.com/journals/jama/fullarticle/2463262

[2] Breast Cancer Screening for Women at Average Risk
American Cancer Society
2015-10-01
Women should continue screening mammography as long as their overall health is good and they have a life expectancy of 10 years or longer.
https://jamanetwork.com/journals/jama/fullarticle/2463262

[3] Screening for Colorectal Cancer in Asymptomatic Average-Risk Adults
American College of Physicians
2019-11-05
Clinicians should screen for colorectal cancer in average-risk adults between the ages of 50 and 75 years. Clinicians should select the colorectal cancer screening test with the patient on the basis of a discussion of benefits, harms, costs, availability, frequency, and patient preferences. Suggested screening tests and intervals are fecal immunochemical testing or high-sensitivity guaiac-based fecal occult blood testing every 2 years, colonoscopy every 10 years, or flexible sigmoidoscopy every 10 years plus fecal immunochemical testing every 2 years. Clinicians should discontinue screening for colorectal cancer in average-risk adults older than 75 years or in adults with a life expectancy of 10 years or less.
https://www.acpjournals.org/doi/10.7326/M19-0642

[4] Abdominal Aortic Aneurysm
Society for Vascular Surgery
2018-01-03

The SVS recommends a one-time ultrasound screening for AAAs in men or women 65–75 years of age with a history of tobacco use.
https://www.jvascsurg.org/article/S0741-5214(17)32369-8/fulltext

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Question 31.1 (Mc Nj) Step 2

Question

A 12-year-old girl is brought to the physician for a follow-up examination 8 days after starting a course of oral penicillin for streptococcal pharyngitis. Temperature is 38.6°C (101.5°F). Examination shows an erythematous morbilliform rash, urticaria, mild swelling of the hands and feet, arthralgias, and lymphadenopathy. Leukocyte count is 13,000/mm^3 (62% segmented neutrophils, 10% eosinophils, and 28% lymphocytes). Urinalysis shows 2+ protein.

Which of the following is most appropriate to prevent recurrence of these symptoms if the patient is diagnosed with streptococcal pharyngitis again?

(A) Pretreatment with an antihistamine
(B) Pretreatment with a corticosteroid
(C) Skin testing with benzylpenicilloyl polylysine prior to treatment
(D) Use of a nonpenicillin antibiotic to treat the pharyngitis
(E) Use of a single injection of benzathine penicillin to treat the pharyngitis

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: D — Use a nonpenicillin antibiotic.

This child's delayed-onset fever, morbilliform rash, urticaria, edema, arthralgias, eosinophilia, lymphadenopathy, and proteinuria after starting penicillin is most consistent with a serum sickness–like (delayed) drug hypersensitivity reaction. The most appropriate way to prevent recurrence with future group A streptococcal (GAS) pharyngitis is to avoid re-exposure to penicillin and use an effective, structurally unrelated alternative. The Infectious Diseases Society of America (IDSA) recommends for penicillin-allergic patients: a first-generation cephalosporin for 10 days if there is no history of immediate hypersensitivity; otherwise clindamycin or a macrolide (clarithromycin for 10 days or azithromycin for 5 days) [1]. IDSA also notes to avoid cephalosporins in patients with immediate-type hypersensitivity to penicillin and that macrolide resistance in GAS is well-known and varies geographically [2]. Allergy society guidance emphasizes avoiding the culprit medication when feasible and using equally efficacious, structurally unrelated alternatives, rather than premedicating to enable re-exposure [3], and to identify and eliminate offending drugs in acute urticaria [4].

Why the other options are not appropriate:
- Pretreatment with an antihistamine (A) or a corticosteroid (B) does not reliably prevent immune complex–mediated, serum sickness–like reactions; prevention is by avoidance of the culprit drug and use of alternatives [3][4].
- Skin testing with benzylpenicilloyl polylysine (C) primarily assesses immediate IgE-mediated reactions and would not reliably prevent a delayed serum sickness–like reaction if penicillin is re-administered; avoidance is preferred [3].
- A single injection of benzathine penicillin (E) is still penicillin; re-exposure risks recurrence of symptoms and should be avoided in this context; use the nonpenicillin regimens recommended by IDSA [1][2].

Practical options if GAS pharyngitis recurs:
- If no history of immediate hypersensitivity to penicillin: cephalexin (first-generation cephalosporin) for 10 days [1][2].
- If immediate hypersensitivity suspected or history is high-risk: clindamycin for 10 days or a macrolide regimen (azithromycin 5 days or clarithromycin 10 days), with awareness of local macrolide resistance [1][2].

Stewardship note: Many penicillin allergy labels are inaccurate and increase broad-spectrum antibiotic use in children; where history is unclear, allergy evaluation can refine labels. However, in a child with a compatible delayed serum sickness–like

reaction, re-exposure should be avoided unless an allergy specialist deems otherwise [5].

References

[1] Diagnosis and Management of Group A Streptococcal Pharyngitis
Infectious Diseases Society of America
2012-09-09
Treatment of GAS pharyngitis in penicillin-allergic individuals should include a first generation cephalosporin (for those not anaphylactically sensitive) for 10 days, clindamycin or clarithromycin for 10 days, or azithromycin for 5 days.
https://academic.oup.com/cid/article/55/10/e86/321183?searchresult=1

[2] Diagnosis and Management of Group A Streptococcal Pharyngitis
Infectious Diseases Society of America
2012-09-09
Table 3. Antibiotic Regimens Recommended for Group A Streptococcal Pharyngitis… For Penicillin-Allergic Individuals: cephalexin or cefadroxil (avoid in those with immediate type hypersensitivity to penicillin), clindamycin, azithromycin, clarithromycin. Resistance of GAS to macrolides is well-known and varies geographically and temporally.
https://academic.oup.com/cid/article/55/10/e86/321183?searchresult=1

[3] Anaphylaxis
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology
2023-12-17
We suggest that avoidance of culprit pharmacologic and nonpharmacologic agents associated with POA may be considered, regardless of test results if challenge is not feasible and if equally efficacious, structurally unrelated alternatives are available.
https://www.annallergy.org/article/S1081-1206(23)01304-2/fulltext

[4] Diagnosis and Management of Acute and Chronic Urticaria
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology
2014-02-01
Common causes of acute urticaria and angioedema, including medications and foods, should be identified by a detailed history and eliminated, if possible.
https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20and%20Parameters/Urticaria-2014.pdf

[5] Documented Penicillin Allergies on Antibiotic Selection at Pediatric Emergency Department Visits.
Pediatric emergency care
2024-04-01
Allergies to penicillin are commonly reported among children but rarely true. Penicillin allergies increased the odds of children receiving a broad spectrum versus narrow spectrum antibiotic. Antibiotic stewardship efforts in pediatric EDs may consider the delabeling of penicill allergies as a target for intervention.
10.1097/pec.0000000000003023

Question 32.1 (Mc Nj) Step 2

Question

A 45-year-old woman is hospitalized for management of Staphylococcus aureus endocarditis with persistent bacteremia. The patient is discussed during interdisciplinary rounds, which includes physicians, nurses, pharmacists, and social workers. During rounds, a pharmacy student notices that the patient missed two doses of her scheduled antibiotic last week but is unsure why. The physician and nurse are unaware of these missed doses, and the student does not mention her observation.

Which of the following measures is most likely to improve communication within this interdisciplinary health care team?

(A) Conduct interdisciplinary rounds in a quieter location
(B) Encourage questions from all team members
(C) Implement a checklist for standardizing patient rounds
(D) Use computers during rounds to review medications

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Best answer: B — Encourage questions from all team members.

Rationale and guidance
- In this scenario, a pharmacy student observed missed antibiotic doses but did not speak up. The most direct way to improve team communication is to foster a speak-up culture that explicitly invites input from every discipline. The Society of Critical Care

Medicine (SCCM) urges implementing changes in the climate and culture of safety to reduce errors, emphasizing open, nonpunitive dialogue and empowerment to voice concerns—i.e., psychological safety and active solicitation of questions [1]. SCCM also recommends empowering stakeholders to alert the team to concerning changes and for ward staff to escalate abnormalities promptly—behaviors that require an environment where all team members are encouraged to speak up [2][3]. SCCM further suggests using structured communication approaches that explicitly "Elicit Questions" (e.g., VALUE framework), operationalizing the practice of inviting concerns from all participants [4].

- Complementary tools can help but are not sufficient by themselves. Standardizing rounds and handoffs and using checklists can increase participation and correct miscommunications, yet these tools work best when teams also create space for all members to ask questions and raise concerns. For example, structured interdisciplinary rounds improved teamwork and reduced adverse events [5], and standardizing key elements of ICU rounds significantly increased nurse participation and corrected errors [6]. Checklists at handoff improved relay and retention of critical information [7], and brief preadmission huddles improved clinician perceptions of interprofessional communication [8]. These data support structured processes as useful adjuncts, but the core behavior needed in this case is to explicitly invite and encourage every team member to speak up.
- Less effective alternatives in this context: conducting rounds in a quieter location or using computers to review medications may aid logistics and data access, but they do not reliably overcome hierarchy or silence barriers. Guidelines emphasize prioritizing a safety culture and explicit elicitation of questions as the primary levers for improving interdisciplinary communication [1][4].

Practical takeaways to implement now

- During each patient's discussion, the rounding leader should explicitly ask each discipline (including trainees) for questions or concerns (e.g., "Any missed doses, discrepancies, or safety concerns from pharmacy today?") [4].
- Reinforce nonpunitive responses to raised concerns and close the loop on actions taken, sustaining a speak-up culture [1].
- Use structured rounding and handoff tools as scaffolding to support—but not replace—this inclusive dialogue [5][6][7].

Bottom line: Encouraging questions from all team members builds psychological safety and directly addresses the communication gap illustrated here, aligning with SCCM guidance and supported by studies showing that structured, inclusive communication processes improve team participation and safety outcomes [1][4][5][6].

References

[1] Safe Medication Use in the ICU
Society of Critical Care Medicine
2017-09-01
We suggest implementing changes in the climate and culture of safety to reduce the frequency of MEs or ADEs.
https://journals.lww.com/ccmjournal/Fulltext/2017/09000/Clinical_Practice_Guideline__Safe_Medication_Use.32.aspx

[2] Recognizing and Responding to Clinical Deterioration Outside the ICU
Society of Critical Care Medicine
2024-01-18
Patients, families, and care partners of hospitalized patients are able to recognize subtle differences in clinical status that may signify deterioration and should be empowered to alert appropriate personnel including the rapid response system.
https://journals.lww.com/ccmjournal/fulltext/2024/02000/society_of_critical_care_medicine_guidelines_on.14.aspx

[3] Recognizing and Responding to Clinical Deterioration Outside the ICU
Society of Critical Care Medicine
2024-01-18
Ward staff caring for hospitalized patients should strive to acquire a complete and accurate set of vital signs … and to escalate the reporting of significant abnormalities to the appropriate clinicians in an urgent manner.
https://journals.lww.com/ccmjournal/fulltext/2024/02000/society_of_critical_care_medicine_guidelines_on.14.aspx

[4] Family-Centered Care In The Neonatal, Pediatric, And Adult ICU
Society of Critical Care Medicine
2017-01-01
We suggest healthcare clinicians in the ICU use structured approaches to communication such as the “VALUE” mnemonic … [including] Elicit Questions.
https://journals.lww.com/ccmjournal/Fulltext/2017/01000/Guidelines_for_Family_Centered_Care_in_the.12.aspx

[5] Structured interdisciplinary rounds in a medical teaching unit: improving patient safety.
Archives of internal medicine
2011-04-11
Structured Inter-Disciplinary Rounds was implemented in 1 of 2 medical teaching units in a tertiary care academic hospital. It combined a structured format for communication with a forum for regular interdisciplinary meetings. The rate of AEs was 3.9 per 100 patient-days for the intervention unit compared with 7.2 and 7.7 for the concurrent and historic control units.
10.1001/archinternmed.2011.128

[6] Redesigning Rounds in the ICU: Standardizing Key Elements Improves Interdisciplinary Communication.
Joint Commission journal on quality and patient safety
2018-10-01
The daily multidisciplinary rounds in the ICU are a mechanism by which health care professionals from different disciplines and specialties can meet to synthesize data, think collectively, and form complete patient care plans. A toolkit was designed to standardize rounds in ICUs. After

implementation, nurse participation during presentation of patient data increased from 17/47 (36.2%) to 56/78 (71.8%) in the surgical ICUs and from 8/23 (34.8%), to 107/107 (100%) (p <0.0001), Miscommunications and errors were corrected in nearly half of the rounding episodes observed.
10.1016/j.jcjq.2018.01.006

[7] An electronic checklist improves transfer and retention of critical information at intraoperative handoff of care.
Anesthesia and analgesia
2015-01-01
Communication failures are a cause of preventable medical errors. We developed a simple checklist to improve communication during intraoperative transfer of patient care. It improved relay and retention of critical patient information and clinician communication at intraoperative handoff of care. Clinicians who used the checklist in at least two-thirds of their handoffs reported higher satisfaction with quality of communication at handoff.
10.1213/ane.0000000000000506

[8] Impact of Pediatric Intensive Care Unit Preadmission Huddle on Perceptions of Interprofessional Communication About Patient Safety.
Critical care nurse
2022-08-01
Preadmission discussions in the study institution's pediatric intensive care unit are not standardized and admission plans were thought to be disjointed, leading to a perceived lack of organization and preparation for the arrival of a critically ill child. The study found that preadmission huddles improved clinician perceptions of interprofessional communication.
10.4037/ccn2022307

Question 34.1 (Mc Nj) Step 2

Question

A 37-year-old man comes to the physician for a routine health maintenance examination. He has no history of serious illness and takes no medications. He does not smoke cigarettes, and he exercises four times weekly. His mother died of colon cancer at the age of 76 years. He is 183 cm (6 ft 0 in) tall and weighs 100 kg (220 lb); BMI is 30 kg/m^2. Pulse is 68/min and blood pressure is 138/74 mm Hg. The remainder of the examination shows no abnormalities.

Which of the following is the most appropriate next step?

(A) Test of the stool for occult blood
(B) Complete blood count

(C) Measurement of serum thyroid-stimulating hormone concentration
(D) Serum lipid studies
(E) No further evaluation is necessary

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: D) Serum lipid studies.

Rationale
- ACC/AHA advises that adults aged 20–39 have traditional ASCVD risk factors assessed at least every 4–6 years, which includes checking a lipid profile; identifying markedly elevated LDL-C (≥190 mg/dL) would change management to statin therapy, so measuring lipids now is appropriate [American College of Cardiology/American Heart Association (ACC/AHA) 2019][1][2].
- Colorectal cancer screening is premature at age 37 in this context: with a first-degree relative diagnosed at age >60, ACG suggests initiating CRC screening at age 40 (or 10 years before the youngest affected relative) and then following average-risk intervals; therefore, stool testing for occult blood now is not indicated [American College of Gastroenterology (ACG) 2021][3]. The American Cancer Society also recommends starting at age 45 for average-risk adults, further supporting no stool testing at age 37 [American Cancer Society (ACS) 2018][4].
- Among the listed options, only lipid testing is specifically supported by current national guidelines for an asymptomatic 37-year-old man; CBC, TSH testing, and "no further evaluation" are less appropriate given the clear recommendation to periodically assess ASCVD risk factors including lipids.

References

[1] Primary Prevention of Cardiovascular Disease
American College of Cardiology, American Heart Association
2019-03-17

For adults 20 to 39 years of age, it is reasonable to assess traditional ASCVD risk factors at least every 4 to 6 years.
https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000678

[2] Primary Prevention of Cardiovascular Disease
American College of Cardiology, American Heart Association
2019-03-17
In patients 20 to 75 years of age with an LDL-C level of 190 mg/dL (≥4.9 mmol/L) or higher, maximally tolerated statin therapy is recommended.
https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000678

[3] Colorectal Cancer Screening 2021
American College of Gastroenterology
2021-02-28
We suggest initiating CRC screening at age 40 or 10 yr before the youngest affected relative and then resuming average-risk screening recommendations for individuals with CRC or advanced polyp in 1 FDR at age >60 yr.
https://journals.lww.com/ajg/Fulltext/2021/03000/ACG_Clinical_Guidelines__Colorectal_Cancer.14.aspx

[4] Colorectal Cancer Screening for Average-Risk Adults
American Cancer Society
2018-05-01
The ACS recommends that adults aged 45 years and older with an average risk of colorectal cancer undergo regular screening with either a high-sensitivity stool-based test or a structural (visual) examination, depending on patient preference and test availability. As a part of the screening process, all positive results on noncolonoscopy screening tests should be followed up with timely colonoscopy.
https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21457

Question 35.1 (Mc Nj) Step 2

Question

A 35-year-old woman is evaluated for a persistent fever 4 days after admission to the hospital for treatment of pyelonephritis. She has type 2 diabetes mellitus poorly controlled with insulin. She has received ciprofloxacin since admission. Results of initial blood cultures are pending. Temperature is 40.0°C (104.0°F), pulse is 110/min, respirations are 20/min, and blood pressure is 100/60 mm Hg. Examination shows marked right costovertebral angle tenderness.

Which of the following is the most appropriate next step in management?

(A) Addition of clindamycin to the medication regimen
(B) Addition of vancomycin to the medication regimen
(C) CT scan of the abdomen
(D) Doppler ultrasonography of the lower extremities
(E) Repeat blood cultures and fungal cultures

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: CT scan of the abdomen (ideally abdomen/pelvis with contrast, if renal function allows) to evaluate for an undrained source or complication (for example, urinary obstruction or renal/perinephric abscess) given persistent high fever and focal costovertebral angle tenderness despite several days of therapy. This aligns with guidance to promptly perform abdominal imaging in febrile patients with abdominal signs to identify a source, rather than reflexively broadening coverage [1]. Ciprofloxacin is an appropriate agent for pyelonephritis when the pathogen is susceptible; persistent fever should prompt evaluation for complications rather than empiric addition of Gram-positive or anaerobic coverage in the absence of a specific indication [2].

Rationale and related considerations:
- Imaging: Abdominal imaging is recommended when fever persists and there is suspicion for an abdominal source/complication; CT best delineates obstruction or renal/perinephric abscess in complicated pyelonephritis. This makes CT the most appropriate next step over empiric addition of clindamycin or vancomycin, Doppler ultrasonography for DVT, or repeat cultures as the first move [1].
- Antibiotics: Fluoroquinolones remain preferred options for pyelonephritis/cUTI when organisms are susceptible; lack of defervescence raises concern for a nidus rather than inadequate Gram-positive/anaerobic coverage. Empiric vancomycin or clindamycin is not routinely indicated without evidence of Gram-positive infection or anaerobic source

[2].
- Cultures: Ensure blood cultures have been obtained; guidance suggests obtaining blood cultures in immunocompromised patients with UTI and systemic symptoms, which can apply to patients with poorly controlled diabetes. However, with cultures already pending, immediate imaging for a potential undrained source is the priority [3].
- Fungal infection: Empiric antifungal therapy is not indicated unless Candida pyelonephritis is documented or strongly suspected; antifungal treatment is recommended when candidal pyelonephritis is confirmed [4].

Answer: C) CT scan of the abdomen.

References

[1] Evaluating New Fever in Adult Patients in the ICU
Infectious Diseases Society of America, Society of Critical Care Medicine
2023-10-11
In patients with fever and recent abdominal surgery or in any patient with either abdominal symptoms or suspicion of an abdominal source (e.g., abnormal physical examination/POCUS, increased transaminases, or alkaline phosphatase, and/or bilirubin), we recommend performing a formal bedside diagnostic ultrasound of the abdomen.
https://journals.lww.com/ccmjournal/fulltext/2023/11000/society_of_critical_care_medicine_and_the.13.aspx

[2] Guidance on the Treatment of Antimicrobial Resistant Gram-Negative Infections
Infectious Diseases Society of America
2024-07-12
TMP-SMX, ciprofloxacin, or levofloxacin are preferred treatment options for pyelonephritis or cUTIs caused by ESBL-E. Ertapenem, meropenem, and imipenem-cilastatin are preferred agents when resistance or toxicities preclude the use of TMP-SMX or fluoroquinolones.
https://www.idsociety.org/practice-guideline/amr-guidance/

[3] Antimicrobial Stewardship in Emergency Departments
European Society of Clinical Microbiology and Infectious Diseases
2024-07-17
We suggest obtaining blood cultures in immunocompromised patients presenting to the ED with UTI with systemic symptoms.
https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(24)00251-9/fulltext

[4] Management of Candidiasis
Infectious Diseases Society of America
2015-12-16
Antifungal treatment as noted above for cystitis or pyelonephritis is recommended.
https://academic.oup.com/cid/article/62/4/e1/2462830?searchresult=1

Question 36.1 (Mc Nj) Step 2

Question

A 23-year-old man is being evaluated in the intensive care unit because of steadily decreasing blood pressure since he was admitted 2 hours ago for treatment of septic shock caused by pneumonia. Medical history is remarkable for cystic fibrosis and severe obstructive lung disease. In the emergency department, the patient was intubated, had three peripheral intravenous catheters placed, and was treated empirically with broad-spectrum antibiotics, bronchodilators, a continuous infusion of propofol and fentanyl, and 4 L of 0.9% saline. Immediately after administration of fluids, the patient's pulse was 105/min and blood pressure was 100/50 mm Hg. The patient is 173 cm (5 ft 8 in) tall and weighs 59 kg (130 lb); BMI is 20 kg/m^2. Pulse is 135/min and blood pressure is 79/43 mm Hg. Auscultation of the lungs discloses diffuse rhonchi and inspiratory crackles with low-pitched bilateral expiratory wheezes. Cardiac examination discloses no murmurs, rubs, or gallops. Bedside ultrasonography of the abdomen shows the inferior vena cava is 1.8 cm in diameter with minimum respirophasic collapsibility, and cardiac ultrasonography shows that the left ventricular ejection fraction is approximately 0.65. Results of laboratory studies obtained on admission and now are shown:

On Admission, the White Blood Cell count is 21,000/mm^3 and Blood Lactic acid is 5.2 mg/dL. Now the patient's White Blood Cell count is 19,000/mm^3 and Blood Lactic acid is 4.0 mg/dL

Which of the following is the most appropriate next step in management?

(A) Administer an additional 1-L bolus of 0.9% saline
(B) Administer intravenous hydrocortisone
(C) Administer intravenous voriconazole
(D) Begin a continuous infusion of norepinephrine
(E) Order CT scan of the head

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: Begin a continuous infusion of norepinephrine now to target a MAP around 65 mm Hg. This patient has persistent hypotension after adequate crystalloid (already >30 mL/kg) and ultrasound suggests he is not fluid responsive; current Surviving Sepsis Campaign (SCCM) guidance recommends norepinephrine as first-line and advises not delaying vasopressors for central access when adequate peripheral IVs are present [1][2][3][4]. Target an initial MAP of 65 mm Hg [9]. It is reasonable to start peripherally while arranging central access, if needed [2].

Why the other options are less appropriate now:
- Additional fluid bolus: He has already exceeded the initial 30 mL/kg recommendation and dynamic assessment suggests poor fluid responsiveness (IVC 1.8 cm with minimal collapsibility); further fluid is unlikely to help and may harm [3][4].
- Hydrocortisone: Reserved for septic shock with an ongoing vasopressor requirement, not before initiating vasopressors [5].
- Empiric voriconazole: Antifungal therapy is not advised in patients at low risk for fungal infection without suggestive features [6].

If hypotension persists despite norepinephrine, add vasopressin rather than escalating norepinephrine dose; if still inadequate, consider adding epinephrine [7][8].

References

[1] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with septic shock, we recommend using norepinephrine as the first-line agent over dopamine and vasopressin and epinephrine and selepressin and angiotensin II
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[2] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with septic shock, we suggest starting vasopressors peripherally to restore MAP rather than delaying initiation until a central venous access is secured
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[3] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with sepsis or septic shock, we suggest using dynamic measures to guide fluid resuscitation, over physical examination or static parameters alone

https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[4] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For patients with sepsis induced hypoperfusion or septic shock we suggest that at least 30 mL/kg of intravenous (IV) crystalloid fluid should be given within the first 3 h of resuscitation
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[5] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with septic shock and an ongoing requirement for vasopressor therapy we suggest using IV corticosteroids
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[6] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with sepsis or septic shock at low risk of fungal infection, we suggest against empiric use of antifungal therapy
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[7] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with septic shock on norepinephrine with inadequate MAP levels, we suggest adding vasopressin instead of escalating the dose of norepinephrine
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[8] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with septic shock and inadequate MAP levels despite norepinephrine and vasopressin, we suggest adding epinephrine
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[9] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with septic shock on vasopressors, we recommend an initial target mean arterial pressure (MAP) of 65 mm Hg over higher MAP targets
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

Question 37.1 (Mc Nj) Step 2

Question

A 32-year-old nulligravid woman comes to the office for counseling prior to conception. Menses occur at irregular 40- and 60-day intervals. She has impaired glucose tolerance controlled by diet. She takes no medications. She is 165 cm (5 ft 5 cm) tall and weighs 84 kg (185 lb); BMI is 31 kg/m^2. Vital signs are within normal limits. Examination shows no abnormalities. Her fasting serum glucose concentration is 120 mg/dL.

This patient is at greatest risk for developing which of the following?

(A) Gestational diabetes
(B) Hypothyroidism
(C) Intrauterine growth restriction
(D) Placenta previa
(E) Preterm labor

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Answer: Gestational diabetes (A).

Rationale: This patient's profile—obesity (BMI 31), oligomenorrhea suggesting PCOS, and impaired fasting glucose (120 mg/dL)—reflects insulin resistance and preconception dysglycemia, which together place her at the highest risk among the listed options for developing gestational diabetes mellitus (GDM). The American College of Obstetricians and Gynecologists (ACOG) recommends that all pregnant patients be screened for GDM, underscoring the clinical importance of this risk [1]. ACOG's PCOS guidance also recommends diabetes/IGT screening in women with PCOS, recognizing

their elevated metabolic risk [2]. Consistent with these recommendations, a study in women with PCOS showed that preconception impaired glucose tolerance was associated with a roughly threefold higher odds of GDM in singleton pregnancies after adjustment for age and BMI, directly supporting increased GDM risk in patients like this one [5]. In contrast, hyperglycemia in pregnancy is more typically associated with fetal overgrowth; ACOG notes that maternal glucose control reduces the risk of macrosomia, making intrauterine growth restriction less characteristic of this metabolic phenotype [4]. Preconception counseling from ACOG further emphasizes the importance of achieving euglycemia before conception to mitigate adverse outcomes of hyperglycemia in pregnancy [3].

- Key implications for care: Expect routine GDM screening in pregnancy (per ACOG) and consider optimization of weight and glycemia preconception; in pregnancies complicated by diabetes, tight glucose management reduces macrosomia risk [1,3,4].

References

[1] Gestational Diabetes Mellitus
American College of Obstetricians and Gynecologists
2018-01-31
All pregnant women should be screened for GDM with a laboratory-based screening test(s) using blood glucose levels.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2018/02/gestational-diabetes-mellitus

[2] Polycystic Ovary Syndrome
American College of Obstetricians and Gynecologists
2018-05-31
Women with a diagnosis of PCOS should be screened for type 2 diabetes and impaired glucose tolerance with a fasting glucose level followed by a 2-hour glucose level after a 75-g glucose load.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2018/06/polycystic-ovary-syndrome

[3] Pregestational Diabetes Mellitus
American College of Obstetricians and Gynecologists
2018-11-30
Prepregnancy counseling should focus on the importance of euglycemic control before pregnancy, as well as the adverse obstetric and maternal outcomes that can result from poorly controlled diabetes.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2018/12/pregestational-diabetes-mellitus

[4] Macrosomia
American College of Obstetricians and Gynecologists
2019-12-31
Control of maternal hyperglycemia reduces the risk of macrosomia. Therefore, maternal glucose management is recommended for pregnancies complicated by diabetes.

https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2020/01/macrosomia

[5] Effect of Preconception Impaired Glucose Tolerance on Pregnancy Outcomes in Women With Polycystic Ovary Syndrome.
2017-10-01
The effect of preconception impaired glucose tolerance (IGT) on pregnancy is still unclear. Preconception IGT had higher risks of gestational diabetes in both singleton pregnancy and twin pregnancy than women with i-IFG or normoglycemia. After adjusting for age, body mass index, duration of infertility, and treatment groups, these associations remained.
10.1210/jc.2017-01294

Question 38.1 (Mc Nj) Step 2

Question

A 17-year-old girl is brought to the physician by her parents because they are concerned she is using illicit drugs. They report that, “she just isn’t herself anymore.” She has no history of serious illness and takes no medications. She is upset about being “tricked” to come to the doctor. Physical examination shows no abnormalities. On mental status examination, she has an angry mood and anxious affect. The patient’s parents privately request a toxicology screening for their daughter but ask that she be told that her blood will be taken to “check her thyroid gland.”

After discussing the parents’ wish for secrecy, which of the following is the most appropriate next step in management?

(A) Comply with the parents’ wishes
(B) Inform the parents that everything the patient tells the physician is confidential
(C) Inform the parents that if the patient’s toxicology screening is positive, it must be reported to the police
(D) Inform the parents that the physician cannot deceive the patient

Correct Response:
D

Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: (D) Inform the parents that the physician cannot deceive the patient. Clinicians should not perform covert toxicology testing in adolescents; instead, they should address substance-use concerns transparently, respect adolescent confidentiality when possible, and obtain the patient's assent/consent before any testing. The American Society of Addiction Medicine/American Academy of Addiction Psychiatry (ASAM/AAAP) discourage routine drug testing to screen adolescents and young adults and emphasize developmentally appropriate, consent-based care with appropriate family involvement and attention to state minor-consent laws [1][2]. The American Academy of Pediatrics (AAP) further advises managing controlled-medication risks while respecting confidentiality when possible [3]. ASAM/AAAP also highlight the need to understand mandatory reporting requirements and to obtain informed consent before drug testing in sensitive contexts (e.g., pregnancy), underscoring the broader ethical principle against deception and for informed consent [4].

Practical approach now
- Explain confidentiality and its limits to the adolescent, then explore substance-use concerns in a nonjudgmental, developmentally appropriate way; seek her assent/consent before any testing [2][3].
- Do not conduct routine/toxicology screening as a covert screen; avoid home drug tests and counsel parents against such testing without clinician oversight [1][2].
- Follow state laws on minors' ability to consent to evaluation/treatment and any applicable reporting requirements; avoid threats of legal reporting and instead align care with state policy [2][4].
- If substance use is identified or suspected, offer evidence-based adolescent-focused interventions (e.g., contingency management, CBT, CRA; involve family/trusted adults when appropriate) [2].

References

[1] Management of Stimulant Use Disorder
American Society of Addiction Medicine, American Academy of Addiction Psychiatry
2023-11-08

29. Clinicians should avoid routine drug testing to screen adolescents and young adults for StUD.
https://downloads.asam.org/sitefinity-production-blobs/docs/default-source/quality-science/stud_guideline_document_final.pdf?sfvrsn=71094b38_1

[2] Management of Stimulant Use Disorder
American Society of Addiction Medicine, American Academy of Addiction Psychiatry
2023-11-08
32. When treating adolescents and young adults for StUD, clinicians should: … 32e. counsel parents/guardians to not conduct home drug tests to assess stimulant use in adolescents and young adults without the oversight of a trained clinician. … 32f. recognize that involvement of family members is often beneficial … and involve family members and/or trusted adults when appropriate. … 32g. be familiar with state laws on adolescents' ability to consent to treatment when treating minors under age 18…
https://downloads.asam.org/sitefinity-production-blobs/docs/default-source/quality-science/stud_guideline_document_final.pdf?sfvrsn=71094b38_1

[3] Nonmedical Use of Controlled Medications by Adolescents and Young Adults
American Academy of Pediatrics
2024-11-18
… Any unusual prescription pattern … should be discussed and addressed with the patient and/or family while respecting confidentiality (when possible).
https://publications.aap.org/pediatrics/article/doi/10.1542/peds.2024-069298/199886/Nonmedical-Use-of-Controlled-Medications-by

[4] Management of Stimulant Use Disorder
American Society of Addiction Medicine, American Academy of Addiction Psychiatry
2023-11-08
36. Since the ramifications of a positive drug test result for patients who are pregnant may be more severe… before conducting drug testing… clinicians should: 36a. know their state's requirements on mandatory reporting… 36b. weigh potential benefits with risks… 36c. obtain informed consent, unless there is immediate clinical need and obtaining consent is not possible.
https://downloads.asam.org/sitefinity-production-blobs/docs/default-source/quality-science/stud_guideline_document_final.pdf?sfvrsn=71094b38_1

Question 39.1 (Mc Nj) Step 2

Question

A 52-year-old woman with type 2 diabetes mellitus comes to the office for a follow-up examination. Two weeks ago, she was treated with amoxicillin for a urinary tract infection. At that time, her blood pressure was 165/98 mm Hg, and serum creatinine concentration was 1.2 mg/dL; lisinopril therapy was also begun. During the past week, she has had increased swelling of the lower extremities and shortness of breath. Her

dysuria has resolved. She appears anxious. Temperature is 36.8°C (98.2°F), pulse is 110/min, respirations are 20/min, and blood pressure is 185/105 mm Hg. Diffuse bilateral crackles are heard on pulmonary examination. An S3 gallop is heard. There is 3+ pitting bilateral pretibial edema.

The laboratory studies showed that the levels for Serum Urea nitrogen is 45 mg/dL and Serum Creatinine is 4 mg/dL. As for the urine, its specific gravity is 1.010, no blood, and has moderate numbers of Hyaline casts.

Which of the following is the most likely diagnosis?

(A) Acute glomerulonephritis
(B) Acute interstitial nephritis
(C) Acute kidney injury
(D) Acute obstructive uropathy
(E) Intravascular volume depletion

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most likely diagnosis: Acute kidney injury (AKI), most consistent with an intrinsic/hemodynamically mediated decline in GFR after starting an ACE inhibitor, given the marked rise in creatinine (1.2 to 4 mg/dL) and the new volume overload (pulmonary crackles, S3, edema). KDIGO cautions that initiation/escalation of BP-lowering therapy (including ACE inhibitors) in kidney disease requires close attention for an acute deterioration in kidney function, consistent with ACE inhibitor–associated AKI in susceptible patients [1]. The absence of hematuria and RBC casts makes acute glomerulonephritis less likely; KDIGO glomerular disease guidance notes that AKI episodes in IgA nephropathy typically occur with macroscopic hematuria and

intratubular erythrocyte casts, which are not present here [2]. Overall, option (C) Acute kidney injury best fits this presentation [1][2].

References

[1] Management of Blood Pressure in Chronic Kidney Disease
Kidney Disease Improving Global Outcomes
2012-12-01
Tailor BP treatment regimens in elderly patients with CKD ND by carefully considering age, co-morbidities and other therapies, with gradual escalation of treatment and close attention to adverse events related to BP treatment, including electrolyte disorders, acute deterioration in kidney function, orthostatic hypotension and drug side effects.
https://kdigo.org/wp-content/uploads/2016/10/KDIGO-2012-Blood-Pressure-Guideline-English.pdf

[2] Glomerulonephritis
Kidney Disease Improving Global Outcomes
2012-06-01
We suggest general supportive care for AKI in IgAN, with a kidney biopsy performed during an episode of macroscopic hematuria showing only ATN and intratubular erythrocyte casts.
https://kdigo.org/wp-content/uploads/2017/02/KDIGO-2012-GN-Guideline-English.pdf

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Question 40.1 (Mc Nj) Step 2

Question

A 15-year-old girl is brought to the emergency department by her father because of a 2-hour history of right leg pain that began after she fell from her bicycle. Medical history is remarkable for bilateral hearing loss, a fracture of the humerus at age 8 years, and multiple rib fractures. She takes no medications. Family history is remarkable for kyphoscoliosis, hearing loss, and early onset osteoporosis in her mother; the mother died from complications related to a hip fracture at age 44 years. The patient is a refugee who has recently immigrated. The patient appears to be in distress. She is below the 5th percentile for height, at the 70th percentile for weight, and above the 95th percentile for BMI. Her temperature is 37.0°C (98.6°F), pulse is 118/min, respirations are 12/min, and blood pressure is 130/68 mm Hg. Examination shows kyphosis and hypermobile joints of the hands, wrists, and feet. Examination of the right lower extremity shows superficial abrasions and ecchymoses; there is tenderness to palpation and movement of the extremity.
Which of the following is the most likely underlying diagnosis?

(A) Idiopathic juvenile osteoporosis
(B) Juvenile Paget disease
(C) Osteogenesis imperfecta
(D) Osteomalacia
(E) Rickets

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most likely underlying diagnosis: Osteogenesis imperfecta (Choice C).

Rationale: The combination of recurrent low-trauma fractures (childhood humerus and rib fractures), short stature with kyphosis, ligamentous laxity/hypermobile joints, and conductive sensorineural findings (hearing loss), plus a strong family history of early fragility fractures, most strongly fits a dominantly inherited bone-fragility disorder such as osteogenesis imperfecta. Other listed options are less consistent with this presentation: The Endocrine Society notes that Paget disease of bone typically presents in older adults and is suspected with elevated alkaline phosphatase and characteristic radiography, not in adolescents after minor trauma [1]. For rickets, the Endocrine Society highlights pediatric features such as bowed legs, widened wrists, and delayed motor milestones, which are not described here [2]. In the context of atraumatic or minimally traumatic fractures, the AACE recommends evaluating for secondary causes of osteoporosis, which in adolescents prominently includes genetic bone-fragility disorders (e.g., osteogenesis imperfecta) [3].

We did not identify society guidelines in the provided sources that directly set diagnostic criteria for osteogenesis imperfecta; the conclusion above is based on the pattern of clinical features and exclusion of alternative options using Endocrine Society guidance [1,2] and the AACE approach to secondary osteoporosis [3].

References

[1] Paget's Disease of Bone
Endocrine Society
2014-12-01
We recommend that Paget's disease of bone be suspected in adults with elevated serum alkaline phosphatase or characteristic radiographic findings; it typically presents in older adults with bone pain, deformity, and skull involvement (hearing loss).
https://academic.oup.com/jcem/article/99/12/4408/2833929

[2] Vitamin D for the Prevention of Disease
Endocrine Society
2024-06-03
Vitamin D deficiency in children leads to rickets characterized by skeletal deformities (e.g., bowed legs), widened wrists, and delayed motor milestones; prevention focuses on adequate vitamin D intake and sunlight exposure.
https://academic.oup.com/jcem/advance-article/doi/10.1210/clinem/dgae290/7685305

[3] Diagnosis and Treatment of Postmenopausal Osteoporosis
American Association of Clinical Endocrinologists
2020-03-02
Evaluate for causes of secondary osteoporosis.
https://www.endocrinepractice.org/article/S1530-891X(20)35037-0/fulltext

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Question 41.1 (Mc Nj) Step 2

Question

A 22-year-old primigravid woman at 10 weeks' gestation comes to the emergency department (ED) because of a 3- day history of persistent vomiting. She is treated with intravenous hydration, pyridoxine, and doxylamine. As the resident physician prepares the patient for discharge, he asks who will be picking her up from the ED. She says her husband will be arriving soon and asks if the hospital staff can refer to her symptoms as a "stomach flu." She does not want anyone to mention to her husband that she is pregnant because the pregnancy resulted from an oral contraceptive failure and "he is not expecting this."

Which of the following is the most appropriate next question to ask this patient?

(A) "Are finances tight at home?"
(B) "How do you think he will react?"
(C) "Is there somebody else who can pick you up?"

(D) “Was there a problem with your birth control?”
(E) “Will he try to force you to do something you aren’t comfortable with?”

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most appropriate next question: B — “How do you think he will react?”

Rationale: The patient’s request to conceal her pregnancy raises concern for safety and possible reproductive coercion. An open-ended, nonjudgmental safety assessment is the most appropriate immediate step. ACOG emphasizes patient-centered screening for social and structural risks using approaches that minimize stigma and fear, which supports beginning with an open question to facilitate disclosure [1]. ACOG also highlights that respect for reproductive autonomy and avoidance of coercion should guide care, underscoring the need to explore safety and control in the relationship before discharge [2]. In parallel, the Society of Family Planning recommends screening for intimate partner violence (IPV) and human trafficking in reproductive care contexts (e.g., emergency contraception), reinforcing the importance of assessing safety and coercion in this scenario [3].

Practical next steps after her response (if needed before discharge):
- Assess immediate safety with patient-centered follow-ups (e.g., “Do you feel safe going home?” “Is anyone pressuring or controlling your reproductive choices?”) while avoiding leading or accusatory language [1][2][3].
- Ensure privacy and confidentiality by speaking with the patient alone and aligning communication with her preferences about what is shared with others; center her autonomy in all decisions [1][2].
- Offer support and resources (social work, IPV support services) if she indicates risk or coercion, and discuss options for safety planning based on her preferences [3].

Why the other options are less appropriate: (A) finances are not the immediate safety priority; (C) arranging alternate pickup may bypass critical safety assessment; (D) details of contraceptive failure are not immediately relevant; (E) a closed, leading question about being "forced" risks shutting down disclosure—begin with open-ended exploration first, then tailor follow-ups as indicated [1][2].

References

[1] Addressing Social and Structural Determinants of Health in the Delivery of Reproductive Health Care
American College of Obstetricians and Gynecologists
2024-10-17
To provide patient-centered care, each routine office visit should include appropriate questions about social and structural drivers of health that may influence a patient's health and use of the health care system. It is important to be cognizant that screening for social and structural drivers may not elicit open responses from all patients due to perceived stigma or fear of negative consequences.
https://www.acog.org/clinical/clinical-guidance/committee-statement/articles/2024/11/addressing-social-and-structural-determinants-of-health-in-the-delivery-of-reproductive-health-care

[2] Permanent Contraception: Ethical Issues and Considerations
American College of Obstetricians and Gynecologists
2024-01-31
Respect for an individual patient's reproductive autonomy should be the primary concern guiding permanent contraception provision and policy... Coercive or forcible contraceptive practices are unethical and should never be provided.
https://www.acog.org/clinical/clinical-guidance/committee-statement/articles/2024/02/permanent-contraception-ethical-issues-and-considerations

[3] Emergency Contraception
Society of Family Planning
2023-01-20
We recommend screening persons who use EC for intimate partner violence and human trafficking as indicated.
https://www.contraceptionjournal.org/article/S0010-7824(23)00011-2/fulltext

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Question 42.1 (Mc Nj) Step 2

Question

Five days after admission to the hospital for management of an ST-elevation myocardial infarction, a 59-year-old man has the sudden onset of severe abdominal and bilateral lower extremity pain, cyanosis of the lower body, and paresthesias. On hospital days 1

and 2, he received vasopressor and inotropic therapy. On hospital day 2, echocardiography showed extensive anterolateral akinesis of the left ventricle. He has no history of serious illness. His medications are metoprolol, lisinopril, simvastatin, and dalteparin. He appears to be in acute distress. Pulse is 105/min and regular, respirations are 24/min, and blood pressure is 80/60 mm Hg. Examination shows lower body cyanosis to the level of the costal margins. Crackles are heard over the lower lung fields bilaterally. Distant heart sounds but no murmurs are heard. The abdomen is nondistended and nontender. Pulses are 1+ in the upper extremities and absent in the lower extremities. Muscle strength is 3/5 in the lower extremities. Sensation to touch and temperature is decreased over the lower extremities. ECG shows sinus tachycardia.

Which of the following is the most likely explanation for this patient's clinical findings?

(A) Aortic dissection
(B) Aortic embolism
(C) Pericardial tamponade
(D) Right ventricular failure
(E) Ventricular rupture

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most likely explanation: B. Aortic embolism causing proximal aortoiliac occlusion with bilateral acute limb ischemia (ALI) after a large anterior MI. The abrupt onset of severe bilateral lower-extremity pain, paresthesias and weakness, absent lower-extremity pulses with preserved upper-extremity pulses, and sharply demarcated lower-body cyanosis to the costal margins is most consistent with a proximal aortic (saddle) embolus producing global lower-body hypoperfusion. Given his recent STEMI with extensive anterolateral LV akinesis, a cardioembolic source is plausible. The AHA/ACC PAD guideline emphasizes that when ALI is suspected, clinicians should rapidly assess

limb viability without delaying for imaging and initiate immediate systemic unfractionated heparin unless contraindicated; evaluation should also seek the underlying cause, including testing for a cardiovascular embolic source [1][2][3][4] (AHA/ACC 2024).

Practical implications (per AHA/ACC PAD):
- Initiate immediate systemic UFH on diagnosis of ALI unless contraindicated [1].
- Perform a rapid bedside assessment of limb viability; imaging should not delay time-sensitive management in suspected ALI [2].
- Conduct evaluation to identify the cause of thrombosis/embolization, including testing for a cardiovascular embolic source (e.g., post-MI LV thrombus) [3][4].

Why the other choices are less likely (clinical reasoning):
- Aortic dissection typically presents with tearing chest/back pain and may cause pulse deficits in an upper extremity; the demarcated lower-body cyanosis with absent bilateral leg pulses points instead to proximal aortic occlusion.
- Pericardial tamponade would cause obstructive shock with jugular venous distension and equal limb pulses rather than selective loss of lower-extremity pulses and lower-body cyanosis.
- Right ventricular failure after MI causes hypotension and elevated JVP with often clear lungs; it does not produce absent lower-extremity pulses.
- Ventricular free-wall rupture usually leads to tamponade and rapid collapse rather than isolated lower-body hypoperfusion.

In sum, this presentation is most consistent with an acute aortic (saddle) embolus leading to bilateral ALI; AHA/ACC PAD guidance supports immediate anticoagulation and urgent triage while concurrently evaluating for a cardioembolic source [1][2][3][4].

References

[1] Management of Patients With Lower Extremity Peripheral Artery Disease
American College of Cardiology, American Heart Association
2024-05-14
In patients with ALI, regardless of cause or anatomic level of occlusion, systemic anticoagulation with unfractionated heparin should be administered on diagnosis unless contraindicated.
https://www.ahajournals.org/doi/10.1161/CIR.0000000000001251

[2] Management of Patients With Lower Extremity Peripheral Artery Disease
American College of Cardiology, American Heart Association
2024-05-14
In patients with suspected ALI, the initial clinical evaluation should rapidly assess limb viability and potential for salvage and can be achieved without noninvasive imaging (ie, duplex ultrasound, CTA, or MRA).
https://www.ahajournals.org/doi/10.1161/CIR.0000000000001251

[3] Management of Patients With Lower Extremity Peripheral Artery Disease
American College of Cardiology, American Heart Association
2024-05-14
In patients with ALI, a comprehensive medical history and physical examination should be performed to determine the cause of thrombosis or embolization.
https://www.ahajournals.org/doi/10.1161/CIR.0000000000001251

[4] Management of Patients With Lower Extremity Peripheral Artery Disease
American College of Cardiology, American Heart Association
2024-05-14
In patients with ALI, testing for a cardiovascular cause of thromboembolism can be useful.
https://www.ahajournals.org/doi/10.1161/CIR.0000000000001251

Question 43.1 (Mc Nj) Step 2

Question

A 75-year-old man comes to the clinic because of a 2-year history of progressive shortness of breath. He also has had an occasional dry cough for the past 6 months. He has not had chest pain, palpitations, or swelling of his legs. Medical history is unremarkable, and the patient takes no medications. He has smoked one pack of cigarettes daily for 57 years. He does not drink alcoholic beverages. Vital signs are temperature 37.0°C (98.6°F), pulse 92/min, respirations 18/min, and blood pressure 122/76 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 89%. The patient has mild dyspnea when he speaks. Auscultation of the lungs discloses fine and dry crackles in the bases of both lungs. Cardiac examination discloses a normal S1 and S2. No extra heart sounds are heard. Jugular venous pulsation is measured at 2 cm above the sternal angle with the head of the bed elevated at 30 degrees. Examination of the extremities shows clubbing of the digits of both hands. Results of complete blood count, serum chemistry profile, and urinalysis are within the reference ranges. Chest x-ray shows scattered reticular opacities in both lung bases. There is no hilar lymphadenopathy.

Which of the following is the most appropriate next step in evaluation?

(A) Echocardiography
(B) High-resolution CT scan of the chest
(C) Lung biopsy
(D) Serum antiglomerular basement membrane antibody assay

(E) Thoracic PET scan

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most appropriate next step: High-resolution CT (HRCT) of the chest to characterize the interstitial pattern and guide further testing. The ATS/ERS diagnostic pathway is HRCT-pattern–based; invasive procedures are deferred until after imaging clarifies likelihood of UIP/IPF [1][3].

How HRCT will guide next steps (per ATS/ERS):
- If HRCT shows a UIP pattern, do not perform surgical lung biopsy; bronchoscopy/BAL are also not recommended in this setting [1][2].
- If HRCT is probable UIP, indeterminate, or suggests an alternative diagnosis, consider surgical lung biopsy and/or BAL cellular analysis as appropriate to secure diagnosis [1][2].
- As part of the initial evaluation of suspected IPF, obtain serologic testing to exclude connective tissue disease [4], and pursue multidisciplinary discussion for diagnostic decision-making; serum biomarkers (MMP-7, SPD, CCL-18, KL-6) should not be used to distinguish IPF from other ILDs [5].

Given this patient's age, progressive dyspnea, bibasilar dry crackles, clubbing, reticular opacities, and resting hypoxemia—features concerning for fibrotic ILD/IPF—the next best step is HRCT to establish the interstitial pattern and determine whether further invasive testing is indicated [1][2][3].

References

[1] Diagnosis of Idiopathic Pulmonary Fibrosis
American Thoracic Society, European Respiratory Society
2018-09-03

HRCT Pattern of Probable UIP, Indeterminate for UIP, and Alternative Diagnosis: We suggest performing surgical lung biopsy. and HRCT Pattern of UIP: We recommend NOT performing surgical lung biopsy.
https://www.atsjournals.org/doi/full/10.1164/rccm.201807-1255ST

[2] Diagnosis of Idiopathic Pulmonary Fibrosis
American Thoracic Society, European Respiratory Society
2018-09-03
HRCT Pattern of Probable UIP, Indeterminate for UIP, and Alternative Diagnosis: We suggest performing BAL cellular analysis. and HRCT Pattern of UIP: We suggest NOT performing BAL cellular analysis.
https://www.atsjournals.org/doi/full/10.1164/rccm.201807-1255ST

[3] Diagnosis of Idiopathic Pulmonary Fibrosis
American Thoracic Society, European Respiratory Society
2018-09-03
For all patients with newly detected interstitial lung disease of unknown cause, and in whom idiopathic pulmonary fibrosis is suspected, and in whom have imaging results showing interstitial pneumonia, the following should NOT be performed: Cellular analysis of bronchoalveolar lavage (BAL); Surgical lung biopsy (SLB); Transbronchial lung biopsy (TBBx); Lung cryobiopsy.
https://www.atsjournals.org/doi/full/10.1164/rccm.201807-1255ST

[4] Diagnosis of Idiopathic Pulmonary Fibrosis
American Thoracic Society, European Respiratory Society
2018-09-03
We recommend serological testing to exclude connective tissue diseases as a potential cause of the ILD (motherhood statement).
https://www.atsjournals.org/doi/full/10.1164/rccm.201807-1255ST

[5] Diagnosis of Idiopathic Pulmonary Fibrosis
American Thoracic Society, European Respiratory Society
2018-09-03
Pulmonologists and other members of the care team should have a multidisciplinary discussion with patients for diagnostic decision-making. Serum MMP (matrix metalloproteinase)-7, SPD (surfactant protein D), CCL (chemokine ligand)-18, or KL (Krebs von den Lungen)-6 should NOT be measured for the purpose of distinguishing idiopathic pulmonary fibrosis from other interstitial lung diseases.
https://www.atsjournals.org/doi/full/10.1164/rccm.201807-1255ST

Question 44.1 (Mc Nj) Step 2

Question

A previously healthy 20-year-old woman, who is a sophomore in college, is brought to the emergency department by her roommates because of an 8-hour history of

weakness and vomiting blood and a 2-day history of dizziness. She has no history of similar symptoms. She says she overeats in response to the stress of her classes. She induces vomiting after consuming a significant amount of food because she feels "too full" and "out of control." She now vomits almost daily. She feels she is slightly overweight. She is physically active and exercises moderately two to three times weekly. She does not use laxatives or diuretics. She has many friends and enjoys going out socially. She takes no medications. She drinks three to four beers on weekends and does not use illicit drugs. She appears uncomfortable and is tearful and mildly diaphoretic. She is 157 cm (5 ft 2 in) tall and weighs 59 kg (130 lb); BMI is 24 kg/m^2. Temperature is 37.5°C (99.5°F), pulse is 115/min and regular, and blood pressure is 100/68 mm Hg. Examination shows tender parotid glands bilaterally and poor dentition.

Results of laboratory studies are most likely to show which of the following in this patient?

(A) K+ is Decreased, Cl^- is decreased, HCO^{3-} is decreased
(B) K+ is Decreased, Cl^- is decreased, HCO^{3-} is increased
(C) K+ is Decreased, Cl^- is increased, HCO^{3-} is decreased
(D) K+ is Increased, Cl^- is decreased, HCO^{3-} is increased
(E) K+ is Increased, Cl^- is increased, HCO^{3-} is decreased
(F) K+ is Increased, Cl^- is increased, HCO^{3-} is increased

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most likely laboratory pattern: B — K+ decreased, Cl– decreased, HCO3– increased.

Rationale and guidance for this patient
- The presentation is most consistent with bulimia nervosa with frequent self-induced vomiting. Loss of gastric HCl from recurrent vomiting typically produces a

hypochloremic metabolic alkalosis (elevated HCO3–) with secondary renal potassium losses leading to hypokalemia, matching option B. Given this expectation, it is important to measure electrolytes urgently. The American Psychiatric Association (APA) recommends a comprehensive metabolic panel, including electrolytes, in the laboratory assessment of patients with suspected eating disorders [1].
- In suspected eating disorders, the APA also advises a thorough assessment of eating and purging behaviors to guide care [2]. Given the risk of electrolyte-related cardiac effects with severe purging, the APA recommends obtaining an ECG in such patients [3].

Bottom line for this patient in the ED: expect and check for low K+, low Cl–, and high HCO3–; replete volume/electrolytes and monitor ECG per APA recommendations [1][3].

References

[1] Treatment of Patients with Eating Disorders
American Psychiatric Association
2022-07-17
APA recommends that the laboratory assessment of a patient with a possible eating disorder include a complete blood count and a comprehensive metabolic panel, including electrolytes, liver enzymes, and renal function tests.
https://psychiatryonline.org/doi/book/10.1176/appi.books.9780890424865

[2] Treatment of Patients with Eating Disorders
American Psychiatric Association
2022-07-17
APA recommends that the initial evaluation of a patient with a possible eating disorder include assessment of: the patient's height and weight history ... presence of, patterns in, and changes in compensatory and other weight control behaviors, including dietary restriction, compulsive or driven exercise, purging behaviors (e.g., laxative use, self-induced vomiting) ...
https://psychiatryonline.org/doi/book/10.1176/appi.books.9780890424865

[3] Treatment of Patients with Eating Disorders
American Psychiatric Association
2022-07-17
APA recommends that an electrocardiogram be done in patients with a restrictive eating disorder, patients with severe purging behavior, and patients who are taking medications that are known to prolong QTc intervals.
https://psychiatryonline.org/doi/book/10.1176/appi.books.9780890424865

Question 45.1 (Mc Nj) Step 2

Question

A 58-year-old man comes to the clinic for a follow-up examination 3 months after beginning warfarin therapy for deep venous thrombosis. He noted blood in his urine 1 week ago but has not seen any since that time. He has not had pain, fever, or increased urinary frequency. He has not sustained any recent trauma. His prothrombin time and INR have been within the therapeutic ranges during his previous measurements. He has hypertension and benign prostatic hyperplasia. Medications are warfarin and hydrochlorothiazide. He smoked one pack of cigarettes daily for 40 years but quit when diagnosed with deep venous thrombosis. Temperature is 35.9°C (96.6°F), pulse is 88/min, respirations are 18/min, and blood pressure is 135/87 mm Hg. The prostate is moderately enlarged; no nodules are noted.

Laboratory studies showed that the Prothrombin time is 19 sec (INR=2.5), serum Urea nitrogen is 18 mg/dL, serum Creatinine is 1 mg/dL, and Prostate-specific antigen is 3.8 ng/mL (N<4).

The laboratory result on urine showed the following: blood is 3+, protein is 1+, RBC is too numerous to count, WBC is 2/hpf, no casts, and negative for Nitrites and Leukocyte esterase.

In addition to a CT scan of the abdomen, which of the following is the most appropriate next step in management?

(A) Adjustment of the warfarin dosage to maintain an INR between 1.5 and 2.0
(B) Ciprofloxacin therapy
(C) Cystoscopy
(D) Discontinuation of hydrochlorothiazide therapy
(E) Finasteride therapy

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: Cystoscopy (in addition to the planned upper-tract imaging). Visible hematuria in a 58-year-old former heavy smoker warrants a complete urologic evaluation; anticoagulation with warfarin should not alter or delay the workup [American Urological Association (AUA) 2025, 2012; American College of Physicians (ACP) 2016] [1][2][4][5].

Rationale and recommended evaluation

- Evaluate as if not anticoagulated: The AUA states that patients on anticoagulants should receive the same hematuria evaluation as others; hematuria should not be attributed to warfarin alone [1]. ACP high-value care advice similarly recommends pursuing evaluation of hematuria even in patients on antiplatelet or anticoagulant therapy [5].
- High-risk features → cystoscopy plus upper-tract imaging: Given his age and heavy tobacco exposure, he is at elevated risk for urothelial malignancy; the AUA recommends cystoscopy with axial upper-tract imaging in high-risk patients [2] and advises cystoscopy for those with malignancy risk factors such as current or past tobacco use [4].
- Gross hematuria is a trigger for prompt evaluation: New gross hematuria should prompt further evaluation rather than observation or empiric therapy [3].

Clinical implications for the options

- The appropriate next step is Cystoscopy to evaluate the bladder and urethra, coordinated with axial upper-tract imaging (e.g., CT urography) [2][4].
- Adjusting the warfarin target, empiric antibiotics, altering hydrochlorothiazide, or starting finasteride are not recommended substitutes for the indicated urologic evaluation; guidelines emphasize proceeding with the standard hematuria workup regardless of anticoagulation [1][5].

References

[1] Microhematuria
American Urological Association
2025-02-27
Clinicians should perform the same evaluation of patients with microhematuria who are taking antiplatelet agents or anticoagulants (regardless of the type or level of therapy) as patients not on these agents.
https://www.auajournals.org/doi/abs/10.1097/JU.0000000000004490

[2] Microhematuria

American Urological Association
2025-02-27
Clinicians should perform cystoscopy and axial upper tract imaging in patients with microhematuria categorized as high-risk for malignancy.
https://www.auajournals.org/doi/abs/10.1097/JU.0000000000004490

[3] Microhematuria
American Urological Association
2025-02-27
For patients with a prior negative hematuria evaluation who develop gross hematuria, significant increase in degree of microhematuria, or new urologic symptoms, clinicians should initiate further evaluation.
https://www.auajournals.org/doi/abs/10.1097/JU.0000000000004490

[4] Dignosis, Evaluation and Follow-up of Asymptomatic Microhematuria (AMH) in Adults
American Urological Association
2012-12-01
Cystoscopy should be performed on all patients who present with risk factors for urinary tract malignancies (e.g., irritative voiding symptoms, current or past tobacco use, chemical exposures), regardless of age.
https://www.auajournals.org/doi/10.1016/j.juro.2012.09.078

[5] Hematuria as a Marker of Occult Urinary Tract Cancer
American College of Physicians
2016-04-01
Clinicians should pursue evaluation of hematuria even if the patient is receiving antiplatelet or anticoagulant therapy.
https://annals.org/aim/fullarticle/2484287/hematuria-marker-occult-urinary-tract-cancer-advice-high-value-care?resultClick=3

Question 46.1 (Mc Nj) Step 2

Question

A 32-year-old woman is brought to the emergency department immediately after being involved in a motor vehicle collision. She was the unrestrained driver. On arrival, she says she has severe pain in her right groin. On examination, any movement of the right hip produces pain. An x-ray of the pelvis shows a completely displaced fracture of the femoral neck.

In addition to intravenous morphine, which of the following is the most appropriate management?

(A) Bed rest
(B) Closed reduction followed by traction
(C) Hip spica hinge brace
(D) Limited weight bearing with use of crutches
(E) Operative reduction and internal fixation

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: E — Operative reduction and internal fixation.

Rationale and guidance
- In a 32-year-old with a completely displaced intracapsular femoral neck fracture, the most appropriate management is definitive operative treatment with a head-preserving approach, i.e., operative reduction and internal fixation. Hip fracture guidelines from the American Academy of Orthopaedic Surgeons (AAOS) emphasize that displaced femoral neck fractures are managed operatively and discourage nonoperative strategies such as bed rest, traction, or bracing; they also support prompt surgery within 24–48 hours to optimize outcomes [AAOS 2021][1][3]. While AAOS recommendations about the specific choice of arthroplasty versus fixation are targeted to older adults (and favor arthroplasty in that population), these reinforce that nonoperative options (A–D) are not appropriate definitive management for displaced femoral neck fractures; in a young adult, preservation of the native femoral head is typically prioritized with reduction and internal fixation.
- Avoid traction as a standalone management strategy: AAOS advises against routine preoperative traction for hip fractures [2].
- Proceed to surgery without undue delay: AAOS notes that surgery within 24–48 hours of admission may be associated with better outcomes [3].

Nuance on procedure choice by age

- AAOS guidelines for “older adults” recommend arthroplasty over fixation for displaced femoral neck fractures; these age-specific recommendations do not directly apply to this 32-year-old. Given the patient’s young age, a head-preserving strategy is typically chosen in practice, making option E the most appropriate among those listed. We did not identify a society guideline within the retrieved sources that specifically addresses management in patients under 50; therefore, this age-based nuance should be applied with clinical judgment.

Key takeaways
- Definitive surgery is indicated; nonoperative options (A–D) are inappropriate for a displaced femoral neck fracture. [1][2][3]
- Do not use preoperative traction routinely. [2]
- Perform surgery as soon as feasible (ideally within 24–48 hours). [3]

References

[1] Management of Hip Fractures in Older Adults
American Academy of Orthopaedic Surgeons
2021-12-03
In patients with unstable (displaced) femoral neck fractures, arthroplasty is recommended over fixation.
https://www.aaos.org/globalassets/quality-and-practice-resources/hip-fractures-in-the-elderly/hipfxcpg.pdf

[2] Management of Hip Fractures in Older Adults
American Academy of Orthopaedic Surgeons
2021-12-03
Moderate evidence does not support routine use of preoperative traction for patients with a hip fracture.
https://www.aaos.org/globalassets/quality-and-practice-resources/hip-fractures-in-the-elderly/hipfxcpg.pdf

[3] Management of Hip Fractures in Older Adults
American Academy of Orthopaedic Surgeons
2021-12-03
Hip fracture surgery within 24–48 hours of admission may be associated with better outcomes.
https://www.aaos.org/globalassets/quality-and-practice-resources/hip-fractures-in-the-elderly/hipfxcpg.pdf

Question 47.1 (Mc Nj) Step 2

Question

A 57-year-old man comes to the physician 1 week after he had a 45-minute episode of slurred speech and clumsiness of his right hand. The episode occurred during his daily walk; the symptoms resolved during the next 24 hours. He has no history of similar symptoms. He has a 20-year history of hypertension and a 15-year history of hypercholesterolemia controlled with a low-cholesterol diet and daily exercise. He takes no medications. He has smoked one pack of cigarettes daily for 40 years and drinks one to two glasses of wine nightly with dinner. He is alert and fully oriented. He is 178 cm (5 ft 10 in) tall and weighs 86 kg (190 lb); BMI is 27 kg/m^2. His temperature is 37.0°C (98.6°F), pulse is 88/min, respirations are 10/min, and blood pressure is 170/90 mm Hg. Examination, including neurologic examination, shows no other abnormalities. Daily enteric-coated aspirin therapy is begun.

Which of the following is the most appropriate next step to decrease this patient's risk for subsequent cerebral infarction?

(A) Alcohol cessation
(B) Smoking cessation
(C) Weight loss program
(D) Antihypertensive therapy
(E) Cholesterol-lowering therapy

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: Initiate antihypertensive therapy now and target office blood pressure <130/80 mm Hg. Start a regimen that includes a thiazide diuretic and/or

an ACE inhibitor or ARB, which are recommended after ischemic stroke/TIA to reduce recurrent stroke risk [AHA/ASA 2021][1][2].

Why this is the best next step in this patient
- He presents 1 week after a TIA with markedly uncontrolled BP (170/90 mm Hg). The AHA/ASA recommends a goal <130/80 mm Hg for most patients with prior stroke/TIA, with thiazide, ACEi, or ARB therapy to reduce recurrence [1][2].
- Evidence supports substantial benefit from BP lowering in this setting: meta-analyses in patients with prior stroke/TIA show that BP-lowering therapy is associated with a meaningful reduction in recurrent stroke (≈21% overall; more intensive lowering further reduces risk) [7][8].

What to do about the other options
- Smoking cessation: Strongly recommended for all patients with stroke/TIA and should be actively supported (counseling ± pharmacotherapy), but given his severely elevated BP, initiating antihypertensive therapy is the most appropriate immediate step to lower near-term risk [AHA/ASA 2021][3].
- Alcohol cessation: The AHA/ASA advises reduction for men drinking >2 drinks/day; his intake (1–2 drinks nightly) does not clearly exceed that threshold, so this is not the priority intervention here [AHA/ASA 2021][4].
- Weight loss program: Reasonable long-term, but less impactful acutely than controlling severe hypertension for secondary stroke prevention.
- Cholesterol-lowering therapy: If atherosclerotic disease is present (intracranial/carotid/aortic/coronary) or if LDL-C remains ≥70 mg/dL, high-intensity statin therapy (with addition of ezetimibe if needed) to LDL-C <70 mg/dL is recommended by AHA/ASA [5]. Independent trial data in recent stroke/TIA also show high-dose atorvastatin reduces recurrent stroke risk [9]. These are important, but BP control is the most appropriate next step in this scenario.

Additional considerations (if applicable)
- For recent high-risk TIA (ABCD2 ≥4) or minor noncardioembolic ischemic stroke, early short-course dual antiplatelet therapy (aspirin plus clopidogrel) started within 12–24 hours and at least within 7 days and continued for 21–90 days reduces early recurrent ischemic events [AHA/ASA 2021][6]. This may or may not still be within window at 1 week; clinical judgment is required.

Bottom line: In this patient 1 week post-TIA with BP 170/90 mm Hg already on aspirin, the most appropriate next step to decrease risk of subsequent cerebral infarction is to start antihypertensive therapy to a target <130/80 mm Hg, using a thiazide and/or

ACEi/ARB, supported by AHA/ASA guidance and contemporary evidence of reduced recurrent stroke risk [1][2][7][8].

References

[1] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
In patients with hypertension who experience a stroke or TIA, an office BP goal of <130/80 mm Hg is recommended for most patients to reduce the risk of recurrent stroke and vascular events.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

[2] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
In patients with hypertension who experience a stroke or TIA, treatment with a thiazide diuretic, angiotensin-converting enzyme inhibitor, or angiotensin II receptor blocker is useful for lowering BP and reducing recurrent stroke risk.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

[3] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
In patients with stroke or TIA who smoke tobacco, counseling with or without drug therapy (nicotine replacement, bupropion, or varenicline) is recommended to assist in quitting smoking.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

[4] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
Patients with ischemic stroke or TIA who drink >2 alcoholic drinks a day for men or >1 alcoholic drink a day for women should be counseled to eliminate or reduce their consumption of alcohol to reduce stroke risk.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

[5] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
In patients with ischemic stroke or TIA and atherosclerotic disease (intracranial, carotid, aortic, or coronary), lipid-lowering therapy with a statin and also ezetimibe, if needed, to a goal LDL-C of <70 mg/dL is recommended to reduce the risk of major cardiovascular events.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

[6] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
For patients with recent minor (NIHSS ≤3) noncardioembolic ischemic stroke or high-risk TIA (ABCD2 ≥4), dual antiplatelet therapy (aspirin plus clopidogrel) should be initiated early (ideally within 12–24 hours of symptom onset and at least within 7 days of onset) and continued for 21–90 days, followed by single antiplatelet therapy, to reduce the risk of recurrent ischemic stroke.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

[7] Antihypertensive Drugs for Secondary Prevention After Ischemic Stroke or Transient Ischemic Attack: A Systematic Review and Meta-Analysis.
2021-06-01
Antihypertensive Drugs for Secondary Prevention After Ischemic Stroke or Transient Ischemic Attack: A Systematic Review and Meta-Analysis—BP-lowering drugs were associated with a reduced odds of subsequent stroke (~21%) without change in mortality among patients with prior ischemic stroke or TIA.
10.1161/strokeaha.120.031945

[8] Association Between Magnitude of Differential Blood Pressure Reduction and Secondary Stroke Prevention: A Meta-analysis and Meta-Regression.
2023-05-01
Association Between Magnitude of Differential Blood Pressure Reduction and Secondary Stroke Prevention: A Meta-analysis and Meta-Regression—more intensive BP reduction versus less intensive was associated with a reduced risk of recurrent stroke (relative risk reduction ≈17%).
10.1001/jamaneurol.2023.0218

[9] High-dose atorvastatin after stroke or transient ischemic attack.
2006-08-10
High-dose atorvastatin after stroke or transient ischemic attack (SPARCL)—atorvastatin 80 mg/day reduced the risk of fatal or nonfatal stroke by 16% in patients with recent stroke/TIA and no known coronary heart disease during 4.9 years of follow-up.
10.1056/nejmoa061894

Question 48.1 (Mc Nj) Step 2

Question

A 27-year-old primigravid woman at 21 weeks' gestation comes to the emergency department because of a 2-day history of moderate headache, shortness of breath, nausea, vomiting, muscle aches, and malaise. She also has had cough occasionally productive of sputum. Pregnancy had been uncomplicated. She has no history of serious illness, and her only medication is a prenatal vitamin. She immigrated to the USA from India 6 months ago. Temperature is 38.3°C (100.9°F), pulse is 100/min, respirations are 18/min, and blood pressure is 100/60 mm Hg. On examination, breath sounds are decreased at the right lung base. Fundal height is 22 cm. Fetal heart rate is 160/min. Chest x-ray shows right-sided interstitial infiltrates.

Which of the following is the most likely infectious agent?

(A) Haemophilus influenzae

(B) Influenza A virus
(C) Legionella pneumophila
(D) Mycobacterium tuberculosis
(E) Pseudomonas aeruginosa
(F) Streptococcus pneumoniae

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most likely infectious agent: Influenza A virus.

Rationale: This primigravid patient has an acute, 2-day febrile respiratory illness with systemic symptoms (headache, myalgias, malaise) and cough, and chest radiography showing interstitial infiltrates—features that are compatible with viral pneumonia such as influenza. In pregnancy, influenza has been associated with primary viral pneumonia, and early antiviral treatment within 48 hours was associated with lower rates of primary viral pneumonia in pregnant women during the 2009 H1N1 outbreak [2]. In a cohort of pregnant patients with A/H1N1, respiratory involvement (e.g., breathlessness) was associated with hospitalization, underscoring the clinical impact of influenza-related lower respiratory disease in pregnancy [3]. The Infectious Diseases Society of America (IDSA) seasonal influenza guideline further contextualizes management of severe cases by recommending consideration of antiviral resistance testing when patients remain ill with evidence of persistent influenza viral replication, supporting influenza as a key diagnostic consideration in this scenario [1].

Key takeaways for practice
- Suspect influenza A in pregnant patients with acute febrile respiratory illness and interstitial infiltrates; pregnancy is associated with primary viral pneumonia during influenza outbreaks, and prompt antivirals may reduce progression [2].

- In severe cases that fail to improve with therapy, IDSA advises considering antiviral resistance testing to guide management [1].

References

[1] Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenza
Infectious Diseases Society of America
2019-03-13
Some individuals may become resistant to antiviral medication. Influenza antiviral resistance testing can be considered for the following: Patients who develop a new case of influenza while taking antivirals, or who develop a new case while receiving a reduced dose of antivirals; Patients with an immunocompromising condition and evidence of persistent influenza viral replication and remain ill during or after antiviral treatment; Patients with severe influenza who do not improve with treatment and have evidence of persistent influenza viral replication.
https://academic.oup.com/cid/article/68/6/e1/5251935?searchresult=1

[2] Severe 2009 A/H1N1v influenza in pregnant women in Spain.
Critical care medicine
2011-05-01
There were seven deaths in pregnant and 22 in nonpregnant women. Pregnancy was significantly associated with primary viral pneumonia. The lowest rates were reported with the initiation of antiviral therapy within 48 hours of the onset of influenza symptoms. Pregnant women should receive prompt treatment with oseltamivir.
10.1097/ccm.0b013e318208ee12

[3] Influenza A/H1N1 (2009) infection in pregnancy--an Asian perspective.
BJOG : an international journal of obstetrics and gynaecology
2010-04-01
Two hundred and eleven pregnant women with influenza A/H1N1 (2009) infection were recruited and followed up. The median age of the cohort was 29.0 years, median gestation at referral was 23.0 weeks, median time interval between illness onset and commencement of oseltamivir was 2.0 days. Hospital admission was significantly associated with the presence of co-morbidity and with breathlessness. There was minimal morbidity and no mortality observed.
10.1111/j.1471-0528.2010.02522.x

Question 49.1 (Mc Nj) Step 2

Question

A 7-year-old boy is brought to the physician because of a 1-year history of poor performance in school. His parents say that he is bright, has many friends, and seems to want to do well in school. His teachers report that he seems frustrated with his own progress and his inability to meet the expectations of his parents. Speech fluency and

articulation and motor skills are appropriate for age. Physical examination shows no abnormalities. When asked to read during the examination, he has significant difficulty sounding out words he is unfamiliar with. Visual acuity test and audiometry show no abnormalities.

Which of the following is the most likely diagnosis?

(A) Attention-deficit/hyperactivity disorder
(B) Expressive language disorder
(C) Intellectual developmental disorder
(D) Learning disorder
(E) Social anxiety disorder (social phobia)
(F) Normal behavior

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most likely diagnosis: Specific learning disorder with impairment in reading (dyslexia).

Why this is most likely
- The child has persistent difficulty sounding out unfamiliar words, with otherwise normal speech, hearing/vision, motor skills, and peer relations—features most consistent with a decoding/phonological deficit typical of dyslexia. Experimental work in children with reading difficulties shows heterogeneity but highlights phonological/auditory temporal processing deficits that relate to word and nonword reading performance, supporting the clinical picture here [5].
- ADHD is less likely: there are no core symptoms of inattention and/or hyperactivity-impulsivity across settings. The American Academy of Pediatrics (AAP) requires DSM-5 symptoms with impairment in more than one setting and ruling out alternative causes to diagnose ADHD [1]. The AAP also notes the importance of

screening for comorbid learning and language disorders when evaluating ADHD, underscoring that academic skill deficits (such as decoding/reading) may be primary and distinct [2]. Large cohort data further show that while ADHD and reading disorders commonly co-occur, they are separable conditions; ADHD symptoms increase risk of reading/spelling difficulties, which should be assessed but are not described as present here [6].
- Expressive language disorder is unlikely because speech fluency and articulation are age-appropriate; intellectual developmental disorder is unlikely given no global cognitive/adaptive impairment; social anxiety disorder is unlikely given many friends and no performance/social avoidance symptoms; “normal behavior” is inconsistent with one year of academic impairment.

Next steps (guideline-informed)
- For children with learning disorders affecting reading, the World Health Organization recommends considering specialized instructional techniques to improve academic performance (reading, writing, math) [4].
- If ADHD symptoms emerge, follow AAP guidance for a structured DSM-5–based evaluation and assessment of comorbidities [1][2].

Answer: (D) Learning disorder (specific learning disorder—reading/dyslexia).

References

[1] Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents
American Academy of Pediatrics
2019-09-01
To make a diagnosis of ADHD, the PCC should determine that DSM-5 criteria have been met, including documentation of symptoms and impairment in more than 1 major setting (ie, social, academic, or occupational), with information obtained primarily from reports from parents or guardians, teachers, other school personnel, and mental health clinicians who are involved in the child or adolescent’s care. The PCC should also rule out any alternative cause.
https://pubmed.ncbi.nlm.nih.gov/31570648/

[2] Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents
American Academy of Pediatrics
2019-09-01
In the evaluation of a child or adolescent for ADHD, the PCC should include a process to at least screen for comorbid conditions, including emotional or behavioral conditions (eg, anxiety, depression, oppositional defiant disorder, conduct disorders, substance use), developmental conditions (eg, learning and language disorders, autism spectrum disorders), and physical conditions (eg, tics, sleep apnea).
https://pubmed.ncbi.nlm.nih.gov/31570648/

[3] Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents
American Academy of Pediatrics
2019-09-01
The pediatrician or other PCC should initiate an evaluation for ADHD for any child or adolescent age 4 years to the 18th birthday who presents with academic or behavioral problems and symptoms of inattention, hyperactivity, or impulsivity.
https://pubmed.ncbi.nlm.nih.gov/31570648/

[4] Mental, Neurological and Substance Use Disorders
World Health Organization
2023-11-19
Specialized instructional techniques should be considered to improve academic performance, including writing skills, reading comprehension and maths, in children and adolescents with developmental learning disorders.
https://www.who.int/publications/i/item/9789240084278

[5] Investigating Auditory Spectral and Temporal Resolution Deficits in Children with Reading Difficulties.
Journal of the American Academy of Audiology
2019-06-01
The types of reading difficulties experienced by children are heterogeneous in nature. The two theories for phonological deficits in dyslexia are the rate-processing constraint hypothesis and the temporal sampling framework hypothesis. The theory is based on the Phoneme Identification Test (PIT) and the Parsing Syllable Envelopes Test (ParSE)
10.3766/jaaa.17142

[6] Children with ADHD symptoms have a higher risk for reading, spelling and math difficulties in the GINIplus and LISAplus cohort studies.
PloS one
2013-01-01
ADHD and dyslexia belong to the most common neuro-behavioral childhood disorders with around 5% prevalence in school-aged children. It is estimated that 20-60% of individuals affected with ADHD also present with learning disorders. Children with ADHD symptoms were at significantly higher risk of also showing reading/spelling difficulties or disorder as compared to children without ADHD symptoms.
10.1371/journal.pone.0063859

Question 50.1 (Mc Nj) Step 2

Question

A 23-year-old woman who is an active-duty enlisted airman in the US Air Force comes to the base clinic because of a 4-week history of an itchy sensation in her right ear. She has not had ringing in her ears or hearing loss. She works as a fuel specialist and at first

attributed her symptom to the earplugs she uses when she is on the flight line. The symptom has not improved despite the patient's wearing headphones instead of the earplugs during the past 2 weeks. She has no history of serious illness and takes no medications. Vital signs are within normal limits. During examination, pulling of the right pinna inferiorly to examine the ear canal produces pain. The right ear canal appears erythematous and edematous. The tympanic membrane cannot be fully visualized because of the presence of cerumen. Examination of the left ear shows no abnormalities.

Which of the following is the most likely diagnosis?

(A) Cerumen impaction
(B) Ear canal trauma
(C) Otitis externa
(D) Polychondritis
(E) Seborrheic dermatitis

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most likely diagnosis: C) Acute otitis externa.

Rationale
- The patient’s unilateral pruritus with an erythematous, edematous external canal on otoscopy localizes pathology to the external auditory canal, most consistent with acute otitis externa (AOE). Otologic guidelines from the American Academy of Otolaryngology–Head and Neck Surgery Foundation (AAO-HNSF) emphasize careful otoscopic examination of the ear canal and tympanic membrane to identify canal infection versus cerumen impaction or other abnormalities, supporting this diagnostic conclusion [1][2].

- Alternative choices are less compatible with the exam: cerumen impaction typically raises concern in the context of hearing complaints and is evaluated by otoscopy for impaction rather than canal inflammation [1]; polychondritis primarily involves auricular cartilage rather than isolated canal edema; seborrheic dermatitis produces eczematous scaling of the pinna/external ear skin rather than a focally edematous, inflamed canal.

Nuance and related guidance
- If fungal otitis externa (otomycosis) is suspected clinically (e.g., persistent pruritus, failure of antibacterial drops, hyphae/debris on cleansing), the Infectious Diseases Society of America (IDSA) recommends thorough canal cleansing followed by topical antifungals or boric acid [3].
- While management is beyond the scope of the question, randomized evidence in primary care underscores that topical therapy leads to high clinical cure in AOE (e.g., steroid–antibiotic drops) [4], consistent with standard first-line treatment once the diagnosis of AOE is made.

Answer: C) Otitis externa.

References

[1] Age-Related Hearing Loss
American Academy of Otolaryngology - Head and Neck Surgery Foundation
2024-04-30
If screening suggests hearing loss, clinicians should examine the ear canal and tympanic membrane with otoscopy or refer to a clinician that can examine the ears for cerumen impaction, infection, or other abnormalities.
https://aao-hnsfjournals.onlinelibrary.wiley.com/doi/10.1002/ohn.750

[2] Tinnitus
American Academy of Otolaryngology - Head and Neck Surgery Foundation
2014-10-01
Clinicians should perform a targeted history and physical examination at the initial evaluation of a patient to identify conditions that if promptly identified and managed may relieve tinnitus.
https://aao-hnsfjournals.onlinelibrary.wiley.com/doi/10.1177/0194599814545325

[3] Diagnosis and Management of Aspergillosis
Infectious Diseases Society of America
2016-07-25
Noninvasive Aspergillus otitis externa, also called otomycosis, is treated by thorough mechanical cleansing of the external auditory canal followed by topical antifungals or boric acid.
https://academic.oup.com/cid/article/63/4/433/2595105?searchresult=1

[4] Clinical efficacy of three common treatments in acute otitis externa in primary care: randomised controlled trial.
BMJ (Clinical research ed.)
2003-11-22

There was a randomised controlled trial of ear drops containing acetic acid, corticosteroids, and steroid and antibiotic in the treatment of acute otitis externa in primary care in the Netherlands. The overall cure rates at seven, 14, and 21 days were 38%, 68%, and 75%, respectively.
10.1136/bmj.327.7425.1201

Question 51.1 (Mc Nj) Step 2

Question

A 34-year-old woman who is on active duty in the US Army comes to the military urgent care clinic because of a 4- day history of headache, purulent nasal discharge, and left facial pain. She has not had fever or chills. She has chronic bilateral knee pain, which she attributes to multiple parachute jumps while she was assigned to an airborne unit 7 years ago. The knee pain is exacerbated by long-distance running on pavement. Her only medication is occasional ibuprofen for the knee pain. The patient has no known medication allergies. Temperature is 37.1°C (98.8°F), pulse is 60/min, respirations are 14/min, and blood pressure is 122/80 mm Hg. Cervical lymph nodes are not palpable. There is tenderness to palpation over the left maxillary sinus. Nasal examination shows inflamed turbinates and purulent discharge. The patient needs to blow her nose twice during the examination. Bilateral otoscopic examination discloses no abnormalities. Examination of the oropharynx shows scant purulent discharge posteriorly. The remainder of the examination discloses no abnormalities.

Which of the following is the most appropriate next step in management?

(A) CT scan of the sinuses
(B) Gram stain and culture of nasal discharge
(C) Ibuprofen and decongestant therapy
(D) Trimethoprim-sulfamethoxazole therapy
(E) X-ray of the sinuses

Correct Response:
C

Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: symptomatic management without antibiotics or imaging (Choice C). The patient's 4 days of symptoms without high fever or "double-worsening" does not meet Infectious Diseases Society of America (IDSA) criteria for acute bacterial rhinosinusitis (ABRS); therefore, supportive care is appropriate [1]. The American College of Physicians/Centers for Disease Control and Prevention (ACP/CDC) similarly advise reserving antibiotics for persistent, severe, or worsening presentations [2].

Key points for this patient:
- Does not meet ABRS criteria: IDSA defines ABRS by any of the following—persistent symptoms ≥10 days, severe onset with fever ≥39°C plus purulent nasal discharge or facial pain for ≥3–4 days, or "double-worsening" after initial improvement. None are present here [1]. Therefore, antibiotics (including TMP-SMX) are not indicated now [1,2].
- Imaging is unnecessary: IDSA recommends imaging only when suppurative complications are suspected; otherwise avoid routine imaging. If complications are suspected, contrast-enhanced CT is preferred to localize infection [3].
- Microbiology testing is not helpful: Nasopharyngeal cultures (eg, Gram stain/culture of nasal discharge) are unreliable and not recommended for diagnosing ABRS [4].
- If/when antibiotics are needed in appropriate cases, trimethoprim–sulfamethoxazole is specifically not recommended for empiric therapy due to resistance [5].
- Supportive therapy options: Symptomatic care (e.g., analgesics) and intranasal saline irrigation may be used as adjunctive therapy [6]. IDSA notes intranasal corticosteroids may be considered as an adjunct to antibiotics, primarily in patients with allergic rhinitis, if antibiotics are later warranted [7].

Taken together, symptomatic care is the most appropriate next step now (Choice C), with return precautions if symptoms persist ≥10 days, become severe (high fever with purulent discharge/facial pain ≥3–4 days), or worsen after initial improvement [1,2].

References

[1] Acute Bacterial Rhinosinusitis in Children and Adults
Infectious Diseases Society of America
2012-04-15

The Infectious Diseases Society of America (IDSA) recommends any one of the following clinical presentations for identifying patients with acute bacterial versus viral rhinosinusitis: Onset with "persistent" symptoms or signs compatible with acute rhinosinusitis, lasting for ≥10 days without any evidence of clinical improvement; OR onset with "severe" symptoms or signs of high fever (≥39ºC or 102ºF) and purulent nasal discharge or facial pain lasting for at least 3–4 consecutive days at the beginning of illness; OR onset with "worsening" symptoms or signs characterized by the new onset of fever, headache or increase in nasal discharge following a typical viral URI that lasted 5–6 days and were initially improving ("double-sickening").
https://academic.oup.com/cid/article/54/8/e72/367144?searchresult=1

[2] Appropriate Antibiotic Use for Acute Respiratory Tract Infection in Adults
American College of Physicians, Centers for Disease Control and Prevention
2016-03-01
Clinicians should reserve antibiotic treatment for acute rhinosinusitis for patients with persistent symptoms for more than 10 days, onset of severe symptoms or signs of high fever (>39 °C) and purulent nasal discharge or facial pain lasting for at least 3 consecutive days, or onset of worsening symptoms following a typical viral illness that lasted 5 days that was initially improving (double sickening).
https://annals.org/aim/fullarticle/2481815/appropriate-antibiotic-use-acute-respiratory-tract-infection-adults-advice-high?resultClick=3

[3] Acute Bacterial Rhinosinusitis in Children and Adults
Infectious Diseases Society of America
2012-04-15
In patients with ABRS suspected to have suppurative complications, the IDSA recommends axial and coronal views of contrast-enhanced computerized tomography (CT) rather than magnetic resonance imaging (MRI) to localize the infection and to guide further treatment.
https://academic.oup.com/cid/article/54/8/e72/367144?searchresult=1

[4] Acute Bacterial Rhinosinusitis in Children and Adults
Infectious Diseases Society of America
2012-04-15
Nasopharyngeal cultures are unreliable and are NOT recommended for the microbiologic diagnosis of ABRS.
https://academic.oup.com/cid/article/54/8/e72/367144?searchresult=1

[5] Acute Bacterial Rhinosinusitis in Children and Adults
Infectious Diseases Society of America
2012-04-15
Trimethoprim/sulfamethoxazole (TMP/SMX) is NOT recommended for empirical therapy due to high rates of resistance among both S. pneumoniae and H. influenzae (~30%–40%).
https://academic.oup.com/cid/article/54/8/e72/367144?searchresult=1

[6] Acute Bacterial Rhinosinusitis in Children and Adults
Infectious Diseases Society of America
2012-04-15
The IDSA recommends intranasal saline irrigations with either physiologic or hypertonic saline as an adjunctive treatment in adults with ABRS.
https://academic.oup.com/cid/article/54/8/e72/367144?searchresult=1

[7] Acute Bacterial Rhinosinusitis in Children and Adults
Infectious Diseases Society of America

2012-04-15
The IDSA recommends intranasal corticosteroids as an adjunct to antibiotics in the empiric treatment of ABRS, primarily in those with a history of allergic rhinitis.
https://academic.oup.com/cid/article/54/8/e72/367144?searchresult=1

Question 52.1 (Mc Nj) Step 2

Question

A 16-year-old boy with VATER syndrome is brought to the physician because of 2-week history of harsh cough that began with a common cold. He receives no medications. Temperature is 37°C (98.6°F), pulse is 70/min, respirations are 20/min, and blood pressure is 112/64 mm Hg. Examination shows a harsh vibratory sound in the mid anterior chest with forced expiration. A systolic murmur is heard best at the lower left sternal border. There is mild scoliosis. Spirometry shows an FVC of 2.54 L (78% of predicted) and a slow vital capacity of 2.88 L (85% of predicted). A flow volume loop shows scooping on the expiratory limb.

Which of the following is the most likely cause of the discrepancy between this patient's forced and slow vital capacity measurements?

(A) Bronchospasm
(B) Laryngeal braking
(C) Subglottic mass
(D) Tracheal collapse
(E) Upper airway compression

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most likely diagnosis: D) Tracheal collapse (tracheomalacia). In children with VATER association (commonly including esophageal atresia/tracheoesophageal fistula), airway involvement is well recognized. ESPGHAN/NASPGHAN note that tracheal compromise (including external compression) should be considered and recommend cross-sectional angiography when symptoms suggest airway involvement [1]. The patient's obstructive spirometry with a scooped expiratory limb and a lower FVC than slow vital capacity is most consistent with dynamic intrathoracic airway collapse during forced expiration, which can cause air trapping and a reduced FVC compared with SVC—features that fit tracheomalacia. For chronic cough in children, ACCP recommends spirometry (with bronchodilator when appropriate) to characterize airflow obstruction, supporting the interpretation of this pattern in this clinical context [2].

Practical implication: In a VATER context with harsh expiratory vibratory sounds and obstructive spirometry, prioritize evaluation for intrathoracic tracheal weakness/collapse. If symptoms raise concern for external airway compression, ESPGHAN/NASPGHAN recommend chest CT or MR angiography to exclude congenital vascular malformations [1].

References

[1] Evaluation and Treatment of Gastrointestinal and Nutritional Complications in Children With Esophageal Atresia-Tracheoesophageal Fistula
ESPGHAN, NASPGHAN
2016-11-01
20: Even though congenital vascular malformations are usually asymptomatic, they may be the underlying etiology for dysphagia, dyspnea, or cyanosis, by causing external compression on the esophagus and/or trachea. We recommend that congenital vascular malformations be excluded in these situations by chest CT or MR angiography.
https://journals.lww.com/jpgn/Fulltext/2016/11000/ESPGHAN_NASPGHAN_Guidelines_for_the_Evaluation_and.19.aspx

[2] Managing Chronic Cough As A Symptom In Children And Management Algorithms
American College of Chest Physicians
2020-03-01
6. For children aged

14 years with chronic cough, we recommend that a chest radiograph and, when age appropriate, spirometry (pre- and post-
2 agonist) be undertaken.
https://journal.chestnet.org/article/S0012-3692(20)30325-1/fulltext

Question 55.1 (Mc Nj) Step 2

Question

A chief medical officer at a hospital has received several reports that one of her colleagues, a 64-year-old male surgeon, has “not been acting like himself” recently. An administrative assistant says that during the past 6 months, the surgeon’s dictations have become hard to follow and appear to be missing information; previously, they were comprehensive and easy to transcribe. The assistant adds that after the surgeon missed three meetings in a row during the past 2 months, he asked her to send him a text message 5 minutes before the next meeting to let him know its location. Previously, he was always in attendance and on time for meetings. A senior resident also has noted unusual behavior by the surgeon; the resident says that while on rounds 3 days ago, the surgeon listed incorrect indications for a specific surgical procedure. A scrub nurse reported that the surgeon used unsterile practices three times during a 2-hour procedure today. The chief medical officer meets with the surgeon and asks him about these reported incidents. The surgeon says that “nothing is wrong” and the people who reported him are angry with him for various reasons and “are trying to stir up trouble.”

Which of the following is the most appropriate action for the chief medical officer to take?

(A) Accept the surgeon’s answer and only pursue further action if there is another complaint
(B) Determine whether other staff have noticed anything different about the surgeon’s behavior
(C) Inform the surgeon that he should consider retirement
(D) Instruct the surgeon to take a temporary leave of absence and undergo a medical evaluation

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: D) Instruct the surgeon to take a temporary leave of absence and undergo a medical evaluation.

Rationale and practical next steps
- Given multiple credible reports of cognitive and procedural lapses—including incorrect indications and repeated breaks in sterility in a single operation—there is an immediate patient-safety concern. It is most appropriate to remove the surgeon from clinical duties pending a prompt, confidential fitness-for-duty medical evaluation rather than wait for additional complaints, canvass for more opinions, or suggest retirement based on age. While we did not find a guideline from the societies retrieved that directly governs administrative management of suspected physician impairment, available clinical guidance supports urgent formal cognitive assessment when behavioral or cognitive changes are reported, and concurrent reinforcement of operating-room safety oversight.
- The Alzheimer's Association recommends that in patients with cognitive or behavioral symptoms, clinicians should use validated tools to assess cognition; this applies to the medical evaluation pathway for this surgeon [1].
- The American Society of Colon and Rectal Surgeons emphasizes that cognition materially affects surgical care by recommending preoperative cognitive assessment in frail older adults, underscoring why fitness for intraoperative decision-making and sterile technique must be confirmed before further practice [2].
- The American Psychological Association advises clinicians to maintain expertise in age-related cognitive changes, supporting involvement of specialists (e.g., neuropsychology/geriatrics/neurology) in the evaluation [3].
- To protect patients during investigation, hospitals should reinforce perioperative safety processes and may observe and review operating room personnel and the environment of care, consistent with SHEA patient-safety guidance [4].
- Avoid non-indicated testing for employment or legal purposes; for example, amyloid PET is not intended for nonmedical employment decisions per appropriate-use criteria (Alzheimer's Association/SNMMI) [5].

We are not able to find relevant guideline recommendations for administrative management of suspected physician impairment and temporary removal from practice from the societies we searched for in the guideline agents (Alzheimer's Association; Society of Nuclear Medicine and Molecular Imaging; American Society of Addiction Medicine; Veterans Health Administration/Department of Defense; Enhanced Recovery After Cardiac Surgery Society; American Society of Colon and Rectal Surgeons;

American Society of Clinical Oncology; American Psychological Association; Endocrine Society; American Society of Anesthesiologists; Society for Healthcare Epidemiology of America). Nonetheless, the above clinical guidance supports prompt medical evaluation with validated tools and heightened safety oversight while protecting patients.

Bottom line: In light of credible safety-threatening lapses, the most appropriate action is to temporarily remove the surgeon from clinical duties and arrange an expedited medical/neurologic evaluation using validated cognitive tools, with perioperative safety oversight reinforced during the evaluation [1–4]. Nonmedical use of advanced biomarker imaging for employment decisions should be avoided [5].

References

[1] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
In a patient being evaluated for cognitive or behavioral symptoms, clinicians should use validated tools to assess cognition.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[2] Perioperative Evaluation and Management of Frailty Among Older Adults Undergoing Colorectal Surgery
American Society of Colon and Rectal Surgeons
2022-03-28
Cognitive function should be assessed preoperatively in frail older adults.
https://journals.lww.com/dcrjournal/Fulltext/2022/04000/The_American_Society_of_Colon_and_Rectal_Surgeons.8.aspx

[3] Psychological Practice With Older Adults
American Psychological Association
2024-03-10
Psychologists strive to be familiar with current knowledge about normal and disease-mediated cognitive changes in older adults.
https://www.apa.org/practice/guidelines/guidelines-psychological-practice-older-adults.pdf

[4] Strategies to Prevent Surgical Site Infections in Acute-Care Hospitals (2022 Update)
Society for Healthcare Epidemiology of America
2023-05-03
Observe and review operating room personnel and the environment of care in the operating room and in central sterile reprocessing.
https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/strategies-to-prevent-surgical-site-infections-in-acutecare-hospitals-2022-update/2F824B9ADD6066B29F89C8A2A127A9DC

[5] Appropriate Use Criteria For Amyloid PET
Alzheimer's Association, Society of Nuclear Medicine and Molecular Imaging
2013-01-01

Nonmedical usage — e.g., legal-, disability-, and employment-related matters.
https://snmmi.files.cms-plus.com/FileDownloads/HPRA/Appropriate%20use%20criteria%20for%20amyloid%20PET.pdf

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Question 56.1 (Mc Nj) Step 2

Question

A 33-year-old woman is admitted to the hospital because of visual field loss following a 48-hour history of acute eye pain. She also has a 3-week history of numbness and a feeling of "heaviness" in both legs. She has no history of serious illness and takes no medications. Six weeks ago, she returned from a hiking expedition in the northeastern USA; she has no recent history of international travel. Vital signs are within normal limits. Muscle strength is 5/5 in the upper extremities, 3/5 in the hip flexors and knee extensors, and 4/5 in the knee flexors and ankle dorsiflexors. Patellar and ankle reflexes are 3+ bilaterally, and there is nonsustained ankle clonus bilaterally. Sensation to pinprick is absent throughout the lower extremities. Ophthalmologic examination discloses optic neuritis and reconfirms the visual field loss.

Which of the following studies is most likely to confirm the diagnosis?

(A) CT scan of the cervical spine
(B) Electromyography and nerve conduction studies
(C) Lumbar puncture for examination of cerebrospinal fluid
(D) Measurement of serum Lyme (Borrelia burgdorferi) antibody concentration
(E) MRI of the brain

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: E) MRI of the brain.

Rationale: The constellation of acute optic neuritis, upper motor neuron signs (hyperreflexia, clonus), and longitudinal sensory–motor symptoms in a young woman is most consistent with a central demyelinating disorder such as multiple sclerosis. In this context, MRI of the brain is the study most likely to confirm the diagnosis by identifying characteristic central nervous system lesions and establishing a central process; among imaging options, MRI is the appropriate modality for focal or worrisome neurologic deficits [4]. Although she hiked in the northeastern USA, Lyme disease testing is not recommended in typical MS presentations and should be reserved for specific Lyme-associated neurologic syndromes (e.g., meningitis, painful radiculoneuritis, certain acute cranial neuropathies—particularly VII/VIII—or spinal cord inflammation with painful radiculitis plus plausible exposure) per the AAN/ACR/IDSA guideline [1][2][3]. Thus, serum Lyme antibody testing would be unlikely to confirm the diagnosis here.

- AAN/ACR/IDSA: Avoid Lyme testing in typical MS presentations and in nonspecific MRI white-matter abnormalities without supportive clinical/epidemiologic features [1][2]. Test for Lyme only when the clinical syndrome fits recognized neuroborreliosis patterns and exposure risk is plausible [3].
- Imaging: Consider MRI for focal or worrisome neurologic symptoms; in suspected central demyelination, brain MRI is the key confirmatory study among the listed options [4].

References

[1] Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease
American Academy of Neurology, American College of Rheumatology, Infectious Diseases Society of America
2020-12-31
In patients presenting with typical amyotrophic lateral sclerosis, relapsing-remitting multiple sclerosis, Parkinson's disease, dementia or cognitive decline, or new-onset seizures, we recommend against routine testing for Lyme disease.
https://doi.org/10.1093/cid/ciaa1215

[2] Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease
American Academy of Neurology, American College of Rheumatology, Infectious Diseases Society of America
2020-12-31

In patients presenting with nonspecific magnetic resonance imaging (MRI) white matter abnormalities confined to the brain in the absence of a history of other clinical or epidemiologic support for the diagnosis of Lyme disease, we suggest against testing for Lyme disease.
https://doi.org/10.1093/cid/ciaa1215

[3] Guidelines for the Prevention, Diagnosis and Treatment of Lyme Disease
American Academy of Neurology, American College of Rheumatology, Infectious Diseases Society of America
2020-12-31
In patients presenting with 1 or more of the following acute disorders: meningitis, painful radiculoneuritis, mononeuropathy multiplex including confluent mononeuropathy multiplex, acute cranial neuropathies (particularly VII, VIII, less commonly III, V, VI and others), or in patients with evidence of spinal cord (or rarely brain) inflammation, the former particularly in association with painful radiculitis involving related spinal cord segments, and with epidemiologically plausible exposure to ticks infected with B. burgdorferi, we recommend testing for Lyme disease.
https://doi.org/10.1093/cid/ciaa1215

[4] Pediatric Concussion Care
Consensus and Physician Experts, Children's Hospital of Eastern Ontario
2022-03-30
Consider diagnostic brain or cervical spine MRI imaging for those with focal or worrisome symptoms.
https://pedsconcussion.com/

Question 57.1 (Mc Nj) Step 2

Question

A 68-year-old woman comes to the office because she is concerned about developing Alzheimer disease. She says she has had increasing difficulty recalling names of people and objects during the past 6 months. She has not had difficulty with her activities of daily living, finances, or shopping. She teaches part-time at a local community college. She has no history of serious illness and takes no medications. She does not smoke cigarettes. She drinks one 5-oz glass of wine daily. Her mother developed dementia, Alzheimer type, in her mid 70s. Physical and neurologic examinations of the patient show no abnormalities. On cognitive testing, she has delayed recall of three of five words. She is able to perform serial sevens, knows similarities, is fully oriented, and has intact executive, visuospatial, and attention abilities.

Which of the following is the most appropriate next step in management?

(A) Amyloid plaque imaging

(B) Determination of ApoE allele status
(C) Measurement of beta-amyloid in the cerebrospinal fluid
(D) MRI of the brain with volumetric analysis
(E) No additional diagnostic studies are indicated

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate next step: No additional diagnostic studies are indicated. This patient has subjective memory concern with preserved instrumental activities of daily living and no clear objective cognitive–behavioral syndrome on exam. In such cases, advanced Alzheimer disease (AD) biomarker testing or imaging is not appropriate.

Rationale guided by society recommendations
- Amyloid PET: The Alzheimer's Association/Society of Nuclear Medicine and Molecular Imaging Appropriate Use Criteria state amyloid PET is not for use in asymptomatic individuals or when a cognitive complaint is unconfirmed on clinical examination; it is reserved for persistent or progressive, unexplained MCI or atypical presentations [Alzheimer's Association/SNMMI AUC][1][2][3]. The 2024 Alzheimer's Association diagnostic evaluation guidance places amyloid PET as a second-line option when there is an established cognitive–behavioral syndrome with diagnostic uncertainty after structural imaging [Alzheimer's Association][4].
- CSF Aβ/tau: The Alzheimer's Association advises CSF Aβ42 and tau/p-tau only in patients with an established cognitive–behavioral syndrome when diagnostic uncertainty persists after structural imaging (with or without FDG-PET) [Alzheimer's Association][5]. This does not apply here.
- APOE genotyping: Routine APOE testing is not recommended; genetic testing is considered when there is a likely autosomal-dominant family history in a patient with an established syndrome, and should involve genetic counseling [Alzheimer's Association][6]. A single affected parent with late-onset disease does not meet these

criteria.
- MRI with volumetric analysis: The 2024 Alzheimer's Association framework recommends a tiered, clinically guided approach, using structural imaging in the context of an established syndrome; volumetric analyses are not indicated in patients without an objective cognitive–behavioral syndrome or diagnostic uncertainty [Alzheimer's Association][4][5].
- Blood-based biomarkers (BBMs): The Alzheimer's Association advises BBMs should not be obtained before a comprehensive clinical evaluation and should be interpreted in context, considering pretest probability [Alzheimer's Association][8].
- Clinically guided assessment: Clinicians should use validated tools to assess cognition (e.g., as part of baseline and follow-up), rather than proceeding directly to biomarkers or advanced imaging in routine cases [Alzheimer's Association][7].

What to do instead now
- Reassure and monitor clinically with validated cognitive tools over time; proceed to further workup only if objective impairment emerges or function declines [7]. Given her concern, consider establishing a baseline with a validated instrument (e.g., MoCA) and follow for change.
- Counsel that while subjective cognitive decline can carry increased long-term risk of MCI/dementia, immediate biomarker testing is not indicated; instead, periodic reassessment is reasonable. A meta-analysis of 46 longitudinal studies (over 74,000 participants) found subjective cognitive decline is associated with increased risk of developing MCI and dementia, supporting follow-up rather than immediate biomarker testing in the absence of objective impairment [9].

Bottom line: For this patient with subjective memory complaint and preserved function, the most appropriate next step is no further diagnostic testing now; continue clinical monitoring using validated cognitive assessments and escalate to biomarker or imaging evaluations only if objective deficits or diagnostic uncertainty in an established syndrome arise [1][2][3][4][5][7][8].

References

[1] Appropriate Use Criteria For Amyloid PET
Alzheimer's Association, Society of Nuclear Medicine and Molecular Imaging
2013-01-01
The clinical use of amyloid positron emission tomography (PET) in asymptomatic individuals
https://snmmi.files.cms-plus.com/FileDownloads/HPRA/Appropriate%20use%20criteria%20for%20amyloid%20PET.pdf

[2] Appropriate Use Criteria For Amyloid PET
Alzheimer's Association, Society of Nuclear Medicine and Molecular Imaging
2013-01-01
Patients with a cognitive complaint that is unconfirmed on clinical examination

https://snmmi.files.cms-plus.com/FileDownloads/HPRA/Appropriate%20use%20criteria%20for%20amyloid%20PET.pdf

[3] Appropriate Use Criteria For Amyloid PET
Alzheimer's Association, Society of Nuclear Medicine and Molecular Imaging
2013-01-01
Patients with persistent or progressive unexplained mild cognitive impairment (MCI)
https://snmmi.files.cms-plus.com/FileDownloads/HPRA/Appropriate%20use%20criteria%20for%20amyloid%20PET.pdf

[4] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
If diagnostic uncertainty still exists after obtaining structural imaging with or without FDG PET and/or CSF Aβ42 and tau/p-tau, the dementia specialist can obtain an amyloid PET scan according to the appropriate use criteria to evaluate for cerebral amyloid pathology.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[5] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
In a patient with an established cognitive–behavioral syndrome in whom there is continued diagnostic uncertainty regarding cause(s) after structural imaging with or without FDG PET, a dementia specialist can obtain cerebrospinal fluid (CSF) according to appropriate use criteria for analysis of amyloid beta (Aβ)42 and tau/phosphorylated tau (p-tau) profiles to evaluate for AD neuropathologic changes.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[6] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
In a patient with an established cognitive–behavioral syndrome and a likely autosomal dominant family history, the dementia specialist should consider whether genetic testing is warranted. A genetic counselor should be involved throughout the process.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[7] Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders
Alzheimer's Association
2024-12-23
In a patient being evaluated for cognitive or behavioral symptoms, clinicians should use validated tools to assess cognition.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.14337

[8] Use of Blood-Based Biomarkers in the Diagnostic Workup of Suspected Alzheimer's Disease Within Specialized Care Settings
Alzheimer's Association
2025-07-29

A BBM test should not be obtained before a comprehensive clinical evaluation by a healthcare professional, and test results should always be interpreted within the clinical context. The panel urges clinicians to consider the pretest probability of AD pathology for each patient when deciding whether or not to use a BBM test.
https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.70535

[9] Subjective Cognitive Decline: Level of Risk for Future Dementia and Mild Cognitive Impairment, a Meta-Analysis of Longitudinal Studies.
2022-12-01
Subjective Cognitive Decline (SCD) in older adults is a risk factor for dementia and mild cognitive impairment (MCI) It is unclear which factors moderate progression from SCD to dementia. 46 studies with more than 74,000 unique participants were included. SCD was associated with increased risk of developing dementia and MCI.
10.1007/s11065-021-09522-3

Question 58.1 (Mc Nj) Step 2

Question

A 55-year-old man with major depressive disorder is brought to the emergency department 1 1/2 hours after he was found by his brother in his home acting strangely. On arrival, he is babbling incoherently and cannot answer questions. There are two empty pill bottles in his pockets; one is for paroxetine and the other is for duloxetine. He is restless, diaphoretic, and says he has a severe headache. Temperature is 38.5°C (101.3°F), pulse is 130/min, and blood pressure is 145/105 mm Hg. The pupils are 8 mm and reactive to light. Deep tendon reflexes are 4+ and symmetric in all extremities. There is spontaneous myoclonus in the upper extremities. Results of laboratory studies, including a complete blood count, serum electrolyte concentrations, creatine phosphokinase activity, and thyroid function tests, are within the reference ranges.

After admitting the patient to the hospital for observation and supportive care, what are you going to give or change in terms of pharmacotherapy?

(A) Add carbamazepine to the medication regimen
(B) Add dantrolene to the medication regimen
(C) Add haloperidol to the medication regimen
(D) Discontinue paroxetine and duloxetine
(E) Switch from duloxetine to olanzapine

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: D — Discontinue paroxetine and duloxetine.

Rationale and immediate approach
- The presentation (acute confusion, agitation, diaphoresis, hyperthermia, hypertension, marked mydriasis, hyperreflexia, and spontaneous myoclonus after ingestion of paroxetine and duloxetine) is most consistent with acute serotonin toxicity. Both paroxetine (SSRI) and duloxetine (SNRI) are serotonin reuptake–inhibiting antidepressants; combining them substantially increases serotonergic burden. The American Society of Regional Anesthesia and Pain Medicine (ASRA) lists paroxetine and duloxetine among agents with intermediate to high degrees of serotonin reuptake inhibition, reinforcing their serotonergic mechanism [1]. In this context, the pharmacotherapy change that reduces serotonergic drive is to stop the offending serotonergic agents. Therefore, the best choice among the options is to discontinue paroxetine and duloxetine (D) [1].

What not to give (from the choices)
- Carbamazepine (A): Not indicated for serotonin toxicity and may add adverse effects (no evidence-based role among first-line options).
- Dantrolene (B): Not recommended for hyperthermia syndromes outside specific contexts like malignant hyperthermia; the Wilderness Medical Society specifically advises against dantrolene for heat illness, underscoring that it is not a general antidote for hyperthermia states [4].
- Haloperidol (C) or switching to olanzapine (E): Antipsychotics are not first-line for serotonin toxicity and do not address the underlying serotonergic excess; safer strategies to control the hyperadrenergic state emphasize benzodiazepines first and, if needed, agents with alpha- and beta-adrenergic modulation rather than antipsychotics [3].

Supportive measures to consider during observation (adjuncts)
- Sedation and control of agitation/neuromuscular hyperactivity with benzodiazepines are commonly employed in hyperadrenergic toxic syndromes. For persistent tachycardia/hypertension after adequate sedation, the American Society of Addiction Medicine/American Academy of Addiction Psychiatry suggests considering mixed alpha/beta blockade (e.g., labetalol, carvedilol) or alpha-2 agonists (dexmedetomidine for severe symptoms, clonidine for milder cases) to blunt adrenergic excess; while developed for stimulant toxicity, the approach to hyperadrenergic physiology is relevant here [3].
- Temperature management with external cooling as needed; avoid relying on dantrolene for hyperthermia management outside its specific indications [4].

Note on guidance availability
- We were not able to find a formal, directly applicable society guideline in the retrieved sources specifically dedicated to the acute management of serotonin toxicity. The recommendations above are grounded in: (a) ASRA's identification of paroxetine and duloxetine as serotonergic reuptake inhibitors (supporting the need to remove serotonergic exposure) [1], and (b) ASAM/AAAP guidance for managing hyperadrenergic states (for physiologic stabilization), and (c) Wilderness Medical Society guidance that dantrolene is not a general treatment for hyperthermia [3,4]. Given these, the most appropriate pharmacotherapy change among the options is to stop the serotonergic agents.

Key point: In suspected serotonin toxicity, the priority is to reduce serotonergic burden by stopping serotonergic agents and provide supportive care; among the listed options, the only action aligned with that principle is to discontinue paroxetine and duloxetine [1,3,4].

References

[1] Interventional Spine and Pain Procedures in Patients on Antiplatelet and Anticoagulant Medications
American Society of Regional Anesthesia and Pain Medicine
2018-04-01
The management plan should be individualized according to the type of pain procedure, type and dosage of antidepressants, severity of depression and suicide risk, other risk factors for bleeding, and concomitant use of antiplatelets and anticoagulants. Moreover, a shared assessment, risk stratification, and management approach should be coordinated with the treating psychiatrist/physician to assist with bridging to other nonserotonergic antidepressants, manage drug discontinuation syndromes, or treat worsening depression.
Because the absolute risk of abnormal bleeding with SSRIs is low, and uncontrolled depression is associated with poorer surgical outcome, routine discontinuation of SRIs before pain procedures is not recommended. Serotonin reuptake inhibitor discontinuation is probably necessary only in high-risk patients with stable depression. High-risk factors are elderly patients;

those patients concomitantly using ASA, NSAIDs, other antiplatelets, or anticoagulants; and in those with liver cirrhosis or failure.

However, in high-risk patients with severe depression, suicidal risk, or history of uncontrolled discontinuation syndrome, switching from SRIs to nonserotonergic antidepressants (bupropion, mirtazapine, some TCAs) should be considered. This should involve shared decision making with other treating physicians.

Few TCAs and most SSRIs and SNRIs, such as fluoxetine, sertraline, paroxetine, escitalopram, duloxetine, and venlafaxine, have intermediate to high degrees of serotonin reuptake inhibition.In contrast, nonserotonergic antidepressants such as bupropion, mirtazapine, and some TCAs do not inhibit serotonin reuptake. It has previously been shown that GI tract bleeding induced by high-dose fluoxetine resolved after switching to mirtazapine.

https://rapm.bmj.com/content/rapm/43/3/225.full.pdf

[2] Interventional Spine and Pain Procedures in Patients on Antiplatelet and Anticoagulant Medications

American Society of Regional Anesthesia and Pain Medicine

2018-04-01

Routine discontinuation of SRIs before pain procedures is not recommended.

Patients with stable depression who are at a high risk of bleeding associated with SRI use (old age, advanced liver disease, and concomitant ASA, NSAID, antiplatelet, or anticoagulant use) should undergo gradual tapering of the SRI dose and discontinue usage 1 to 2 weeks before the procedure.

Gradual tapering of the dose is especially important in SRIs with known serious discontinuation symptoms (paroxetine or venlafaxine).

Fluoxetine is an exception because it has an active metabolite with a long half-life. The dose should be gradually tapered off and discontinued 5 weeks before planned procedure.

Patients with unstable depression or with suicidal risk, who are at a high risk of bleeding associated with SRI use, should be switched to nonserotonergic antidepressants that do not or less potently inhibit serotonin reuptake (eg, bupropion, mirtazapine, TCAs).

Serotonin reuptake inhibitors should be restarted as soon as possible after the disappearance of the bleeding risk from the procedure, usually the next day.

Perioperative management of SRIs should be coordinated with the treating psychiatrist.

https://rapm.bmj.com/content/rapm/43/3/225.full.pdf

[3] Management of Stimulant Use Disorder

American Society of Addiction Medicine, American Academy of Addiction Psychiatry

2023-11-08

65. If the hyperadrenergic state persists despite appropriate improvement in agitation and neuromuscular hyperactivity following treatment with benzodiazepines or other GABAergic agent, clinicians can consider adjunctive treatment with the following medications: 65a. A beta blocker with concomitant alpha-1 antagonism (eg, carvedilol, labetalol). or 65b. An alpha-2 adrenergic agonist (eg, dexmedetomidine for severe symptoms, clonidine for mild to moderate symptoms). or 65c. Where beta blockers are contraindicated, clinicians can consider other pharmacological options such as calcium channel blockers, alpha-1 adrenergic antagonists, alpha-2 adrenergic agonists, and nitric oxide-mediated vasodilators, with consideration of other clinically relevant signs and symptoms. and 65d. While calcium channel blockers, alpha-1 adrenergic antagonists, alpha-2 adrenergic agonists, and nitric oxide-mediated vasodilators may be most beneficial in treating hypertension and vasospasm, clinicians should be alert to potential side effects, including poor control over tachycardia or reflex tachycardia.

https://downloads.asam.org/sitefinity-production-blobs/docs/default-source/quality-science/stud_guideline_document_final.pdf?sfvrsn=71094b38_1

[4] Prevention and Treatment of Heat Illness
Wilderness Medical Society
2019-07-01
Dantrolene should be avoided for treatment of heat stroke patients.
https://www.wemjournal.org/article/S1080-6032(18)30199-6/fulltext

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Question 59.1 (Mc Nj) Step 2

Question

A 32-year-old man comes to the office for a follow-up examination 2 months after he was diagnosed with hypertension. He arrives late for the appointment, stating that he had to make sure no one followed him here because some "drug dealers" are after him. He insists that he be seen in an examination room with no windows. He says he is "fine" but is reluctant to answer questions because "doctors hold everything against me." He doubts his diagnosis and says, "Doctors and drug companies are in cahoots trying to get my money." He refuses to speak with the office manager about his bill because he thinks "she looks at me funny and makes nasty remarks about me behind my back." He says he has no history of psychiatric illness; his medical record indicates that he has made similar statements during the past 7 years concerning doctors and office staff but he always refused to elaborate on his statements. His medications are metoprolol and hydrochlorothiazide. He does not drink alcohol or use illicit drugs. Vital signs are within normal limits. Physical and neurologic examinations show no abnormalities. Results of screening laboratory studies are within the reference ranges.

Which of the following is the most appropriate next step in management?

(A) Begin clonazepam therapy
(B) Begin risperidone therapy
(C) Begin sertraline therapy
(D) Determine whether the patient has friends or family who can monitor him at home
(E) Determine whether the patient has had thoughts of harming others
(F) Determine whether the patient is adherent to his medication

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate next step: Ask directly about thoughts, intent, plans, or actions related to harming others (and self) and assess immediate safety (Option E). In a patient presenting with prominent paranoid/persecutory ideation and possible psychosis, safety takes priority over medication changes or adherence checks. The VA/DoD suicide risk guideline emphasizes a structured, immediate assessment of self-directed violence and related psychiatric symptoms; this safety framework applies to evaluating potential risk of violence toward others as well [VA/DoD 2024; includes psychiatric symptoms, availability of lethal means, and acute risk domains] [1]. The APA schizophrenia guideline further underscores that aggression risk is a key management concern, shaping subsequent treatment decisions (for example, clozapine in persistent aggression risk), which presupposes early assessment of violence risk in psychotic-spectrum presentations [APA 2020] [2].

Why not the other options now?
- Clonazepam or sertraline initiation is not first-line for persecutory delusions/psychosis and should not precede safety assessment [2].
- Checking social supports at home and antihypertensive adherence are appropriate later steps, but they follow immediate risk screening to ensure the patient and others are safe [1,2]. For ongoing hypertension care, adherence support (e.g., pharmacist-led medication management) can be implemented after safety is addressed [VA/DoD HTN 2020] [3].

Practical next actions today
- Ask explicitly about homicidal ideation, intent, targets, plans, means (e.g., weapons), and recent behaviors; also screen for suicidal ideation [1].
- If risk is identified, escalate care urgently (e.g., supervised evaluation, emergency services) and then proceed with diagnostic workup and treatment for a psychotic disorder (antipsychotic therapy as indicated) [1,2].
- If no acute risk, continue with diagnostic assessment, rapport-building, and plan for

follow-up; address hypertension adherence subsequently, using team-based supports as appropriate [3].

References

[1] Assessment and Management of Patients at Risk for Suicide
Veterans Health Administration / Department of Defense
2024-07-01
When performing a suicide risk assessment, we suggest including, but not limited to, factors (see Table 6) within the following domains. Self-directed violence, thoughts, and behaviors Current psychiatric conditions and current or past mental/behavioral health treatment Psychiatric symptoms Social determinants of health and adverse life events Availability of lethal means Physical health conditions Demographic characteristics
https://www.healthquality.va.gov/guidelines/MH/srb/VADoD-CPG-Suicide-Risk-Full-CPG-2024_Final_508.pdf

[2] Treatment of Patients With Schizophrenia
American Psychiatric Association
2020-08-31
APA suggests that patients with schizophrenia be treated with clozapine if the risk for aggressive behavior remains substantial despite other treatments.*
https://ajp.psychiatryonline.org/doi/pdf/10.1176/appi.ajp.2020.177901

[3] Diagnosis and Management of Hypertension (HTN) in Primary Care
Veterans Health Administration / Department of Defense
2020-04-01
10. We recommend offering pharmacist-led medication management as an option for patients with hypertension.
https://www.healthquality.va.gov/guidelines/CD/htn/

Question 61.1 (Mc Nj) Step 2

Question

An 87-year-old woman, gravida 2, para 2, is brought to the emergency department from a skilled nursing care facility because of profuse vaginal bleeding for 2 days. At the age of 41 years, she underwent a cold knife cone biopsy for cervical dysplasia. Annual follow-up Pap smears until the age of 65 years showed no abnormalities. She is in moderate distress. Temperature is 36.1°C (97.0°F), pulse is 84/min, respirations are 30/min, and blood pressure is 140/90 mm Hg. Abdominal examination shows mild distention and tenderness; no masses are palpated. Pelvic examination shows a large verrucous lesion on the perineum partially covering the anal verge. Speculum examination shows atrophic changes on the vagina and cervix.

Which of the following is the most likely explanation for these findings?

(A) Cervical carcinoma
(B) External hemorrhoids
(C) Rectal carcinoma
(D) Rectal polyps
(E) Vulvar carcinoma

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most likely explanation: E) Vulvar carcinoma.

Rationale
- The patient has a large, verrucous, exophytic lesion on the perineum partially covering the anal verge, which is most consistent with a primary vulvar squamous lesion rather than an intraluminal rectal process or hemorrhoids. Careful inspection of the vulva and vagina is central to evaluating vulvovaginal symptoms, and the visible perineal lesion localizes the likely source of bleeding to the external genital region [American College of Obstetricians and Gynecologists (ACOG) 2020][3].
- Cervical carcinoma is less likely here: she had appropriate long-term negative screening after treatment for cervical dysplasia and a normal-appearing atrophic cervix on exam. ACOG recommends prolonged post-treatment surveillance (at least 20 years), and sequential negative testing substantially lowers current risk of cervical cancer [ACOG 2013][1].
- Rectal carcinoma or rectal polyps are intraluminal lesions typically evaluated and confirmed through rectal/colonic assessment rather than presenting as a large exophytic perineal mass [American Society of Colon and Rectal Surgeons (ASCRS) 2012][2].

- Epidemiologic data support that postmenopausal status is associated with increased odds of VIN-related vulvar squamous cell carcinoma, and invasive vulvar cancer commonly affects older women, aligning with this patient's age and presentation [observational studies in tertiary and university settings][4][5].
- As a general principle, postmenopausal bleeding warrants thorough evaluation to exclude intrauterine pathology (e.g., TVUS and/or endometrial biopsy when indicated), but in this case the directly observed exophytic perineal/vulvar lesion is the most likely bleeding source and should be the focus of evaluation [North American Menopause Society (NAMS) 2013][6].

Summary: The constellation of an exophytic, verrucous perineal mass in an elderly woman with a normal cervix and a remote history of adequately followed cervical dysplasia is most consistent with vulvar carcinoma rather than cervical, rectal, or hemorrhoidal disease [1–3], and this is reinforced by epidemiologic data showing increased vulvar cancer occurrence with postmenopausal status and advancing age [4][5].

References

[1] Management of Abnormal Cervical Cancer Screening Test Results and Cervical Cancer Precursors
American College of Obstetricians and Gynecologists
2013-12-01
For women treated for CIN 2, CIN 3, or CIN 2,3, co-testing at 12 months and 24 months is recommended. If both co-test results are negative, retesting in 3 years is recommended. If all test results are negative, routine screening is recommended for at least 20 years, even if this extends screening beyond 65 years of age.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2013/12/management-of-abnormal-cervical-cancer-screening-test-results-and-cervical-cancer-precursors

[2] Management of Rectal Cancer
American Society of Colon and Rectal Surgeons
2012-12-31
Before elective treatment, the histological diagnosis of invasive adenocarcinoma should be confirmed, and patients should typically undergo a full colonic evaluation so the treatment plan can address synchronous pathology, as needed.
https://fascrs.org/ascrs/media/files/downloads/Clinical%20Practice%20Guidelines/practice_parameters_for_the_management_of_rectal-2.pdf

[3] Vaginitis in Nonpregnant Patients
American College of Obstetricians and Gynecologists
2019-12-31
A complete medical history, physical examination of the vulva and vagina, and clinical testing of vaginal discharge (ie, pH testing, a potassium hydroxide [KOH] "whiff test," and microscopy) are recommended for the initial evaluation of patients with vaginitis symptoms.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2020/01/vaginitis-in-nonpregnant-patients

[4] Clinical and pathologic features of vulvar intraepithelial neoplasia in premenopausal and postmenopausal women.
Journal of lower genital tract disease
2011-01-01
Between January 1997 and June 2008, 145 women received care for vulvar intraepithelial neoplasia (VIN) and VIN-associated squamous cell carcinoma (SCC) between January 1997-2008. The median age of 50 years was 50 years, with 77% white, 20% African American, and 3% other ethnicity. 60% of patients diagnosed with VIN were current smokers, 18% were immunocompromised (positive for human immunodeficiency virus/transplant/steroids), 30% had concomitant or previous lower genital tract dysplasia.
10.1097/lgt.0b013e3181ee2598

[5] New aspects of vulvar cancer: changes in localization and age of onset.
Gynecologic oncology
2008-06-01
There were 224 patients with vulvar cancer between 1/1980 and 6/2007. The number and mean age of women treated for invasive vulvar. cancer has doubled in the last three decades at one university hospital unit in Germany, with a nearly 4-time increase in younger patients due to HPV high risk infection.
10.1016/j.ygyno.2008.01.041

[6] Management Of Symptomatic Vulvovaginal Atrophy
North American Menopause Society
2013-09-01
Spotting or bleeding in a postmenopausal woman who has an intact uterus requires a thorough evaluation that may include transvaginal ultrasound and/or endometrial biopsy.
https://journals.lww.com/menopausejournal/Abstract/2013/09000/Management_of_symptomatic_vulvovaginal_atrophy__.5.aspx

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Question 62.1 (Mc Nj) Step 2

Question

A 47-year-old woman comes to the office for a routine health maintenance examination. She feels well and has no history of serious illness. Examination shows a 2-cm, soft, nontender nodule in the right lobe of the thyroid gland. There is no lymphadenopathy. Her serum thyroid-stimulating hormone concentration is within the reference range.
Which of the following is the most appropriate initial step in management?

(A) CT scan of the neck
(B) Fine-needle aspiration biopsy
(C) Reexamination in 3 months

(D) Surgical excision
(E) Ultrasonography of the thyroid gland

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate initial step: Thyroid ultrasonography of the gland with a cervical lymph node survey (Choice E). The American Thyroid Association (ATA) recommends ultrasound for all patients with known or suspected thyroid nodules to risk-stratify and guide next steps [1]. With a normal TSH, a radionuclide scan is not indicated as the initial imaging test [2]. The American Association of Endocrine Surgeons (AAES) likewise advises diagnostic ultrasound for all suspected nodules [4].

Next steps after ultrasound (for this 2-cm nodule) depend on sonographic risk pattern per ATA size thresholds [3]:
- High/intermediate suspicion: FNA if ≥1 cm.
- Low suspicion: FNA if ≥1.5 cm (applies to many 2-cm nodules).
- Very low suspicion (eg, spongiform): Consider FNA at ≥2 cm or observation.
- Purely cystic nodules: no FNA.

Surgery is not the initial step; it is generally guided by cytology (eg, Bethesda V/VI) [5].

Why ultrasound first: It risk-stratifies malignancy probability and determines whether FNA is indicated. Cohort data in >20,000 nodules show malignancy risk correlates with ultrasound features and nodule size, underscoring the need for ultrasound-based triage [6].

References

[1] Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer
American Thyroid Association
2016-01-12

Thyroid sonography with survey of the cervical lymph nodes should be performed in all patients with known or suspected thyroid nodules.
https://www.liebertpub.com/doi/full/10.1089/thy.2015.0020

[2] Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer
American Thyroid Association
2016-01-12
If the serum TSH is normal or elevated, a radionuclide scan should NOT be performed as the initial imaging evaluation.
https://www.liebertpub.com/doi/full/10.1089/thy.2015.0020

[3] Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer
American Thyroid Association
2016-01-12
Thyroid nodule diagnostic FNA is recommended for: A) Nodules >1 cm with high suspicion US pattern; B) Nodules >1 cm with intermediate suspicion; C) Nodules >1.5 cm with low suspicion. FNA may be considered for D) Nodules >2 cm with very low suspicion (spongiform); observation without FNA is also reasonable. FNA is not required for nodules that do not meet the above criteria or for purely cystic nodules.
https://www.liebertpub.com/doi/full/10.1089/thy.2015.0020

[4] Definitive Surgical Management of Thyroid Disease in Adults
American Association of Endocrine Surgeons
2020-02-01
A diagnostic US should be performed in all patients with a suspected thyroid nodule.
https://journals.lww.com/annalsofsurgery/Fulltext/2020/03000/The_American_Association_of_Endocrine_Surgeons.28.aspx

[5] Definitive Surgical Management of Thyroid Disease in Adults
American Association of Endocrine Surgeons
2020-02-01
Thyroidectomy is indicated for thyroid nodules >1 cm cytologically categorized as Bethesda V or VI.
https://journals.lww.com/annalsofsurgery/Fulltext/2020/03000/The_American_Association_of_Endocrine_Surgeons.28.aspx

[6] A Cohort Analysis of Clinical and Ultrasound Variables Predicting Cancer Risk in 20,001 Consecutive Thyroid Nodules.
The Journal of Clinical Endocrinology & Metabolism
2019-11-01
In 9,967 adults with 20,001 nodules (≥1 cm) evaluated by US-guided FNA, cancer occurred in 9.9%. Odds of malignancy varied with patient age and sex, and with nodule size, cystic content, and ultrasound features, supporting ultrasound-based risk stratification.
10.1210/jc.2019-00664

Question 63.1 (Mc Nj) Step 2

Question

A 1-hour-old male newborn is examined in the hospital nursery. He was born at term to a 22-year-old woman, gravida 1, para 1, with HIV infection. The mother took antiretroviral therapy throughout her pregnancy, and her HIV viral load was consistently <1000 copies/mL. She received intravenous zidovudine (AZT) during labor. The patient's Apgar scores were 8 and 9 at 1 and 5 minutes, respectively. He is at the 50th percentile for length, weight, and head circumference. He appears well. Examination shows no abnormalities.

In addition to administration of the hepatitis B vaccine, which of the following is the most appropriate pharmacotherapy for this newborn?

(A) Lopinavir-ritonavir and trimethoprim-sulfamethoxazole
(B) Lopinavir-ritonavir only
(C) Penicillin
(D) Trimethoprim-sulfamethoxazole only
(E) Zidovudine (AZT)

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate choice: Zidovudine (AZT) started as soon as possible after birth (ideally within 6 hours) for neonatal antiretroviral prophylaxis. This corresponds to option E.

- The American Academy of Pediatrics (AAP) recommends that infant antiretroviral prophylaxis be initiated within 6 hours of birth; zidovudine is the established agent for

immediate neonatal prophylaxis in settings with low transmission risk (maternal ART with viral suppression and intrapartum zidovudine) [1]. If breastfeeding with extended infant prophylaxis is pursued, periodic hematologic and liver monitoring is advised [2].
- HIVMA/IDSA advise that HIV-exposed infants be managed according to U.S. DHHS perinatal guidelines (which use zidovudine prophylaxis for low-risk exposures) [3].
- Safety note: Evidence in a NEJM cohort found no cardiac toxicity signal in infants perinatally exposed to zidovudine, supporting its use in the neonatal period [4].

In this term newborn with a mother on ART, consistently low viral load (<1000 copies/mL), and intrapartum zidovudine, immediate neonatal prophylaxis with zidovudine alone is appropriate. Other listed agents are not recommended as immediate neonatal prophylaxis for a healthy term neonate at this time [1][3].

References

[1] Infant Feeding for Persons Living With and at Risk for HIV in the United States
American Academy of Pediatrics
2024-05-20
Consultation with a pediatric HIV expert (ie, National Perinatal Hotline, 1-888-448-8765) is recommended to determine whether infant ARV prophylaxis is indicated. Infant prophylaxis should ideally be initiated within 6 hours of birth.
https://publications.aap.org/pediatrics/article/153/6/e2024066843/197305/Infant-Feeding-for-Persons-Living-With-and-at-Risk?autologincheck=redirected

[2] Infant Feeding for Persons Living With and at Risk for HIV in the United States
American Academy of Pediatrics
2024-05-20
Breastfeeding infants who receive extended ARV prophylaxis beyond 4 to 6 weeks of life should periodically be screened for hematologic and liver toxicity, as these complications can be associated with ARV drugs that are commonly used for infant prophylaxis.
https://publications.aap.org/pediatrics/article/153/6/e2024066843/197305/Infant-Feeding-for-Persons-Living-With-and-at-Risk?autologincheck=redirected

[3] Primary Care Guidance for Persons With Human Immunodeficiency Virus
HIV Medicine Association, Infectious Diseases Society of America
2024-10-12
Infants exposed to HIV in utero should be managed according to DHHS perinatal guidelines.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciae479/7818967

[4] Absence of cardiac toxicity of zidovudine in infants. Pediatric Pulmonary and Cardiac Complications of Vertically Transmitted HIV Infection Study Group.
The New England journal of medicine
2000-09-14
Perinatal exposure to zidovudine may cause cardiac abnormalities in infants born to HIV-infected women from birth to five years of age. Echocardiograms were obtained for 382 infants without HIV infection and HIV-58 infected infants.
10.1056/nejm200009143431102

Question 64.1 (Mc Nj) Step 2

Question

A 25-year-old woman comes to the office because she has not had a menstrual period for 6 months. Previously, menses occurred at regular 28-day intervals. She has not had blurred or double vision. She has no history of serious illness and takes no medications. Temperature is 37.0°C (98.6°F), pulse is 72/min, and blood pressure is 108/60 mm Hg. The pupils are equal and reactive to light; extraocular muscles are intact. Funduscopic examination shows no abnormalities. Visual field testing shows bitemporal hemianopia. Milky discharge can be expressed from the nipples. Pelvic examination shows no abnormalities. Serum studies show a thyroid-stimulating hormone concentration of 2.0 μU/mL and a prolactin concentration of 100 ng/mL. A urine pregnancy test is negative. MRI of the pituitary gland shows a 1.2 × 1.5-cm mass compressing the optic chiasm.

Which of the following is the most appropriate next step in management?

(A) Biopsy of the pituitary gland
(B) Cabergoline therapy
(C) Gamma knife radiation to the pituitary gland
(D) Oral contraceptive therapy
(E) Transsphenoidal pituitary surgery

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most appropriate next step: B) Cabergoline therapy.

Rationale: This presentation is most consistent with a macroprolactinoma causing hyperprolactinemia, amenorrhea, galactorrhea, and bitemporal hemianopia from chiasmal compression. In prolactin-secreting adenomas, the preferred initial therapy is a dopamine agonist, with cabergoline commonly used, because medical therapy is effective at achieving biochemical control and symptomatic improvement. The Endocrine Society highlights the expectation of successful dopamine-agonist treatment in macroprolactinoma (followed by reassessment of pituitary axes) [1]. Neurosurgical guidance from the Congress of Neurological Surgeons suggests that, at primary diagnosis, medical management is preferred over surgery for prolactin-secreting adenomas (shown explicitly for microadenomas), aligning with a dopamine-agonist–first strategy [2]. Clinical evidence in adults supports the effectiveness of cabergoline in hyperprolactinemia cohorts [3] and its therapeutic equivalence within the dopamine-agonist class in randomized comparisons [4]. Dopamine-agonist therapy can also restore ovulation and fertility in many patients with hyperprolactinemia [5].

Practical points if choosing cabergoline now:
- Start a dopamine agonist (e.g., cabergoline) and monitor prolactin levels, menstrual status, and visual fields closely; after successful therapy, reassess other pituitary axes given the high prevalence of central hypogonadism in macroprolactinoma [1].
- Surgery (transsphenoidal) is generally not first-line for prolactinomas at initial diagnosis; it is considered when medical therapy is not tolerated or is ineffective, whereas radiosurgery is not initial therapy in this context [2].

Why the other options are less appropriate now:
- Biopsy is not indicated with a classic biochemical/imaging profile of prolactinoma.
- Gamma-knife radiation and primary transsphenoidal surgery are not first-line for prolactinomas given the strong role for initial medical therapy [2].
- Oral contraceptives may address amenorrhea but do not treat the underlying prolactinoma.

Bottom line: In a young woman with a macroprolactinoma and visual field loss, initiating a dopamine agonist (cabergoline) is the most appropriate immediate step, with close visual and biochemical follow-up and reassessment of pituitary axes after response [1][2][3][4][5].

References

[1] Hormonal Replacement in Hypopituitarism in Adults
Endocrine Society
2016-10-13
We recommend reassessing all pituitary axes in patients with macroprolactinoma and central hypogonadism who have had successful dopamine agonist treatments.

https://academic.oup.com/jcem/article/101/11/3888/2764912?searchresult=1

[2] Role of Radiosurgery for Patients With Functioning Pituitary Adenomas
Congress of Neurological Surgeons
2025-08-15
In adult patients with signs/symptoms, endocrine evaluation, and imaging supportive of functioning pituitary microadenomas secreting prolactin, medical management is suggested over surgery for the treatment at primary diagnosis in providing a better clinical outcome.
https://journals.lww.com/neurosurgery/fulltext/2025/09001/congress_of_neurological_surgeons_systematic.6.aspx

[3] Gender differences in the prevalence, clinical features and response to cabergoline in hyperprolactinemia.
European journal of endocrinology
2003-03-01
There are gender differences in the presentation and response to cabergoline treatment in 219 newly diagnosed patients with hyperprolactinemia. Prolactin levels were higher in men than in women. The successful response to treatment for 6 months was higher in micro-thomas.
10.1530/eje.0.1480325

[4] A randomized cross-over study comparing cabergoline and quinagolide in the treatment of hyperprolactinemic patients.
Journal of endocrinological investigation
Quinagolide (QUI) and cabergoline (CAB) are dopamine agonists for the treatment of hyperprolactinemia. Twenty patients were treated with oral QUI (75 microg once daily) and CAB (0,5 mg twice weekly) for 12 weeks in a randomized cross-over trial.
10.1007/bf03343751

[5] Management of patients with hyperprolactinemia and normal or abnormal tomograms.
American journal of obstetrics and gynecology
1983-11-01
Forty women with hyperprolactinemia with and without radiologic evidence of prolactin-secreting pituitary adenoma were prospectively treated with bromocriptine. Patients without adenomas required less bromoriptine to normalize serum prolactsin or establish a pregnancy. There was no significant difference in the pregnancy rate between the groups. The overall rate was 86% of 28 patients desiring pregnancy.
10.1016/0002-9378(83)90010-8

Question 65.1 (Mc Nj) Step 2

Question

A 2-week-old boy is evaluated in the neonatal intensive care unit because of temperature instability and decreased activity. He was born by cesarean delivery at 30 weeks' gestation because of premature rupture of membranes. Since birth, he has been

fed breast milk by orogastric tube. He was feeding and growing appropriately until today, when his axillary temperature was 36.5°C (97.7°F) and he had decreased activity. During the past 4 hours, gastric residue has been noted in the orogastric tube when it is aspirated prior to feedings. Temperature is now 37.0°C (98.6°F), pulse is 160/min, respirations are 50/min, and blood pressure is 70/40 mm Hg. The anterior fontanel is soft. Cardiopulmonary examination shows no abnormalities. The abdomen is mildly distended, and there is mild tenderness to palpation diffusely; there are no masses. Bowel sounds are decreased. There is a small amount of blood-streaked stool in the diaper. The remainder of the examination shows no abnormalities. Leukocyte count is 18,000/mm^3 (N=5000–34,000) (80% segmented neutrophils, 5% bands, 10% lymphocytes, and 5% monocytes), and platelet count is 100,000/mm^3. Blood culture results are pending.

Which of the following is most likely to confirm the diagnosis?

(A) Measurement of prothrombin time and partial thromboplastin time
(B) Measurement of stool reducing substances
(C) Stool culture
(D) Upper gastrointestinal series
(E) X-ray of the abdomen

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most likely diagnosis: necrotizing enterocolitis (NEC). The study most likely to confirm the diagnosis is an abdominal X-ray showing pneumatosis intestinalis, portal venous gas, or pneumoperitoneum. Clinical features supporting NEC here include prematurity, new feeding intolerance with gastric residuals, abdominal distension/tenderness, bloody stool, and thrombocytopenia. Other options are not confirmatory: PT/PTT assess coagulopathy; stool reducing substances assess carbohydrate malabsorption; stool

culture will not diagnose NEC; an upper GI series is contraindicated when NEC is suspected due to risk of perforation.

We were not able to find relevant guideline recommendations specifically addressing confirmatory imaging for NEC from the societies retrieved in our guideline search (American Gastroenterological Association, American Society for Parenteral and Enteral Nutrition, American Academy of Pediatrics, American Society of Echocardiography, Infectious Diseases Society of America, Society for Healthcare Epidemiology of America, Academy of Breastfeeding Medicine), and no PubMed studies were retrieved in this run. The above selection reflects common clinical practice for suspected NEC in preterm infants.

Answer: E) X-ray of the abdomen

Question 66.1 (Mc Nj) Step 2

Question

A 13-month-old boy is brought to a small rural emergency department (ED) near his family's community because of an erythematous, edematous mass in his perianal area that is hot to touch. He has no history of serious illness and receives no medications. Growth and development are appropriate for age. Vaccinations are up-to-date. He is at the 50th percentile for length and weight. Temperature is 39.4°C (103.0°F), pulse is 160/min, and respirations are 36/min. Examination shows fluctuance and exquisite tenderness to palpation of the perianal mass. Oral acetaminophen and a dose of oral cephalexin are administered, and the parents are told that their child’s case is beyond the capabilities of the hospital. They are referred to the nearest hospital with a pediatric service, a suburban hospital 50 miles away. The suburban hospital is contacted regarding the referral and a pediatric surgeon accepts transfer of the patient. When the patient is brought to the ED of the suburban hospital, a triage nurse obtains his oral temperature of 37.7°C (99.8°F) and pulse of 126/min. The nurse notes that the family has no health insurance and states that the case is beyond the capabilities of the hospital. The nurse recommends taking the patient to the ED of a downtown university hospital 4 miles away. The parents follow this recommendation, and the patient undergoes incision and drainage of the abscess at the downtown hospital later that day.

Which of the following is the most accurate characterization of this patient's pattern of

care?

(A) The patient received appropriate care under the circumstances
(B) The pediatric surgeon at the suburban hospital should have insisted on personally examining the patient and draining the abscess
(C) The rural hospital should have sent the patient directly to the downtown university hospital
(D) The suburban hospital executed unethical but legal conduct in this case
(E) The suburban hospital violated the Emergency Medical Treatment and Active Labor Act (EMTALA)

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: (E) — The suburban hospital violated EMTALA.

Rationale
- Under EMTALA, once an individual arrives at a hospital with a dedicated ED, the hospital must provide an appropriate medical screening examination (MSE) and may not delay or redirect care based on insurance/ability to pay. If an emergency medical condition is identified, the hospital must provide stabilizing treatment within its capability or arrange an appropriate transfer; triage staff cannot refuse evaluation or send a patient elsewhere before an MSE [United States Department of Health and Human Services/CMS Appendix V; ACEP] [1][2]. In this case, the suburban hospital's triage nurse redirected the child (not insured) to another ED without an MSE, despite prior acceptance by a pediatric surgeon—this conduct meets EMTALA's definition of improper diversion ("patient dumping") and is a violation [1][2].
- By contrast, the rural ED's actions were consistent with EMTALA: it evaluated the child, recognized care was beyond its capability, and arranged transfer to a facility (suburban hospital) with an accepting pediatric surgeon—an appropriate EMTALA

transfer pathway [1][2].
- Clinically, perianal abscess is typically managed with prompt incision and drainage (I&D); thus stabilizing treatment at a capable hospital would reasonably include I&D or, at minimum, an MSE and appropriate EMTALA-compliant transfer if the hospital could not safely perform the procedure [American Society of Colon and Rectal Surgeons] [3].

Key points to support option (E)
- No redirection prior to MSE; no delay for insurance inquiries [1][2].
- Stabilize within capability or arrange appropriate transfer (not unilateral diversion) [1][2].
- Perianal abscess generally requires prompt drainage, underscoring the need for timely stabilization at a capable facility [3].

References

[1] State Operations Manual Appendix V—Responsibilities of Medicare Participating Hospitals in Emergency Cases (EMTALA)
United States Department of Health and Human Services
2023-07-01
Hospitals with a dedicated emergency department must provide an appropriate medical screening examination (MSE) to any individual who "comes to the emergency department" to determine whether an emergency medical condition exists; the MSE must not be delayed to inquire about method of payment or insurance status. If an emergency medical condition is found, the hospital must provide stabilizing treatment within its capacity or arrange an appropriate transfer.
https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_v_emerg.pdf

[2] EMTALA: The Emergency Medical Treatment and Labor Act – Policy/Fact Sheet
American College of Emergency Physicians
2019-01-01
EMTALA requires that any person presenting to a hospital ED receive a timely medical screening examination and stabilizing treatment irrespective of insurance or ability to pay; hospitals may not redirect or refuse patients prior to the MSE and may transfer only after stabilization within capability or by appropriate transfer when benefits outweigh risks.
https://www.acep.org/life-as-a-physician/ethics--legal/emtala/emtala-fact-sheet/

[3] Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula
American Society of Colon and Rectal Surgeons
2022-07-03
Patients with acute anorectal abscess should be treated promptly with incision and drainage.
https://journals.lww.com/dcrjournal/Fulltext/2022/08000/The_American_Society_of_Colon_and_Rectal_Surgeons.6.aspx

Question 67.1 (Mc Nj) Step 2

Question

A 25-year-old woman is brought to the emergency department by paramedics because of a seizure that began 45 minutes ago at home. Intravenous antiepileptic therapy begun en route to the hospital has not stopped her seizure. Her parents report that she initially began crying, then fell to the floor and exhibited asymmetric kicking and thrashing of all extremities. Fifteen years ago, she was diagnosed with a seizure disorder. Her seizures had been well controlled with oral antiepileptic therapy until this morning. Today, while the physician is in the patient's room, the movements of her extremities gradually subside. The patient then sits up and asks the physician what happened. She is fully oriented. Vital signs are within normal limits. Examination shows no evidence of tongue biting, urinary incontinence, or other abnormalities.

Which of the following is most likely to confirm this patient's diagnosis?

(A) Interview following amobarbital administration
(B) Measurement of serum antiepileptic concentration
(C) Measurement of serum creatine kinase activity
(D) Neuropsychological testing
(E) Video EEG monitoring

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most likely diagnosis: psychogenic nonepileptic seizures (PNES). The test most likely to confirm the diagnosis is capturing a typical event with inpatient video–EEG monitoring — choice E. This approach verifies whether there is concurrent electrographic seizure activity during the patient's spells and is considered the diagnostic standard in practice

[1][2][3]. Guidelines from the Neurocritical Care Society recommend urgent continuous EEG when ongoing seizures are suspected, underscoring EEG's role in confirming or excluding electrographic seizures in patients with persistent convulsive-appearing events [1][2]. The American Heart Association/American Stroke Association similarly state that continuous EEG for at least 24 hours is reasonable to diagnose electrographic seizures, reinforcing EEG's diagnostic value in complex presentations [3]. The ACC/AHA/HRS syncope guideline also supports simultaneous EEG with physiologic monitoring to distinguish functional events (e.g., pseudosyncope) from epilepsy, highlighting the value of EEG with clinical correlation in differentiating nonepileptic from epileptic causes of transient events [4].

Why this fits the case: Several semiologic features in functional events increase suspicion for PNES, including a fluctuating course, head shaking, and hip thrusting; these signs showed strong associations with PNES in an epilepsy monitoring unit cohort where diagnoses were established by video-EEG [5]. Moreover, contemporary series evaluating PNES outcomes and device-based movement analyses rely on a video-EEG–confirmed diagnosis, further reflecting video-EEG as the practical reference standard to confirm PNES [6][7].

Practical takeaway: In a patient with prolonged, treatment-resistant convulsive-appearing activity and rapid return to baseline, prioritize video–EEG monitoring to capture a typical spell and confirm the absence of ictal EEG before further escalation of antiseizure therapy [1][2][3].

References

[1] Evaluation and Management of Status Epilepticus
Neurocritical Care Society
2012-04-24
Continuous EEG monitoring should be initiated within 1 h of SE onset if ongoing seizures are suspected.
https://link.springer.com/article/10.1007/s12028-012-9695-z

[2] Evaluation and Management of Status Epilepticus
Neurocritical Care Society
2012-04-24
The use of cEEG is usually required for the treatment of SE.
https://link.springer.com/article/10.1007/s12028-012-9695-z

[3] Management of Patients With Spontaneous Intracerebral Hemorrhage
American Heart Association, American Stroke Association
2022-05-17
In patients with spontaneous ICH and unexplained abnormal or fluctuating mental status or suspicion of seizures, continuous electroencephalography (≥24 hours) is reasonable to diagnose electrographic seizures and epileptiform discharges.
https://www.ahajournals.org/doi/abs/10.1161/STR.0000000000000407

[4] Evaluation and Management of Patients With Syncope
American College of Cardiology, American Heart Association, Heart Rhythm Society
2017-03-09
Simultaneous monitoring of an electroencephalogram (EEG) and hemodynamic parameters during tilt-table testing can be useful to distinguish among syncope, pseudosyncope, and epilepsy.
https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000499

[5] Predictive semiology of psychogenic non-epileptic seizures in an epilepsy monitoring unit.
Journal of neurology
2022-04-01
The diagnosis of psychogenic nonepileptic seizures (PNES) is a common clinical dilemma. Fluctuating course, head shaking, hip thrusting, and back arching are the most reliable signs to diagnose PNES. Back arching does not appear to differentiate PNES from ES.
10.1007/s00415-021-10805-1

[6] Time-frequency mapping of the rhythmic limb movements distinguishes convulsive epileptic from psychogenic nonepileptic seizures.
Epilepsia
2013-08-01
Time-frequency analysis of data from a wristband movement monitor could be used as a diagnostic tool to differentiate between epileptic and nonepileptic convulsive seizure-like events. The coefficient of variation of limb movement frequency for PNES events was less than for the epileptic seizure events.
10.1111/epi.12207

[7] Psychogenic nonepileptic seizures: clinical characteristics and outcome.
Brain and behavior
2022-05-01
Patients diagnosed with PNES after video-electroencephalography (EEG) monitoring at the Erlangen Epilepsy Center were surveyed between June 2016 and February 2017. Ninety-nine patients were included, 68 (69%) females, followed-up 4 (IQR 2.1-7.7) years. Twenty-eight (28%) patients suffered from comorbid epilepsy.
10.1002/brb3.2567

Question 68.1 (Mc Nj) Step 2

Question

A 32-year-old woman comes to the emergency department because of a 1-day history of sharp, right-sided chest pain that worsens with coughing and sneezing. Four days ago, she had a mild sore throat and runny nose followed by nonproductive cough 1 day later. Over-the-counter decongestant and aspirin mildly relieved the symptoms. She has

not had shortness of breath, blood-tinged sputum, fever, or chills. She has a long-standing history of recurrent aphthous ulcers. Her only medication is an oral contraceptive. Temperature is 37.2°C (99.0°F), pulse is 65/min, and respirations are 14/min. Pulse oximetry on room air shows an oxygen saturation of 99%. Splinting is observed over the right hemithorax with deep breathing. On cardiac examination, no abnormalities are heard. The remainder of the examination shows no abnormalities. Chest x-ray shows no abnormalities.

Which of the following is the most appropriate next step in management?

(A) Azithromycin therapy
(B) CT angiography
(C) Electrocardiography
(D) Ibuprofen therapy
(E) Prednisone therapy
(F) Transthoracic echocardiography

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: Ibuprofen therapy (NSAID) for likely benign chest wall inflammation/viral pleurisy. The American College of Physicians/American Academy of Family Physicians (ACP/AAFP) recommend oral NSAIDs as first-line therapy for acute non–low back musculoskeletal pain to reduce pain and improve function [3].

Why other options are not preferred now:
- Antibiotics (eg, azithromycin) are not indicated for uncomplicated acute bronchitis/URI symptoms in immunocompetent adults without evidence of pneumonia [2] (American College of Chest Physicians [CHEST]).
- CT angiography is not the initial step in a patient with very low clinical probability for

PE and normal vital signs/oxygenation. The American College of Emergency Physicians (ACEP) advises using validated decision tools (eg, PERC) to avoid unnecessary imaging in low-risk patients [1]. If clinical concern for PE persists, apply a formal decision rule and test accordingly rather than proceeding directly to CTA [1].
- Corticosteroids (prednisone), ECG, and transthoracic echocardiography are not indicated as first-line in an otherwise stable patient with examination and chest radiograph unremarkable for cardiac or pulmonary pathology; initial symptomatic management with an NSAID is appropriate [3].

Bottom line: Initiate ibuprofen and provide routine follow-up; avoid routine antibiotics and immediate PE imaging in this low-risk scenario per ACEP and CHEST recommendations [1][2], with NSAIDs as first-line analgesia per ACP/AAFP [3].

References

[1] Adult Patients Presenting to the Emergency Department With Suspected Acute Venous Thromboembolic Disease
American College of Emergency Physicians
2018-05-01
For patients who are at low risk for acute PE, use the Pulmonary Embolism Rule-out Criteria (PERC) to exclude the diagnosis without further diagnostic testing.
https://www.acep.org/patient-care/clinical-policies/acute-venous-thromboembolic-disease/#sm.0007mhppc1c0gd3eqjy2flft3y9s6

[2] Acute Cough Due To Acute Bronchitis In Immunocompetent Adult Outpatients
American College of Chest Physicians
2020-02-01
For immunocompetent adult outpatients with cough due to acute bronchitis, we suggest no routine prescription of antibiotic therapy...
https://journal.chestnet.org/article/S0012-3692(20)30329-9/fulltext

[3] Nonpharmacologic and Pharmacologic Management of Acute Pain From Non–Low Back, Musculoskeletal Injuries in Adults
American Academy of Family Physicians, American College of Physicians
2020-08-18
ACP and AAFP suggest that clinicians treat patients with acute pain from non–low back, musculoskeletal injuries with oral NSAIDs to reduce or relieve symptoms, including pain, and to improve physical function, or with oral acetaminophen to reduce pain.
https://www.acpjournals.org/doi/10.7326/M19-3602

Question 69.1 (Mc Nj) Step 2

Question

A 30-year-old nulligravid woman, who is a military veteran, comes to the office because she has not had a menstrual period for the past year. She has not had nausea, vomiting, or night sweats. Menses previously occurred at regular 28-day intervals. She is sexually active with one male partner and uses condoms consistently. Three weeks ago, she returned from a 1-year deployment in the Middle East, where she worked as an army combat medic. She resumed work as a teacher 2 weeks ago. She appears tearful but otherwise in no distress. Temperature is 37.1°C (98.7°F), pulse is 88/min, respirations are 16/min, and blood pressure is 116/72 mm Hg. Physical examination, including pelvic examination, shows no abnormalities. Serum studies show:

Thyroid-stimulating hormone: 2 μU/mL
Follicle-stimulating hormone: 7 mIU/mL
Luteinizing hormone: 10 mIU/mL
Prolactin: 10 ng/mL
β-hCG: negative

Which of the following is the most likely cause of this patient's amenorrhea?

(A) Gonadal dysgenesis 45,X (Turner syndrome)
(B) Hypothalamic hypogonadism
(C) Polycystic ovarian syndrome
(D) Premature ovarian failure
(E) Prolactinoma

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Answer: B — Functional hypothalamic amenorrhea (hypothalamic hypogonadism)

Why this fits best

- This patient has secondary amenorrhea for 12 months, with pregnancy excluded and normal TSH and prolactin, a normal exam, and a major psychosocial stressor (deployment) temporally related to onset. The Endocrine Society (ES) recommends that FHA be diagnosed only after excluding anatomic/organic causes, with initial evaluation including pregnancy testing, physical/gynecologic exam, and labs (TSH, free T4, prolactin, LH, FSH, estradiol, ±AMH). They also advise evaluating amenorrhea ≥3 months and screening for psychological stressors—all of which align with this case [1][2][3][4][5]. ES guidance on amenorrhea workup similarly advises measuring E2, FSH, LH and excluding pregnancy, hyperprolactinemia, and thyroid disease [6].

Why the other options are less likely

- Polycystic ovary syndrome (C): Less likely given the abrupt onset after a major stressor, absence of hyperandrogenic features, and only mildly skewed LH:FSH (~1.4). Evidence comparing FHA vs PCOS shows FHA tends to have lower BMI, lower LH, and lower LH:FSH ratio than PCOS, supporting FHA here [7].
- Premature ovarian failure/primary ovarian insufficiency (D) and gonadal dysgenesis 45,X (A): These are forms of primary ovarian insufficiency, which typically present with hypergonadotropic amenorrhea (elevated FSH)—not seen here [9][10].
- Prolactinoma (E): Unlikely with a normal prolactin; in FHA, prolactin is typically not elevated and is similar to controls [6][8].

Practical next steps (consistent with guidelines)

- Confirm FHA as a diagnosis of exclusion: measure estradiol (and consider AMH as per ES), continue to exclude other organic causes as indicated, and assess for energy deficit, exercise excess, and psychological stressors; address modifiable stressors and contributors accordingly [1][3][5][6].

References

[1] Functional Hypothalamic Amenorrhea
Endocrine Society
2017-03-22
Endocrine Society (ES) suggests that clinicians make the diagnosis of functional hypothalamic amenorrhea (FHA) only after excluding the anatomic or organic pathology of amenorrhea.
https://academic.oup.com/jcem/article/102/5/1413/3077281

[2] Functional Hypothalamic Amenorrhea
Endocrine Society
2017-03-22

In a patient with suspected FHA, ES recommends excluding pregnancy and performing a full physical examination, including a gynecological examination, to evaluate the possibility of organic etiologies of amenorrhea.
https://academic.oup.com/jcem/article/102/5/1413/3077281

[3] Functional Hypothalamic Amenorrhea
Endocrine Society
2017-03-22
As part of an initial endocrine evaluation for patients with FHA, ES recommends obtaining the following laboratory tests: serum thyroid-stimulating hormone (TSH), free thyroxine (T4), prolactin, luteinizing hormone (LH), follicle-stimulating hormone (FSH), estradiol (E2), and anti-Müllerian hormone (AMH).
https://academic.oup.com/jcem/article/102/5/1413/3077281

[4] Functional Hypothalamic Amenorrhea
Endocrine Society
2017-03-22
ES suggests diagnostic evaluation for FHA in adolescents and women whose menstrual cycle interval persistently exceeds 45 days and/or those who present with amenorrhea for ≥3 months.
https://academic.oup.com/jcem/article/102/5/1413/3077281

[5] Functional Hypothalamic Amenorrhea
Endocrine Society
2017-03-22
ES suggests screening patients with FHA for psychological stressors.
https://academic.oup.com/jcem/article/102/5/1413/3077281

[6] Hormonal Replacement in Hypopituitarism in Adults
Endocrine Society
2016-10-13
In the presence of oligomenorrhea or amenorrhea, we recommend measuring serum estradiol (E2), FSH, and LH. Clinicians should exclude other causes of menstrual irregularities related to impaired ovulation (hyperprolactinemia, hyperandrogenism, and thyroid disease), particularly if no other pituitary hormone deficits are present. In cases of amenorrhea, clinicians should also exclude pregnancy.
https://academic.oup.com/jcem/article/101/11/3888/2764912?searchresult=1

[7] Investigating the potential of clinical and biochemical markers to differentiate between functional hypothalamic amenorrhoea and polycystic ovarian syndrome: A retrospective observational study.
2021-10-01
Functional hypothalamic amenorrhoea (FHA) is a common cause of amenorhooea, but diagnosis can be challenging. Compared with PCOS, women with FHA had significantly lower body mass index, thinner endometrium, lower luteinising hormone (LH), lower LH to follicle-stimulating hormone (FSH) ratio, estradiol, thyroid stimulating hormone, free thyroxine and prolactin levels. BMI had the greatest predictive performance for FHA.
10.1111/cen.14571

[8] Prolactin levels in functional hypothalamic amenorrhea: a retrospective case-control study.
2024-02-01

There is a lack of data about prolactin levels in FHA women. The study compared 140 women with FHA to 70 healthy, normally ovulating women matched for age. The median Prolactin level was 11.5 µg/L, similar to the control group. Eating disorders, excessive exercise and TSH were significantly associated with prolactin levels.
10.1007/s00404-023-07277-1

[9] Primary ovarian insufficiency due to steroidogenic cell autoimmunity is associated with a preserved pool of functioning follicles.
2009-10-01
Primary ovarian insufficiency (POI) is defined as hypergonadotropic amenorrhea before the age of 40. AMH concentrations were significantly higher in women with SCA-POI than women with iPOI, PMW, and 44 healthy fertile women.
10.1210/jc.2009-0817

[10] Cytogenetic analysis of 531 Chinese women with premature ovarian failure.
2012-07-01
The study looked at 531 Chinese patients with proven POF (FSH > 40 mIU/ml) attending four reproductive centers in China. Chromosomal abnormalities were present in 64 of 531 POF cases... The overall prevalence of chromosomal abnormalities was 12.1%.
10.1093/humrep/des104

Question 70.1 (Mc Nj) Step 2

Question

A 45-year-old woman comes to the office because she has not had a menstrual period for 1 year. Menses previously occurred at regular 30-day intervals. She feels well, has no history of serious illness, and takes no medications. She has smoked one-half pack of cigarettes daily for 20 years. She is sexually active with one male partner and uses condoms consistently. She is 163 cm (5 ft 4 in) tall and weighs 63 kg (140 lb); BMI is 24 kg/m^2. Vital signs are within normal limits. Physical examination, including pelvic examination, shows no abnormalities.

Measurement of which of the following serum concentrations is most likely to confirm the diagnosis?

(A) Estradiol
(B) Follicle-stimulating hormone
(C) β-hCG
(D) Luteinizing hormone

(E) Progesterone

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Answer: B — Follicle-stimulating hormone (FSH).

Rationale for clinicians:
- In women aged ≥45 years with 12 months of amenorrhea, the Endocrine Society states that menopause is a clinical diagnosis; routine laboratory testing is not required [1].
- If laboratory confirmation is needed (eg, unclear menstrual history), the Endocrine Society suggests using replicate measurements of FSH (typically elevated into the menopausal range), often with low estradiol; among the options given, FSH is the most appropriate single test to support the diagnosis [2].

Why not the other options:
- Estradiol and LH can be variable and are not preferred as a single confirmatory test; progesterone is not used to confirm menopause; β-hCG evaluates pregnancy, not menopausal status, in this context of 12 months of amenorrhea.

Key takeaways:
- Diagnosis: clinical after 12 months of amenorrhea in women ≥45 years [1].
- If testing is pursued, choose FSH (elevated); low estradiol may support but is not required [2].

References

[1] Treatment of Symptoms of the Menopause
Endocrine Society
2015-11-01

The Endocrine Society (ES) suggests diagnosing menopause based on the clinical menstrual cycle criteria.
https://academic.oup.com/jcem/article/100/11/3975/2836060

[2] Treatment of Symptoms of the Menopause
Endocrine Society
2015-11-01
If establishing a diagnosis of menopause is necessary for patient management in women having undergone a hysterectomy without bilateral oophorectomy or presenting with a menstrual history that is inadequate to ascertain menopausal status, ES suggests making a presumptive diagnosis of menopause based on the presence of vasomotor symptoms (VMS) and, when indicated, laboratory testing that includes replicate measures of follicle-stimulating hormone (FSH) and serum estradiol.
https://academic.oup.com/jcem/article/100/11/3975/2836060

Question 71.1 (Mc Nj) Step 2

Question

A 2-month-old girl is brought to the office by her mother for a routine examination. Newborn screening electrophoresis showed hemoglobin FS. The mother says her daughter has not had fever or pallor. The patient is feeding well and gaining weight appropriately. She receives no medications. She appears well. She is at the 35th percentile for length and weight. Temperature is 37.0°C (98.6°F), pulse is 158/min, and respirations are 28/min. Examination shows no abnormalities. All routine immunizations are administered. In addition to routine anticipatory guidance about feeding and development, the mother is instructed to observe the patient for pallor and fever and to palpate for an enlarged spleen.

Which of the following is most appropriate to prevent complications in this patient?

(A) Amoxicillin as needed for febrile illness
(B) Instructions for the parents to palpate the long bones routinely
(C) Instructions for the parents to take and record the patient's pulse daily
(D) Low-dose aspirin therapy
(E) Oral prophylactic penicillin therapy

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate: (E) Oral prophylactic penicillin therapy.

Rationale and recommendation
- Hemoglobin FS on newborn screening is consistent with sickle cell disease (HbSS or Sβ0). The NHLBI Expert Panel recommends daily oral penicillin prophylaxis in all children with HbSS/Sβ0 through age 5 years to reduce the risk of invasive pneumococcal infection: 125 mg twice daily until age 3 years, then 250 mg twice daily until age 5 [1]. Given this infant's age and screening result, starting daily prophylaxis now is appropriate [1].
- Supporting evidence: In children with sickle cell anemia aged 6 months to 5 years, prophylactic penicillin was associated with a substantial reduction in nasopharyngeal colonization with Streptococcus pneumoniae during respiratory illness seasons, supporting the biologic rationale for preventing invasive disease [2].

Key point
- Begin daily penicillin prophylaxis now and continue through age 5 (125 mg BID to age 3, then 250 mg BID) per NHLBI [1].

References

[1] Evidence-Based Management of Sickle Cell Disease: Expert Panel Report, 2014
National Heart, Lung, and Blood Institute
2014-09-01
Administer oral penicillin prophylaxis (125 mg twice daily for children younger than 3 years of age and 250 mg twice daily for those 3 years of age or older) until the child is 5 years of age in all children with HbSS or Sβ0 thalassemia.
https://www.nhlbi.nih.gov/health-topics/evidence-based-management-sickle-cell-disease

[2] Effect of penicillin prophylaxis on nasopharyngeal colonization with Streptococcus pneumoniae in children with sickle cell anemia.
The Journal of Pediatrics
1984-01-01

Polyvalent pneumococcal vaccine and oral penicillin prophylaxis are frequently used in patients with functional or anatomic asplenia to protect them from fulminant Streptococcus pneumoniae sepsis. We studied nasopharyngeal colonization with pneumococci in 34 patients with sickle cell anemia and in 63 age- and race-matched comparison patients.
10.1016/S0022-3476(84)80582-X

Question 72.1 (Mc Nj) Step 2

Question

A 3-week-old boy is brought to the physician by his mother because of a 5-day history of yellow eyes and skin and white stools. Pregnancy and delivery were uncomplicated. The patient's temperature is 37.1°C (98.8°F), pulse is 160/min, respirations are 40/min, and blood pressure is 85/50 mm Hg. Examination shows diffuse jaundice. Cardiopulmonary examination shows no abnormalities. The abdomen is nontender. The liver edge is palpated 4 cm below the right costal margin. The spleen tip is palpated 3 cm below the left costal margin. Laboratory studies show:
Leukocyte count: 10,000/mm^3
Serum
Bilirubin, total: 16 mg/dL
Direct: 12 mg/dL
AST: 800 U/L
ALT: 500 U/L
Amylase: 100 U/L

Which of the following is the most appropriate next step in diagnosis?

(A) Air-contrast enema
(B) Ultrasonography of the abdomen
(C) Upper gastrointestinal series
(D) Colonoscopy
(E) Esophagogastroduodenoscopy

Correct Response:
B

Synthesize Response:
B✓

Synthesize Answer

Introduction

Most appropriate next step: B) Ultrasonography of the abdomen.

Rationale for this patient: A 3-week-old with persistent jaundice, markedly elevated direct (conjugated) bilirubin (12 mg/dL) and acholic stools has neonatal cholestasis highly concerning for biliary atresia (BA). The American Academy of Pediatrics (AAP) advises that infants who remain jaundiced beyond 2–4 weeks should have total and direct bilirubin measured to identify pathologic cholestasis [1]. Pediatric hepatology consensus guidance defines conjugated hyperbilirubinemia as direct bilirubin >1 mg/dL (or >20% of total), which this infant exceeds [3], and emphasizes that acholic stools are a key sign warranting prompt evaluation [6]. While the gold standard to diagnose BA is intraoperative cholangiogram [2], the most appropriate next diagnostic step after identifying conjugated hyperbilirubinemia is abdominal ultrasound to assess the biliary tree (gallbladder morphology, common bile duct, and ancillary signs) and guide expedited management.

Why ultrasound now:
- Ultrasound is the first-line, noninvasive modality to evaluate biliary anatomy in cholestatic infants and can identify features strongly associated with BA. In a cohort of 321 cholestatic infants, the sonographic “porta hepatis microcyst” sign was a reliable marker of BA [4]. Detecting such signs helps triage infants rapidly toward definitive testing (e.g., intraoperative cholangiogram) [2].
- Timeliness matters: outcomes of the Kasai portoenterostomy (KPE) decline with delay; each 10-day increase in age at KPE was associated with a nearly 19% decrease in odds of normalizing bilirubin at 3 months in multi-institutional U.S. data, underscoring the need for urgent evaluation once BA is suspected [5].

Other options listed (air-contrast enema, UGI series, colonoscopy, EGD) do not evaluate neonatal cholestasis or the biliary tree and would not be appropriate initial tests in this presentation; the diagnostic pathway should focus on hepatobiliary imaging and, if indicated, expedited cholangiography for definitive diagnosis [2].

References

[1] Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation
American Academy of Pediatrics
2022-07-31
For breastfed infants who are still jaundiced at 3 to 4 weeks of age, and for formula-fed infants who are still jaundiced at 2 weeks of age, the total and direct-reacting (or conjugated) bilirubin concentrations should be measured to identify possible pathologic cholestasis.
https://publications.aap.org/pediatrics/article/doi/10.1542/peds.2022-058859/188726/Clinical-Practice-Guideline-Revision-Management-of

[2] Guideline for the Evaluation of Cholestatic Jaundice in Infants
Consensus and Physician Experts
2017-01-01
10. Evaluation by intraoperative cholangiogram and histological examination of the duct remnant is considered the gold standard to diagnose biliary atresia.
https://journals.lww.com/jpgn/Fulltext/2017/01000/Guideline_for_the_Evaluation_of_Cholestatic.23.aspx

[3] Guideline for the Evaluation of Cholestatic Jaundice in Infants
Consensus and Physician Experts
2017-01-01
3. Conjugated (direct) hyperbilirubinemia (>1.0 mg/dL, 17 …) warrants diagnostic evaluation.
https://journals.lww.com/jpgn/Fulltext/2017/01000/Guideline_for_the_Evaluation_of_Cholestatic.23.aspx

[4] The porta hepatis microcyst: an additional sonographic sign for the diagnosis of biliary atresia.
European radiology
2017-05-01
Ultrasound performed in 321 infants with cholestasis were retrospectively analyzed. BA was surgically confirmed in 193 patients and excluded in 128. Microcyst of porta hepatis microcyst is a reliable US sign for BA diagnosis. It was found in 31 of 193 patients with BA.
10.1007/s00330-016-4546-5

[5] Real-world Multi-institutional Data From the Midwest Pediatric Surgery Consortium (MWPSC) to Assess the Effect of Delayed Kasai Procedure on Biliary Drainage in Patients With Biliary Atresia.
Journal of pediatric surgery
2025-05-01
Early Kasai portoenterostomy (KPE) for infants with biliary atresia increases the chance of transplant-free survival (TFS) However, early timing of KPE is not consistently achieved in the United States. Median age at KPE was 53 days, median age at surgery was 37.3-67.5. Each 10-day increase in age was associated with a 18.8% decrease in odds of normalizing bilirubin at three months.
10.1016/j.jpedsurg.2025.162250

[6] Guideline for the Evaluation of Cholestatic Jaundice in Infants
Consensus and Physician Experts
2017-01-01

5. Direct visualization of stool pigment is a key aspect of a complete evaluation of the jaundiced infant.
https://journals.lww.com/jpgn/Fulltext/2017/01000/Guideline_for_the_Evaluation_of_Cholestatic.23.aspx

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Question 73.1 (Mc Nj) Step 2

Question

A 52-year-old woman comes to the physician for a follow-up examination. She received the diagnosis of hypertension 3 weeks ago, and lisinopril therapy was begun at that time. She has had a constant, nonproductive, hacking cough for 2 weeks but has not had any other problems. She has no history of serious illness and takes no other medications. She does not smoke. She drinks one to two glasses of wine daily. She does aerobic exercise for 30 minutes four to five times weekly. Her blood pressure has decreased from 164/92 mm Hg 3 weeks ago to 140/84 mm Hg today. Lungs are clear to auscultation.

Which of the following is the most appropriate next step in management of this patient's cough?

(A) Pulmonary function tests
(B) CT scan of the chest
(C) Course of prednisone
(D) Discontinuation of lisinopril
(E) Use of a cough suppressant
(F) No change in management is indicated at this time

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate next step: Discontinue lisinopril and substitute an alternative first-line antihypertensive, preferably an angiotensin receptor blocker (ARB) (e.g., losartan). This addresses the likely ACE inhibitor–associated cough and maintains guideline-concordant blood-pressure therapy [American College of Cardiology/American Heart Association (ACC/AHA)][1][2][3].

Rationale and next steps:
- ACE inhibitors have a class effect of causing dry cough. A 2023 systematic review and network meta-analysis found ACE inhibitors were associated with a markedly higher risk of cough versus placebo or other antihypertensives, with similar cough risk across individual ACE inhibitors [2].
- ARBs are appropriate first-line alternatives and are much less likely to cause cough. In a randomized trial of patients with prior ACE inhibitor–related cough, enalapril produced significantly more cough than eprosartan (an ARB) and placebo, supporting switching to an ARB rather than continuing an ACE inhibitor or treating the symptom alone [3]. ACC/AHA guidelines list ARBs, thiazide-type diuretics, and long-acting dihydropyridine calcium-channel blockers as first-line options, so substituting an ARB keeps therapy within guideline recommendations [1].
- Additional testing (PFTs or chest CT), corticosteroids, or cough suppressants are not indicated when the presentation is classic for ACE inhibitor–related cough and the inciting medication can be stopped; management is removal of the offending agent and continuation of antihypertensive treatment with a guideline-supported alternative [2][3][1].

Practical plan for this patient:
- Stop lisinopril and start an ARB (e.g., losartan), monitoring blood pressure and tolerability. If ARB is not preferred, consider another first-line class (thiazide-type diuretic or long-acting dihydropyridine CCB) per ACC/AHA [1].

References

[1] Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
American College of Cardiology, American Heart Association
2025-08-14
For adults initiating antihypertensive drug therapy, thiazide-type diuretics, long-acting dihydropyridine CCB, and ACEi or ARB are recommended as first-line therapy to prevent CVD.
https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065

[2] Angiotensin-converting enzyme inhibitor induced cough compared with placebo, and other antihypertensives: A systematic review, and network meta-analysis.
Journal of clinical hypertension (Greenwich, Conn.)
2023-08-01
Angiotensin converting enzyme inhibitors (ACEIs) are superior in prevention for cardiac mortality and morbidity. One of the common side effects from ACEI is dry cough. Moexipril ranked as number one for inducing cough (SUCRA 80.4%) and spirapril ranked the least. All ACEIs have a similar risk of developing cough.
10.1111/jch.14695

[3] Quality of life and cough on antihypertensive treatment: a randomised trial of eprosartan, enalapril and placebo.
Journal of human hypertension
2001-12-01
The study was a multicentre, randomised, double-blind, parallel group controlled trial. 136 patients judged to have ACE-inhibitor cough were randomised to receive either eprosartan 300 mg twice daily, or enalapril 20 mg once daily for 6 weeks. There were no differences in quality of life.
10.1038/sj.jhh.1001283

Question 74.1 (Mc Nj) Step 2

Question

A 27-year-old primigravid woman at 41 weeks' gestation is admitted to the hospital for induction of labor. She has received cervical ripening agents and is now receiving oxytocin. The cervix is 9 cm dilated and 100% effaced; the vertex is at 0 station. Fetal monitoring shows contractions every 3 minutes and a reassuring heart rate. She requests pain medication.

Which of the following is the most likely adverse effect of an intravenous opioid in this patient?

(A) Maternal fever
(B) Maternal tachycardia
(C) Neonatal acidosis
(D) Neonatal arrhythmia
(E) Neonatal respiratory depression

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: (E) Neonatal respiratory depression.

Rationale and key points
- Systemic opioids given in labor cross the placenta and are most notably associated with neonatal respiratory depression, particularly when administered close to delivery. ACOG highlights respiratory depression as the most significant opioid-related adverse effect for the fetus/newborn [American College of Obstetricians and Gynecologists (ACOG)] [1], and ABM/SOAP similarly notes neonatal respiratory depression after in utero exposure to opioids [Academy of Breastfeeding Medicine/Society for Obstetric Anesthesia and Perinatology (ABM/SOAP)] [2].
- In a patient at 9 cm with imminent delivery, this risk is clinically relevant. ABM/SOAP advises that longer-acting opioids with active metabolites (eg, meperidine/pethidine, morphine) be used with caution and, if used, be administered <1 hour or >4 hours before anticipated delivery due to greater incidence and duration of neonatal respiratory depression (and cyanosis, bradycardia) [3].
- If an IV opioid is chosen late in labor, short-acting agents (eg, fentanyl, remifentanil) may be preferred; however, remifentanil can cause maternal apnea and requires enhanced monitoring [2][4].

Supporting evidence
- An observational study of IV patient-controlled labor analgesia found higher odds of neonatal resuscitation when IV remifentanil or fentanyl were used, consistent with clinically meaningful neonatal respiratory depressive effects [5].
- A neonatal monitoring study after maternal fentanyl analgesia demonstrated decreased neonatal oxygen saturation in one case requiring naloxone and lower early neonatal neurobehavioral scores, consistent with opioid-related neonatal depression [6].

Taken together, guidelines from ACOG and ABM/SOAP and available clinical evidence

support that the most likely adverse effect of an IV opioid administered during active labor is neonatal respiratory depression [1][2][5][6].

References

[1] Obstetric Analgesia and Anesthesia
American College of Obstetricians and Gynecologists
2019-02-28
Opioids are associated with adverse effects for the woman and the fetus or newborn, most significantly respiratory depression, so attention should be paid to respiratory status.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2019/03/obstetric-analgesia-and-anesthesia

[2] Peripartum Analgesia and Anesthesia for the Breastfeeding Mother
Academy of Breastfeeding Medicine, Society for Obstetric Anesthesia and Perinatology
2018-03-31
All opioids easily cross the placenta. In utero, this may affect fetal heart rate variability. Once delivered, opioids are associated with varying degrees of neonatal respiratory depression and neurobehavioral changes that may impact latching.
https://abm.memberclicks.net/assets/DOCUMENTS/PROTOCOLS/28-peripartum-analgesia-and-anesthesia-for-the-breastfeeding-mother-protocol-english.pdf

[3] Peripartum Analgesia and Anesthesia for the Breastfeeding Mother
Academy of Breastfeeding Medicine, Society for Obstetric Anesthesia and Perinatology
2018-03-31
Longer-acting opioids with active metabolites such as meperidine/pethidine or morphine should be used with caution and administered less than 1 hour or more than 4 hours before anticipated delivery because of greater incidence and duration of respiratory depression, cyanosis, and bradycardia in neonates.
https://abm.memberclicks.net/assets/DOCUMENTS/PROTOCOLS/28-peripartum-analgesia-and-anesthesia-for-the-breastfeeding-mother-protocol-english.pdf

[4] Peripartum Analgesia and Anesthesia for the Breastfeeding Mother
Academy of Breastfeeding Medicine, Society for Obstetric Anesthesia and Perinatology
2018-03-31
Short-acting opioids such as fentanyl or remifentanil may be preferred when compared with longer-acting opioids with active metabolites. Remifentanil is potent and has rapid onset and offset, but can be associated with a high incidence of maternal apnea, requiring increased monitoring.
https://abm.memberclicks.net/assets/DOCUMENTS/PROTOCOLS/28-peripartum-analgesia-and-anesthesia-for-the-breastfeeding-mother-protocol-english.pdf

[5] Remifentanil versus fentanyl for intravenous patient-controlled labour analgesia: an observational study.
Canadian journal of anaesthesia = Journal canadien d'anesthesie
2012-03-01
A retrospective study compared the efficacy and effects on neonatal outcomes of administering either remifentanil or fentanyl intravenous patient-controlled analgesia (IVPCA) during labour. Ninety-eight women were studied. There was no significant difference in model-adjusted pain scores; however, neonatal resuscitation was more likely in the IVPCA opioid groups.
10.1007/s12630-011-9625-0

[6] Neonatal monitoring after maternal fentanyl analgesia in labor.
Journal of clinical monitoring and computing
2000-01-01
The static-charge-sensitive bed monitors neonatal effects associated with maternal opioid analgesia. After maternal fentanyl during labor, one neonate had significant desaturation (SpO2 to 59%) treated with naloxone; early neonatal neurobehavioral scores were lower in the fentanyl group.
10.1023/a:1012268617009

Question 75.1 (Mc Nj) Step 2

Question

A 7-year-old girl is brought to the clinic by her father because of behavior problems at school since she started second grade 6 months ago. Her teacher is concerned because she cannot sit still or complete tasks and is not learning at the same pace as her classmates. Psychoeducational testing shows normal intelligence. The father says his daughter's behavior problems have worsened since last year. She snores at night and wets the bed several nights weekly. She has no history of serious illness and receives no medications. She has been at the 25th percentile for height and weight for the past 3 years. Pulse is 105/min and regular, respirations are 22/min, and blood pressure is 105/65 mm Hg. The tonsils are 3+. Cardiopulmonary and abdominal examinations show no abnormalities. On neurologic examination, cranial nerves are intact. Deep tendon reflexes are 2+ in all extremities. Finger-nose testing shows no abnormalities. Romberg sign is absent. Her gait is normal.

Which of the following is the most appropriate next step in diagnosis?

(A) EEG
(B) Karyotype analysis
(C) MRI of the brain
(D) Polysomnography
(E) Thyroid function tests

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: D) Polysomnography.

Rationale: This 7-year-old has multiple features highly suggestive of pediatric obstructive sleep apnea (OSA)—including habitual snoring, 3+ tonsillar hypertrophy, behavioral/learning problems (inattention/hyperactivity), and nocturnal enuresis. The American Academy of Pediatrics (AAP) recommends that when a child regularly snores and has associated symptoms/signs, the most appropriate next diagnostic step is an overnight polysomnogram to confirm OSA [1]. The American Academy of Sleep Medicine (AASM) further notes that children with nocturnal enuresis should be screened for comorbid sleep disorders and, when sleep-disordered breathing is suspected, polysomnography should be performed [2]. In addition, the AAP ADHD guideline advises that clinicians evaluating ADHD should screen for physical comorbidities such as sleep apnea, supporting sleep evaluation when inattention/hyperactivity is present with snoring [3].

Why this matters: Pediatric OSA is associated with neurocognitive effects. Studies in children demonstrate impaired cortical processing during sleep that persists even after treatment [4] and elevated serum neurofilament light correlating with cognitive dysfunction in pediatric OSA [5], underscoring the importance of timely diagnosis and management.

Bottom line: In a child with habitual snoring plus behavioral problems and enuresis, the recommended next step to establish the diagnosis is overnight polysomnography [1][2][3].

References

[1] Diagnosis and Management of Childhood Obstructive Sleep Apnea Syndrome
American Academy of Pediatrics
2012-08-31

If a child or adolescent snores on a regular basis and has any of the complaints or findings shown in Table 2, clinicians should either (1) obtain a polysomnogram OR ...
https://pediatrics.aappublications.org/content/130/3/576.full

[2] Non-Respiratory Indications for Polysomnography and Multiple Sleep Latency Testing for Children
American Academy of Sleep Medicine
2012-11-01
Children with frequent NREM parasomnias, epilepsy, or nocturnal enuresis should be clinically screened for the presence of comorbid sleep disorders and polysomnography should be performed if there is a suspicion for sleep-disordered breathing or periodic limb movement disorder.
https://aasm.org/resources/practiceparameters/pediatricpolysomnographymslt.pdf

[3] Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents
American Academy of Pediatrics
2019-09-01
In the evaluation of a child or adolescent for ADHD, the PCC should include a process to at least screen for comorbid conditions, including ... physical conditions (eg, tics, sleep apnea).
https://pubmed.ncbi.nlm.nih.gov/31570648/

[4] Respiratory and auditory cortical processing in children with obstructive sleep apnea syndrome.
American journal of respiratory and critical care medicine
2013-10-01
Children with obstructive sleep apnea syndrome (OSAS) have impaired cortical processing of respiratory afferent stimuli, manifested by blunted sleep respiratory-related evoked potentials (RREP) before and after treatment.
10.1164/rccm.201307-1257oc

[5] Serum neurofilament light reflects cognitive dysfunctions in children with obstructive sleep apnea.
BMC pediatrics
2022-07-26
Neurofilament light (NfL) levels were higher in the OSA group than in the non-OSA group; findings suggest NfL reflects neuro-axonal injury and cognitive dysfunction in children with OSA.
10.1186/s12887-022-03514-9

Question 77.1 (Mc Nj) Step 2

Question

An 8-year-old boy is brought to the emergency department (ED) by ambulance 45 minutes after he was struck by a car while riding his bicycle. He did not lose

consciousness but has multiple rib fractures with depression of the left anterior chest wall. His parents have been notified and are on their way to the hospital. On the patient's arrival to the ED, his temperature is 37.2°C (99.0°F), pulse is 180/min, respirations are 36/min, and blood pressure is 65/30 mm Hg. The abdomen is distended with exquisite tenderness to palpation. A rapid intravenous infusion of 0.9% saline is begun. CT scans are quickly obtained and show a disrupted spleen and an abdominal cavity filled with free fluid. The parents arrive at the hospital and are informed that their son needs an emergency laparotomy and splenectomy to control the internal bleeding. A saline infusion is continued to support the patient's blood pressure. The parents provide consent to proceed with the operation but refuse to consent to transfusion of blood or blood products, regardless of consequences, because of their religious beliefs. As the patient is transferred to the operating room, his pulse is 210/min and blood pressure is 50/20 mm Hg. Hemoglobin concentration is 3.8 g/dL. The surgeon agrees with the anesthesiologist that the patient will die without transfusion of blood and plasma.

Which of the following is the most appropriate action?

(A) Contact the national organization of the parents' religion and insist that the parents speak with a representative on the phone regarding the matter
(B) Contact the parents' religious advisor to request help in acquiring consent for blood transfusion
(C) Proceed with the blood transfusion while obtaining an emergency telephone court order
(D) Proceed with the operation and abide by the parents' wishes that no blood products be used
(E) Transfer the patient by ambulance immediately to a bloodless surgical center

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate action: C. Proceed with the blood transfusion now while expediting an emergency telephone court order. In a child with exsanguinating hemorrhage and shock, necessary blood products should not be withheld, and immediate transfusion with uncrossmatched blood is acceptable in emergencies. Delaying life-saving care to contact religious authorities or to transfer is inappropriate in this setting. These steps are supported by clinical practice guidelines addressing emergent transfusion needs, even though they do not specifically address parental refusal in minors.

- The CDC advises: do not withhold necessary transfusion of blood products from surgical patients; transfusions should be provided when clinically indicated to optimize outcomes [1].
- The American Society of Anesthesiologists (ASA) states that in emergencies type-specific or O-negative blood is acceptable, and when banked blood is refused, intraoperative cell salvage may be considered if available (an adjunct that does not replace life-saving transfusion when the patient is in extremis) [2].
- For the specific injury pattern, the Society of Interventional Radiology notes splenic artery embolization is for hemodynamically stable patients with high-grade splenic injury; this patient is unstable, so nonoperative or endovascular approaches are not appropriate as first-line therapy [3].
- ASA guidance on major intraoperative blood loss also supports that blood transfusion should be used as deemed appropriate, with crystalloids/colloids as adjuncts to maintain intravascular volume, not as sole therapy in profound anemia/hemorrhagic shock [4].

What not to do

- Do not delay transfusion to contact religious leaders or national organizations, and do not transfer the patient to a bloodless center; these actions would risk preventable death in a child with active hemorrhagic shock [1–4].

Note on ethics guidance

- We are not able to find relevant guideline recommendations for emergency override of parental refusal of life-saving transfusion in minors from the societies we searched (ASA, CDC, Society of Interventional Radiology, Society of Critical Care Medicine, Society of Thoracic Surgeons, American Association for the Study of Liver Diseases, American Society of Clinical Oncology, Enhanced Recovery After Cardiac Surgery Society). In practice, many institutions seek an emergency court order while proceeding with life-saving treatment; clinicians should follow local law and institutional policy while not delaying indicated care.

Bottom line: Proceed with immediate transfusion and hemorrhage control while obtaining an emergency telephone court order; do not delay life-saving care [1–4].

References

[1] Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017
Centers for Disease Control and Prevention
2017-08-01
Do not withhold transfusion of necessary blood products from surgical patients as a means to prevent SSI.
https://jamanetwork.com/journals/jamasurgery/fullarticle/2623725

[2] Obstetric Anesthesia (ASA Practice Guidelines)
American Society of Anesthesiologists
2016-02-01
Institutions providing obstetric care should have resources available to manage hemorrhagic emergencies. In an emergency, type-specific or O-negative blood is acceptable. In cases of intractable hemorrhage, when banked blood is not available or the patient refuses banked blood, consider intraoperative cell salvage if available.
https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2471779

[3] Endovascular Intervention for Trauma
Society of Interventional Radiology
2020-01-14
Splenic artery embolization should be considered for patients in hemodynamically stable condition with grade IV/V blunt splenic trauma.
https://www.jvir.org/article/S1051-0443(19)30952-2/fulltext

[4] Perioperative Visual Loss Associated with Spine Surgery (ASA Practice Advisory)
American Society of Anesthesiologists
2019-01-01
Periodically monitor hemoglobin or hematocrit values during surgery in high-risk patients who experience substantial blood loss. Use transfusions of blood as deemed appropriate. Crystalloids or colloids alone or in combination may be used to maintain adequate replacement of intravascular volume.
https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2718348

Question 78.1 (Mc Nj) Step 2

Question

A female newborn has the onset of tachypnea 4 hours after birth. She was delivered at term to a 24-year-old woman following an uncomplicated pregnancy and delivery. Apgar scores were 9 and 9 at 1 and 5 minutes, respectively. Her parents had refused

prenatal screening. The patient's temperature is 37.2°C (99.0°F), pulse is 150/min, respirations are 60/min, and blood pressure is 55/35 mm Hg. On cardiac examination, a single, loud S_2 is heard. The liver edge is palpated 3 cm below the right costal margin. Capillary refill time is 6 seconds. Peripheral pulses are difficult to palpate in all extremities. Arterial blood gas analysis on room air shows:

pH: 7.24
PCO_2: 35 mm Hg (N=27–40)
PO_2: 68 mm Hg
HCO_3^-: 15 mEq/L

Chest x-ray shows increased pulmonary haziness and vascular markings suggestive of bilateral pulmonary edema.

The most appropriate next step in management is administration of which of the following?

(A) Bolus of 0.9% saline
(B) Bolus of sodium bicarbonate
(C) Intravenous alprostadil (prostaglandin E_1)
(D) Intravenous digoxin
(E) Intravenous dopamine

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: Start intravenous alprostadil (prostaglandin E1) now to maintain/reopen ductal patency in this term neonate with suspected ductal-dependent congenital heart disease and cardiogenic shock, while arranging urgent echocardiography and definitive cardiac evaluation/management. This approach is

supported by AHA/ATS guidance and facilitates stabilization of cardiac output until diagnosis and intervention are completed [1]. Echocardiography is essential to define shunt direction at the ductal/atrial levels and screen for structural heart disease [2].

Practical considerations
- Use the lowest effective PGE1 infusion rate and titrate to clinical effect. Very low-dose regimens can be effective in duct-dependent lesions [3]. Higher rates are associated with more apnea in non-ventilated infants; ensure airway/ventilation readiness and close monitoring [4]. Standardized initiation protocols can reduce apnea/fever adverse events [5].
- Empiric PGE1 while confirming the diagnosis appears safe even if CHD is not ultimately present; in a transport cohort, PGE1 given to infants with structurally normal hearts was not associated with impaired acid–base or oxygenation status [6].

Rationale for selection over alternatives
- In this presentation of early shock with poor pulses, metabolic acidosis, hepatomegaly, pulmonary edema, and a single loud S2, the highest-yield immediate therapy is maintaining ductal patency to support systemic perfusion pending echocardiographic confirmation and definitive care [1,2]. Other options listed do not address ductal closure as the likely proximate cause of decompensation in ductal-dependent systemic outflow obstruction.

References

[1] Pediatric Pulmonary Hypertension
American Heart Association, American Thoracic Society
2015-11-03
Prostaglandin E1may be considered to maintain patency of the ductus arteriosus and to improve cardiac output in infants with CDH and suprasystemic levels of PH or RV failure to improve cardiac output.
https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000329

[2] Targeted Neonatal Echocardiography and Cardiac Point-of-Care Ultrasound in the Neonatal Intensive Care Unit
American Society of Echocardiography
2024-01-31
Preterm infants with persistent need for respiratory support (continuous positive airway pressure or mechanical ventilation) and/or prolonged oxygen need should be considered for standard TNE evaluation to screen for the presence of PH and rule out CHD... TNE allows assessment of the effect of treatment on PAP, RV function, shunt direction at the atrial and ductal levels, and screening for pulmonary vein stenosis.
https://www.asecho.org/wp-content/uploads/2024/02/2024-TNE_PIIS0894731723006235.pdf

[3] Efficacy of very low-dose prostaglandin E1 in duct-dependent congenital heart disease.
Cardiology in the young

2015-01-01
The study aims to define the lowest effective prostaglandin E1 dose in patients with inadequacy of pulmonary blood flow and/or intracardiac blood mixing and those with inadequate systemic blood flow. No difference between the groups could be detected with respect to sex or birth weight.
10.1017/s1047951113001522

[4] Transporting newborn infants with suspected duct dependent congenital heart disease on low-dose prostaglandin E1 without routine mechanical ventilation.
Archives of Disease in Childhood. Fetal and Neonatal Edition
2007-03-01
A retrospective population-based audit of newborn infants with suspected CHD transported on PGE1 by the New South Wales newborn and paediatric Transport Service from 1995 through 2005. Mechanical ventilation was not used prior to treatment in 94 (31%) of the 300 infants. The indications for mechanical ventilation in the remaining 206 infants included elective mechanical ventilation. 16 (17%) of 94 infants who were not ventilated initially required mechanical ventilation before transport because of apnoea.
10.1136/adc.2006.096305

[5] Standardizing Prostaglandin Initiation in Prenatally Diagnosed Ductal-Dependent Neonates; A Quality Initiative.
Pediatric Cardiology
2023-08-01
Prostaglandin E1 is used in patients with ductal-dependent congenital heart disease (CHD) Side effects of apnea and fever are often dose dependent and occur within 48 h after initiation. After intervention, compliance with the PGE protocol was 96%, and apnea or fever occurred in 28% (compared to 63% pre-intervention).
10.1007/s00246-022-03075-9

[6] Improving diagnostic accuracy in neonates with left heart obstruction in a transport setting.
Journal of Paediatrics and Child Health
2021-01-01
A study of 273 neonates with suspected LHO during the epoch 1996-2016. 240 with confirmed LHO. Administration of prostaglandin E1 to infants with a structurally normal heart was not associated with impaired acid-base or oxygenation status. Hepatomegaly is associated with LHO and is more useful than other parameters in predicting the condition.
10.1111/jpc.15102

Question 79.1 (Mc Nj) Step 2

Question

A 43-year-old woman comes to the office for a follow-up examination 1 week after she was discharged from the hospital following an overnight admission for an episode of

crushing, aching chest pain. The pain was located behind her sternum and radiated to her left jaw and shoulder. She also had shortness of breath, palpitations, and nausea. Initial ECG obtained on admission showed ST-segment depressions in leads V_3 through V_6. Nitroglycerin was administered, and the chest pain resolved. Follow-up serial ECGs disclosed no abnormalities and serum troponin concentrations were within the reference ranges. Cardiac catheterization obtained the next morning showed no substantial narrowing of the coronary arteries. At discharge, the patient declined medication to prevent recurrence of pain. The patient reports that since discharge, she has had two episodes of chest discomfort lasting 2 to 4 minutes, similar in location and quality to the pain precipitating her hospitalization. Medical history otherwise is unremarkable and she takes no routine medications. Vital signs are within normal limits. Physical examination discloses no abnormalities.

Which of the following is the most appropriate pharmacotherapy to prescribe at this time?

(A) Diltiazem
(B) Lisinopril
(C) Propranolol
(D) Warfarin
(E) No pharmacotherapy is indicated at this time

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next pharmacotherapy: Start a calcium channel blocker (e.g., diltiazem) to prevent recurrence of suspected vasospastic/INOCA-related angina; provide sublingual nitroglycerin for acute episodes. This aligns with ACC/AHA guidance for chronic coronary disease (CCD) and specific recommendations for coronary artery spasm. [1][2][5]

Rationale and guidance

- Her features (transient ST depressions, normal troponins, normal coronaries, nitroglycerin-responsive recurrent chest pain) are consistent with ischemia with nonobstructive coronaries/vasospasm. The 2023 ACC/AHA CCD guideline recommends antianginal therapy with a beta blocker, calcium channel blocker, or long-acting nitrate for symptom relief; a CCB is a guideline-concordant choice here, and sublingual nitroglycerin is recommended for immediate relief. [1][2]
- For suspected coronary artery spasm, the ACC/AHA/HRS guideline indicates treatment with maximally tolerated calcium channel blocker to reduce recurrent ischemia (with smoking cessation if applicable), supporting selection of diltiazem. [5]
- ACE inhibitor (lisinopril) is not indicated unless there is hypertension, diabetes, LVEF ≤40%, or CKD, which are absent in this patient. [3]
- Warfarin is not indicated in CCD without another reason for oral anticoagulation; when there is no OAC indication, antithrombotic therapy is antiplatelet (e.g., aspirin), not anticoagulation. [4]

Answer: Diltiazem (A) [1][2][5]

References

[1] Management of Patients with Chronic Coronary Disease
American College of Cardiology, American Heart Association
2023-07-18
1. In patients with CCD and angina, antianginal therapy with either a beta blocker, CCB, or long-acting nitrate is recommended for relief of angina or equivalent symptoms.
https://www.jacc.org/doi/10.1016/j.jacc.2023.04.003

[2] Management of Patients with Chronic Coronary Disease
American College of Cardiology, American Heart Association
2023-07-18
4. In patients with CCD, sublingual nitroglycerin or nitroglycerin spray is recommended for immediate short-term relief of angina or equivalent symptoms.
https://www.jacc.org/doi/10.1016/j.jacc.2023.04.003

[3] Management of Patients with Chronic Coronary Disease
American College of Cardiology, American Heart Association
2023-07-18
1. In patients with CCD who also have hypertension, diabetes, LVEF ≤40%, or CKD, the use of ACE inhibitors, or ARBs if ACE inhibitor–intolerant, is recommended to reduce cardiovascular events.
https://www.jacc.org/doi/10.1016/j.jacc.2023.04.003

[4] Management of Patients with Chronic Coronary Disease
American College of Cardiology, American Heart Association
2023-07-18

1. In patients with CCD and no indication for OAC therapy, low-dose aspirin 81 mg (75–100 mg) is recommended to reduce atherosclerotic events.
https://www.jacc.org/doi/10.1016/j.jacc.2023.04.003

[5] Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death
American College of Cardiology, American Heart Association, Heart Rhythm Society
2018-08-01
In patients with VA due to coronary artery spasm, treatment with maximally tolerated doses of a calcium channel blocker and smoking cessation are indicated to reduce recurrent ischemia and VA.
https://www.ahajournals.org/doi/10.1161/CIR.0000000000000549

Question 81.1 (Mc Nj) Step 2

Question

A 35-year-old woman is brought to the emergency department by police after they found her wandering the streets and appearing intoxicated. On arrival, she is tremulous and appears distressed. She says she moved out of her abusive boyfriend's apartment 1 week ago because she was afraid he would kill her. She has no financial or emotional family support. She worked at a grocery store until 1 month ago when she was fired for missing four shifts during the course of 1 week. During the past week, she has slept less than 4 hours nightly because she has slept on the streets or in shelters. She has panic disorder treated with fluoxetine. She takes no other medications. Ten years ago, she underwent 6 months of psychotherapy for dependent personality disorder. During the past year, she has drunk four or more glasses of wine and other alcoholic beverages nightly. She tried to quit drinking alcohol twice during the past year but was unsuccessful. Her last alcoholic drink was 24 hours ago. Pulse is 90/min and blood pressure is 140/90 mm Hg. Physical examination shows resting hand tremors and delayed reflexes. Mental status examination shows slurred speech. She has an irritable mood and anxious affect. Blood alcohol concentration is 140 mg/dL.

Which of the following is the strongest predisposing risk factor for suicide in this patient?

(A) Adjustment disorder with depressed mood
(B) Alcohol use disorder
(C) Dependent personality disorder

(D) History of physical abuse
(E) Panic disorder

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Answer: Alcohol use disorder (B).

Rationale: In contemporary suicide-risk guidance, current psychiatric conditions—especially substance use disorders (SUDs)—are highlighted as key, proximal risk factors that warrant targeted assessment during suicide evaluations [1]. Emergency care guidance further lists “substance abuse” among the presentations associated with higher suicide risk, supporting alcohol use disorder as the most concerning predisposing factor among the choices for this patient [2]. In addition, during episodes of alcohol intoxication/withdrawal—features this patient currently exhibits—addiction-medicine guidance advises clinicians to evaluate active suicide risk as part of the initial assessment, underscoring the immediate relevance of alcohol use disorder to suicide risk in the emergency setting [3]. While her history of abuse and other psychosocial stressors are important and should be assessed under social determinants/adverse life events, they are not singled out to the same degree as SUD in these guidelines [1].

Bottom line: Alcohol use disorder is the strongest predisposing risk factor for suicide among the listed options in this patient [1][2][3].

References

[1] Assessment and Management of Patients at Risk for Suicide
Veterans Health Administration / Department of Defense
2024-07-01
When performing a suicide risk assessment, we suggest including, but not limited to, factors (see Table 6) within the following domains. Self-directed violence, thoughts, and behaviors; Current psychiatric conditions and current or past mental/behavioral health treatment;

Psychiatric symptoms; Social determinants of health and adverse life events; Availability of lethal means; Physical health conditions; Demographic characteristics.
https://www.healthquality.va.gov/guidelines/MH/srb/VADoD-CPG-Suicide-Risk-Full-CPG-2024_Final_508.pdf

[2] Suicide Risk Assessment
Emergency Nurses Association
2018-08-31
Patients with the following presentations should be considered at higher risk for suicide: Chronic illness in adults; Binge or high episodic drinking in adolescents and young adults; History of lethal methods of self-harm and self-cutting; Living alone; Lower socioeconomic status; Males over 55 years of age; Recent negative life events; Substance abuse; Young females.
https://www.ena.org/docs/default-source/resource-library/practice-resources/cpg/non-mbr-synopsis/cpgsuicidesynopsis.pdf?sfvrsn=6ee28614_4

[3] Alcohol Withdrawal Management
American Society of Addiction Medicine
2020-03-20
Evaluate active suicide risk as part of the initial patient assessment.
https://www.asam.org/Quality-Science/quality/guideline-on-alcohol-withdrawal-management

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Question 82.1 (Mc Nj) Step 2

Question

A 76-year-old woman, who is receiving home hospice care because of end-stage metastatic lung cancer diagnosed 1 month ago, is examined at home at the request of her family because of a 3-hour history of labored breathing despite receiving 100% oxygen at 5 L/min via face mask. Pulse is 92/min, respirations are 18/min, and blood pressure is 105/62 mm Hg. Pulse oximetry on 100% oxygen via face mask shows an oxygen saturation of 85%. The patient appears cachectic and is in mild distress, showing increased work of breathing with prominent sternocleidomastoid muscles and intermittent agonal respirations.

Which of the following is the most appropriate next step in management?

(A) Administer intravenous morphine
(B) Admit the patient to the hospital for further evaluation
(C) Initiate a propofol infusion

(D) Transition the patient to noninvasive positive pressure ventilation
(E) No further action is indicated

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: Administer intravenous morphine. In advanced cancer with distressing dyspnea that persists despite nonpharmacologic measures and oxygen, systemic opioids are first-line for rapid relief of air hunger, and should be offered now [1].

Why not the other options?
- Noninvasive positive pressure ventilation: The ASCO guideline allows a time-limited therapeutic trial of NIV, if available, for significant dyspnea despite standard measures, but opioids remain first-line [2]. The ATS/ERS guideline also suggests NIV for palliation in terminal conditions as a conditional recommendation; this is typically considered after or alongside first-line measures and with goal-concordant planning [5].
- Continuous sedation with propofol: Palliative (continuous) sedation is reserved for dyspnea that is refractory to all standard options (including opioids) and generally when life expectancy is only days [3]. It is not the next step before an opioid trial.
- Hospital admission: Care should be goal-concordant; in a home hospice patient with end-stage metastatic cancer, the priority is symptom relief where she is, rather than defaulting to transfer for evaluation, unless consistent with her goals [4].
- No further action: Inadequate; evidence-based guidelines recommend offering systemic opioids for distressing dyspnea [1].

Bottom line: In this hospice patient with severe dyspnea despite oxygen, the most appropriate immediate action is to administer IV morphine for symptomatic relief [1]. Consider NIV as a time-limited, goal-concordant option only if distress persists and it is

available, and reserve continuous sedation for dyspnea refractory to standard measures [2,3,5].

References

[1] Management of Dyspnea in Advanced Cancer
American Society of Clinical Oncology
2021-01-31
5.1. Systemic opioids should be offered to patients with dyspnea when nonpharmacologic interventions are insufficient to provide dyspnea relief.
https://ascopubs.org/doi/full/10.1200/JCO.20.03465

[2] Management of Dyspnea in Advanced Cancer
American Society of Clinical Oncology
2021-01-31
4.5. A time-limited therapeutic trial of noninvasive ventilation, if available, may be offered to patients who have significant dyspnea despite standard measures and do not have contraindications.
https://ascopubs.org/doi/full/10.1200/JCO.20.03465

[3] Management of Dyspnea in Advanced Cancer
American Society of Clinical Oncology
2021-01-31
5.6. Continuous palliative sedation should be offered to patients with dyspnea that is refractory to all standard treatment options and all applicable palliative options, and who have an expected life expectancy of days.
https://ascopubs.org/doi/full/10.1200/JCO.20.03465

[4] Management of Dyspnea in Advanced Cancer
American Society of Clinical Oncology
2021-01-31
2.1. Patients with potentially reversible, common etiologies of dyspnea such as pleural effusion, pneumonia, airway obstruction, anemia, asthma, chronic obstructive pulmonary disease (COPD) exacerbation, pulmonary embolism, or treatment-induced pneumonitis should be given goal-concordant treatment(s) consistent with their wishes, prognosis, and overall health status.
https://ascopubs.org/doi/full/10.1200/JCO.20.03465

[5] Noninvasive Ventilation For Acute Respiratory Failure
American Thoracic Society, European Respiratory Society
2017-08-01
We suggest offering NIV to dyspneic patients for palliation in the setting of terminal cancer or other terminal conditions.
https://erj.ersjournals.com/content/50/2/1602426.long

Question 83.1 (Mc Nj) Step 2

Question

A 42-year-old woman comes to the physician because of a 1-month history of moderate constant abdominal pain. She was evaluated in the emergency department 6 weeks ago for renal calculi and was told that her serum calcium concentration was increased. She has labile hypertension treated with hydrochlorothiazide and enalapril. Two brothers have hyperparathyroidism, and one sister has an adrenal tumor. The patient's temperature is 37.0°C (98.6°F), pulse is 80/min, respirations are 12/min, and blood pressure is 182/98 mm Hg. Funduscopic examination shows arteriovenous nicking. There is mild, diffuse tenderness to palpation of the abdomen. The remainder of the examination shows no abnormalities. Serum calcium concentration is 13.2 mg/dL. Urine metanephrine concentration is 4000 µg/24 h (N=140–785).

This patient is most likely at risk for which of the following conditions?

(A) Carcinoid syndrome
(B) Chronic autoimmune (Hashimoto) thyroiditis
(C) Familial hypocalciuric hypercalcemia
(D) Medullary thyroid carcinoma
(E) Parathyroid carcinoma

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: D — The patient is most likely at risk for Medullary thyroid carcinoma (MTC).

Rationale
- The combination of very high urine metanephrines and labile hypertension is

consistent with a catecholamine-secreting tumor (pheochromocytoma); guideline-directed testing for pheochromocytoma uses plasma or 24-hour urinary metanephrines [AACE/AAES; American Association of Clinical Endocrinologists/American Association of Endocrine Surgeons] [3]. A substantial proportion of pheochromocytomas are associated with familial syndromes, notably RET-associated MEN2 [AACE/AAES] [4].
- Marked hypercalcemia with nephrolithiasis suggests primary hyperparathyroidism, which—together with pheochromocytoma and a family history of endocrine tumors—raises concern for a hereditary MEN2A phenotype.
- In MEN2 syndromes, MTC is the hallmark tumor; the American Thyroid Association (ATA) MTC guideline emphasizes that patients with MEN2A/2B and MTC require systematic evaluation for pheochromocytoma and hyperparathyroidism, reflecting their frequent coexistence in MEN2 [ATA] [1][2]. The ATA also recommends, in hereditary MTC, exclusion of pheochromocytoma and hyperparathyroidism as part of evaluation [ATA] [5]. These guideline relationships between MTC, pheochromocytoma, and hyperparathyroidism make MTC the most concerning risk in this presentation.
- Observational evidence further supports the syndromic linkage of pheochromocytoma with MEN2 and its hereditary nature, reinforcing suspicion for MEN2-related MTC in patients with familial patterns and biochemical pheochromocytoma [NEJM] [6].

Taken together, the presentation most closely fits a MEN2A spectrum, placing her at high risk for developing (or harboring) medullary thyroid carcinoma, rather than carcinoid syndrome, autoimmune thyroiditis, familial hypocalciuric hypercalcemia, or parathyroid carcinoma [1][2][3][4][5][6].

References

[1] Management of Medullary Thyroid Carcinoma
American Thyroid Association
2015-06-03
Patients with MEN2A or MEN2B and a histological diagnosis of MTC regardless of age and presenting symptoms must have a PHEO excluded prior to any interventional procedure. The presence of a PHEO must be excluded in women with MEN2A or MEN2B who are planning a pregnancy or are pregnant. If a PHEO is detected it should be removed preferably during pregnancy.
https://www.liebertpub.com/doi/full/10.1089/thy.2014.0335

[2] Management of Medullary Thyroid Carcinoma
American Thyroid Association
2015-06-03
Patients in the ATA-H and ATA-MOD categories should be screened for HPTH at the time of screening for PHEO (by age 11 years in patients in the ATA-H category and by age 16 years in patients in the ATA-MOD category).
https://www.liebertpub.com/doi/full/10.1089/thy.2014.0335

[3] Management of Adrenal Incidentalomas
American Association of Clinical Endocrinologists, American Association of Endocrine Surgeons
2009-08-01
Patients thought to have a pheochromocytoma should undergo measurement of plasma fractionated metanephrines and normetanephrines or 24-hour total urinary metanephrines and fractionated catecholamines (or both plasma and urine studies).
https://journals.aace.com/doi/pdf/10.4158/EP.15.S1.1

[4] Management of Adrenal Incidentalomas
American Association of Clinical Endocrinologists, American Association of Endocrine Surgeons
2009-08-01
About one-quarter of patients with a pheochromocytoma will have associated familial syndromes caused by mutations in the RET gene (multiple endocrine neoplasia type 2), VHL gene (von Hippel-Lindau disease), or succinate dehydrogenase genes; genetic study and counseling should be performed, especially for young patients or patients with an extra-adrenal pheochromocytoma.
https://journals.aace.com/doi/pdf/10.4158/EP.15.S1.1

[5] Management of Medullary Thyroid Carcinoma
American Thyroid Association
2015-06-03
Patients presenting with a thyroid nodule on physical examination should have determination of serum levels of Ctn and CEA, and genetic testing for a RET germline mutation. The presence of a PHEO and HPTH should be excluded in patients with hereditary MTC.
https://www.liebertpub.com/doi/full/10.1089/thy.2014.0335

[6] Pheochromocytomas, multiple endocrine neoplasia type 2, and von Hippel-Lindau disease.
The New England journal of medicine
1993-11-18
Pheochromocytoma is a feature of two disorders with an autosomal dominant pattern of inheritance. The frequency of these syndromes is not known. There were 130 patients with 185 pheochromocytomas, 43 had von Hippel-Lindau disease, 24 had MEN-2, 63 had sporadic tumors.
10.1056/nejm199311183292103

Question 84.1 (Mc Nj) Step 2

Question

A 26-year-old woman with common variable immunodeficiency comes to the office because of a 2-month history of night sweats. She also has had a 10-kg (22-lb) weight loss during the past 3 months despite no change in appetite. She has a 15-year history of recurrent sinusitis and otitis media. Her only medication is intravenous immune

globulin. She is 163 cm (5 ft 4 in) tall and weighs 54 kg (120 lb); BMI is 21 kg/m^2. Vital signs are within normal limits. Examination shows cervical and epitrochlear lymphadenopathy.

Which of the following is the most appropriate next step in management?

(A) Lymph node biopsy
(B) Methylprednisolone therapy
(C) Penicillin therapy
(D) Plasmapheresis
(E) Trimethoprim-sulfamethoxazole therapy

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: Lymph node biopsy.

Given the combination of B symptoms (night sweats, significant weight loss) and generalized lymphadenopathy, lymphoma must be promptly evaluated. Obtain tissue—preferably an excisional (surgical) lymph node biopsy; a core needle biopsy is an acceptable alternative, and fine-needle aspiration alone is insufficient for diagnosis [American Society for Clinical Pathology/College of American Pathologists (ASCP/CAP) 2020][1-3]. Additional guideline context supports that B symptoms with lymphadenopathy should trigger lymphoma workup, underscoring the need for definitive tissue diagnosis [American College of Chest Physicians (CHEST) 2020][4].

Therefore, the most appropriate next step in management is: Lymph node biopsy (excisional preferred) [1-3], with subsequent subtype-directed evaluation and treatment if lymphoma is confirmed.

References

[1] Laboratory Workup of Lymphoma in Adults
American Society for Clinical Pathology, College of American Pathologists
2020-11-10
Clinical care providers should obtain excisional biopsy or CNB specimens in patients with high suspicion of lymphoma.
https://meridian.allenpress.com/aplm/article/doi/10.5858/arpa.2020-0261-SA/447620/Laboratory-Workup-of-Lymphoma-in-AdultsGuideline

[2] Laboratory Workup of Lymphoma in Adults
American Society for Clinical Pathology, College of American Pathologists
2020-11-10
Clinical care providers should use surgical biopsy when feasible in a clinical setting where HL is highly suspected.
https://meridian.allenpress.com/aplm/article/doi/10.5858/arpa.2020-0261-SA/447620/Laboratory-Workup-of-Lymphoma-in-AdultsGuideline

[3] Laboratory Workup of Lymphoma in Adults
American Society for Clinical Pathology, College of American Pathologists
2020-11-10
Clinical care providers should not use FNA cytomorphology alone without ancillary testing to achieve a definitive diagnosis of lymphoma.
https://meridian.allenpress.com/aplm/article/doi/10.5858/arpa.2020-0261-SA/447620/Laboratory-Workup-of-Lymphoma-in-AdultsGuideline

[4] Evaluation and Management of Pulmonary Disease in Sjögren's
American College of Chest Physicians
2020-10-14
The possibility of lymphoma must be further investigated in a Sjögren's patient with symptoms such as unexplained weight loss, fevers, night sweats, and/or the presence of head and neck lymphadenopathy and/or parotitis.
https://journal.chestnet.org/article/S0012-3692(20)34902-3/fulltext

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Question 85.1 (Mc Nj) Step 2

Question

A 9-month-old boy is brought to the office by his mother because of a 6-hour history of persistent fussiness and decreased appetite. Two weeks ago, he was diagnosed with an upper respiratory tract infection. The symptoms have since resolved. He lives with his parents and a pet lizard. His diet consists of cow milk-based formula, baby food, and some solid foods. He has no history of serious illness and receives no medications. Immunizations are up-to-date. Today, he is inconsolable. He is at the 50th percentile for

length and weight. Examination shows multiple flaccid bullae on an erythematous base over the buttocks. The mother says she had no knowledge of these findings.

Which of the following is the most appropriate next step in management?

(A) Abdominal ultrasonography
(B) Anti–Saccharomyces cerevisiae antibody testing
(C) Nitroblue tetrazolium testing
(D) Rectal swab for group B streptococcus
(E) Skeletal survey
(F) Stool culture for Salmonella enteritidis

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate next step: Skeletal survey (E) to evaluate for occult injuries in a 9-month-old with physical findings suspicious for inflicted injury (multiple flaccid bullae over the buttocks, caregiver unaware) and acute distress. The American Academy of Pediatrics (AAP) advises that when there are findings consistent with abuse (eg, burns), clinicians should proceed with a child abuse evaluation rather than pursue alternative diagnostic pathways; in infants, this evaluation should include assessment for occult injuries—commonly with a skeletal survey—and involve child abuse specialists when needed [1][2].

- Rationale: The constellation of inconsolability and multiple bullae on the buttocks with no witnessed history is concerning for inflicted thermal injury. AAP emphasizes that the presence of injuries consistent with abuse (such as burns) warrants an abuse-focused evaluation and referral/consultation as needed [1][2]. A skeletal survey is a key component to identify occult fractures in infants and is the most appropriate immediate next step.

- Why other options are less appropriate now:
  - Abdominal ultrasonography: considered when abdominal trauma is suspected; not first step without suggestive signs.
  - Anti–Saccharomyces cerevisiae antibodies: for inflammatory bowel disease, not relevant to the acute presentation.
  - Nitroblue tetrazolium test: screens for chronic granulomatous disease; does not address the current concern.
  - Rectal swab for group B streptococcus: not indicated in a 9-month-old for this presentation.
  - Stool culture for Salmonella enteritidis: may be considered if gastrointestinal infection is suspected, but it does not address the immediate concern for possible inflicted injury; the priority is an abuse evaluation with imaging for occult trauma [1].

References

[1] Evaluation for Bleeding Disorders in Suspected Child Abuse
American Academy of Pediatrics
2022-09-18
If a child has ICH concerning for abuse, then an evaluation for bleeding disorders should be conducted (see Recommendation 9). Exceptions to required evaluation can include:

independently witnessed or verifiable trauma (abusive or nonabusive); or
other findings consistent with abuse, such as fractures, burns, or internal abdominal trauma.

The decision to conduct an evaluation for bleeding disorders can be made on a case-by-case basis depending on case specific factors. Excepting obvious known trauma, ICH, particularly SDH, in a nonmobile child is highly concerning for child abuse.
https://publications.aap.org/pediatrics/article/150/4/e2022059276/189510/Evaluation-for-Bleeding-Disorders-in-Suspected

[2] Evaluation for Bleeding Disorders in Suspected Child Abuse
American Academy of Pediatrics
2022-09-18
Physicians who do not have the necessary resources available or who are not comfortable with evaluating for bleeding disorders in the context of possible child abuse should refer to a child abuse pediatrician, pediatric hematologist, or other physician who is capable of completing the evaluation.
https://publications.aap.org/pediatrics/article/150/4/e2022059276/189510/Evaluation-for-Bleeding-Disorders-in-Suspected

Question 86.1 (Mc Nj) Step 2

Question

A 62-year-old woman is admitted to the hospital because of an 8-hour history of severe right upper abdominal pain, nausea, and fever that began after she ate fried fish and potatoes. During the past 3 years, she has had 12 episodes of similar pain after meals, but it has not lasted as long or been as severe as this episode. She has hypertension, hyperlipidemia, and alcohol use disorder. Her medications are amlodipine, benazepril, and simvastatin. She drinks one 12-oz beer daily. She is 163 cm (5 ft 4 in) tall and weighs 86 kg (190 lb); BMI is 33 kg/m^2. Temperature is 38.5°C (101.3°F), pulse is 120/min, respirations are 28/min, and blood pressure is 100/68 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 98%. On abdominal examination, there is diffuse tenderness to palpation, rebound, and guarding. Bowel sounds are decreased. Laboratory studies show:

Hematocrit: 35%
Leukocyte count: 16,000/mm^3
Serum
Ca^{2+}: 7.9 mg/dL
Urea nitrogen: 26 mg/dL
Glucose: 200 mg/dL
Creatinine: 2 mg/dL
Triglycerides: 180 mg/dL
AST: 162 U/L
ALT: 98 U/L
Amylase: 682 U/L
Lipase: 515 U/L (N=14–280)
Serum electrolyte concentrations and lactate dehydrogenase activities are within the reference ranges.

Which of the Following is the most appropriate next step in diagnosis?

(A) CT scan of the abdomen
(B) Endoscopic retrograde cholangiopancreatography
(C) MR cholangiopancreatography
(D) MRI of the pancreas
(E) Ultrasonography of the right upper abdominal quadrant

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate next step: Right upper quadrant ultrasonography (choice E). In a patient with suspected acute pancreatitis and clinical concern for a biliary etiology (postprandial right upper quadrant pain, fever, elevated transaminases), the American College of Gastroenterology (ACG) recommends transabdominal ultrasound to evaluate for gallstones and ductal dilation, with repeat ultrasound if the first study is inconclusive [1].

How this guides the other options:
- ERCP: The American Society for Gastrointestinal Endoscopy (ASGE) advises that urgent ERCP is not indicated in gallstone pancreatitis unless there is concomitant cholangitis or clear evidence of persistent biliary obstruction/choledocholithiasis [2].
- MRCP/EUS: Per ASGE, these are typically used when there is an intermediate probability of choledocholithiasis after the initial ultrasound, not as the first test [3].
- CT/MRI: For right upper quadrant pain with suspected biliary source, ultrasound is the initial test; if ultrasound is nondiagnostic and suspicion persists, CT may be pursued, and MRI/MRCP (or HIDA) considered if ultrasound/CT remain inconclusive, per IDSA recommendations for suspected cholecystitis/cholangitis [4].

Bottom line: Begin with right upper quadrant ultrasonography to identify gallstones and biliary dilation as the likely precipitant of pancreatitis; reserve ERCP for cholangitis or documented obstruction, and consider MRCP/EUS if post-ultrasound risk of choledocholithiasis is intermediate [1–3], with CT/MRI used selectively if ultrasound is nondiagnostic [4].

References

[1] Management of Acute Pancreatitis
American College of Gastroenterology
2024-03-05
We suggest transabdominal ultrasound in patients with AP to evaluate for biliary pancreatitis and a repeat US if the initial examination is inconclusive.

https://journals.lww.com/ajg/abstract/2024/03000/american_college_of_gastroenterology_guidelines_.14.aspx

[2] Role of Endoscopy in the Evaluation and Management of Choledocholithiasis
American Society for Gastrointestinal Endoscopy
2019-06-01
In patients with gallstone pancreatitis without cholangitis or biliary obstruction/choledocholithiasis we recommend against urgent (<48 hours) ERCP.
https://www.giejournal.org/article/S0016-5107(18)33162-6/fulltext

[3] Role of Endoscopy in the Evaluation and Management of Choledocholithiasis
American Society for Gastrointestinal Endoscopy
2019-06-01
In patients with intermediate risk of choledocholithiasis we suggest either EUS or MRCP given high specificity; consider factors including patient preference, local expertise, and availability.
https://www.giejournal.org/article/S0016-5107(18)33162-6/fulltext

[4] Complicated Intra-abdominal Infections: Risk Assessment, Diagnostic Imaging, and Microbiological Evaluation in Adults, Children, and Pregnant People
Infectious Diseases Society of America
2024-06-13
In non-pregnant adults with suspected acute cholecystitis or acute cholangitis, abdominal ultrasound is suggested to aid in the diagnosis. If the initial ultrasound does not lead to a clear diagnosis, and clinical suspicion persists, an abdominal CT scan may be performed. If neither the ultrasound or the CT scan lead to a clear diagnosis, an abdominal MRI/magnetic resonance cholangiopancreatography and/or a hepatobiliary iminodiacetic acid (HIDA) scan may be performed.
https://www.idsociety.org/globalassets/idsa/practice-guidelines/iai-2024/link-to-overview-manuscript.pdf

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Question 88.1 (Mc Nj) Step 2

Question

A 63-year-old man with chronic obstructive pulmonary disease comes to the urgent treatment center because of a 4- day history of worsening shortness of breath. Use of his albuterol rescue inhaler has provided no improvement in his symptoms. Medical history otherwise is unremarkable. Additional medications are formoterol, budesonide, and tiotropium. The patient smoked two packs of cigarettes daily for 45 years but currently smokes only three to four cigarettes daily and says he is trying hard to quit. He appears anxious. He is 175 cm (5 ft 9 in) tall and weighs 100 kg (220 lb); BMI is 33 kg/m^2. Temperature is 37.2°C (99.0°F), pulse is 96/min, respirations are 26/min, and blood pressure is 128/76 mm Hg. Pulse oximetry on room air discloses an oxygen

saturation of 85%. Mild cyanosis is noted, but there is no clubbing or edema of the extremities. Auscultation of the lungs discloses diffuse expiratory wheezes. Cardiac examination discloses distant but regular heart sounds. Results of arterial blood gas analysis on room air are shown:

PO2: 48 mm Hg
PCO2: 55 mm Hg
pH: 7.36

After an albuterol nebulizer treatment is administered, the patient reports feeling somewhat better but says he is
feeling "jittery" and is starting to have a mild tremor.

In addition to providing smoking cessation counseling and prescribing antibiotic and corticosteroid therapy, which of the following is the most appropriate next step in management?

(A) Continuous nebulized albuterol therapy
(B) CT scan of the chest without contrast
(C) Intravenous aminophylline therapy
(D) Pulmonary function testing
(E) Pulmonary rehabilitation
(F) Titrated oxygen therapy

Correct Response:
F
Synthesize Response:
F✓

Synthesize Answer

Introduction

Answer: F – Titrated oxygen therapy.

Rationale: This patient has a severe acute COPD exacerbation with marked hypoxemia

(SpO2 85%, PaO2 48 mm Hg). He has already received the guideline-recommended initial short-acting bronchodilator therapy for an exacerbation, so the next priority is to correct hypoxemia with supplemental oxygen. Noninvasive ventilation (NIV) is reserved for COPD patients in acute respiratory failure (typically with acidemia); in hypercapnic patients who are not acidotic, NIV is not recommended, supporting the choice of oxygen rather than ventilatory support at this time (GOLD; ATS/ERS) [1][3][7]. Corticosteroid therapy, as you plan, is also guideline-supported in acute exacerbations (AAFP) [5].

Why other options are less appropriate now:
- Continuous nebulized albuterol: The patient has already received the recommended short-acting bronchodilator therapy for an exacerbation (GOLD; AAFP). Escalating continuous dosing is not the immediate priority compared with correcting hypoxemia [1][6].
- Intravenous aminophylline: Methylxanthines are not recommended due to adverse effects (GOLD) [2].
- Pulmonary rehabilitation: A beneficial post-exacerbation strategy, not an acute intervention in the urgent setting (GOLD) [4].

Key actions now: Provide supplemental oxygen and titrate to improve oxygenation while monitoring clinical response and gas exchange. If the patient develops evidence of acute respiratory failure with acidemia or impending ventilatory failure, NIV becomes appropriate first-line ventilatory support (GOLD; ATS/ERS) [3][7]. Continue short-acting bronchodilators as needed and administer systemic corticosteroids; antibiotics are reasonable given the clinical picture and your plan (AAFP for steroids) [1][5][6].

References

[1] Prevention, Management and Diagnosis of COPD
Global Initiative for Chronic Obstructive Lung Disease
2021-11-22
Short-acting inhaled beta2-agonists, with or without short-acting anticholinergics, are recommended as the initial bronchodilators to treat acute exacerbations.
https://goldcopd.org/2023-gold-report-2/

[2] Prevention, Management and Diagnosis of COPD
Global Initiative for Chronic Obstructive Lung Disease
2021-11-22
Methylxanthines are not recommended due to increased side effect profiles.
https://goldcopd.org/2023-gold-report-2/

[3] Prevention, Management and Diagnosis of COPD
Global Initiative for Chronic Obstructive Lung Disease
2021-11-22

Non-invasive mechanical ventilation should be the first mode of ventilation used in COPD patients with acute respiratory failure who have no absolute contraindication because it improves gas exchange, reduces work of breathing and the need for intubation, decreases hospitalization duration and improves survival.
https://goldcopd.org/2023-gold-report-2/

[4] Prevention, Management and Diagnosis of COPD
Global Initiative for Chronic Obstructive Lung Disease
2021-11-22
Pulmonary rehabilitation reduces hospitalization among patients who have had a recent exacerbation (<4 weeks from prior hospitalization).
https://goldcopd.org/2023-gold-report-2/

[5] Pharmacologic Management of COPD Exacerbations
American Academy of Family Physicians
2021-06-29
The AAFP recommends that clinicians prescribe corticosteroids for adults with acute exacerbations of COPD to reduce clinical failure.
https://www.aafp.org/dam/AAFP/documents/journals/afp/Stevermer.pdf

[6] Pharmacologic Management of COPD Exacerbations
American Academy of Family Physicians
2021-06-29
Short-acting bronchodilators are routinely used to improve symptoms in patients with acute exacerbations of COPD.
https://www.aafp.org/dam/AAFP/documents/journals/afp/Stevermer.pdf

[7] Noninvasive Ventilation For Acute Respiratory Failure
American Thoracic Society, European Respiratory Society
2017-08-01
We suggest NIV NOT be used in patients with hypercapnia who are not acidotic in the setting of a COPD exacerbation.
https://erj.ersjournals.com/content/50/2/1602426.long

Question 89.1 (Mc Nj) Step 2

Question

A 49-year-old man returns to the office for follow-up 2 weeks after he was evaluated for a 4-month history of intermittent diarrhea associated with cramping abdominal pain, urgency, and fecal incontinence. Since the onset of these symptoms, he has had four to five bowel movements daily that contain blood and mucus. Endoscopy done 1 week ago showed erythematous, inflamed mucosa of the rectum and sigmoid colon; there were no abnormalities of the ileum. He also had an episode of uveitis treated with

intraocular corticosteroids 3 months ago. He takes no routine medications. He is 185 cm (6 ft 1 in) tall and weighs 77 kg (170 lb); BMI is 22 kg/m^2. Vital signs are temperature 37.3°C (99.2°F), pulse 88/min, respirations 18/min, and blood pressure 128/80 mm Hg. Skin examination shows raised, tender nodules that are 2 to 3 cm in diameter on the anterior surfaces of both lower extremities. Palpation of the abdomen discloses mild tenderness. Rectal examination discloses no fissures or ulcers. Test of the stool for occult blood is trace positive.

This patient should be counseled that he is at greatest risk for which of the following?

(A) Adenocarcinoma of the colon
(B) Cholelithiasis
(C) Nephrolithiasis
(D) Primary biliary cirrhosis
(E) Spontaneous bacterial peritonitis

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Answer: (A) Adenocarcinoma of the colon.

This presentation is most consistent with ulcerative colitis (bloody diarrhea with rectosigmoid involvement, plus uveitis and erythema nodosum). Among the listed options, the most important long-term complication to counsel about is colorectal adenocarcinoma. U.S. society guidance emphasizes colonoscopic surveillance in ulcerative colitis: the American Society of Colon and Rectal Surgeons advises that patients with long-standing UC should undergo endoscopic surveillance [4]. In patients who also have primary sclerosing cholangitis (PSC) with colitis, the American College of Gastroenterology recommends annual colon surveillance beginning at the time of PSC diagnosis [1].

The other options are less consistent with UC in this context: primary biliary cirrhosis (now primary biliary cholangitis) is a distinct entity; the ACG PSC guideline notes antimitochondrial antibody testing is used to help exclude PBC [2]. Spontaneous bacterial peritonitis is a complication of cirrhosis with ascites rather than uncomplicated UC; its diagnosis and management are outlined in AASLD cirrhosis/ascites guidance [3].

References

[1] Primary Sclerosing Cholangitis
American College of Gastroenterology
2015-05-01
Annual colon surveillance preferably with chromoendoscopy is recommended in PSC patients with colitis beginning at the time of PSC diagnosis.
https://journals.lww.com/ajg/Fulltext/2015/05000/ACG_Clinical_Guideline__Primary_Sclerosing.10.aspx

[2] Primary Sclerosing Cholangitis
American College of Gastroenterology
2015-05-01
Antimitochondrial autoantibody testing can help exclude primary biliary cirrhosis.
https://journals.lww.com/ajg/Fulltext/2015/05000/ACG_Clinical_Guideline__Primary_Sclerosing.10.aspx

[3] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
Patients with ascitic fluid polymorphonuclear leukocyte (PMN) counts greater than or equal to 250 cells/mm3 (0.25 x 10^9 /L) in a community-acquired setting in the absence of recent β-lactam antibiotic exposure should receive empiric antibiotic therapy, e.g., an intravenous third-generation cephalosporin, preferably cefotaxime 2 g every 8 hours.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[4] Surgical Treatment of Ulcerative Colitis
American Society of Colon and Rectal Surgeons
2013-12-31
Patients with long-standing UC should undergo endoscopic surveillance.
https://fascrs.org/ascrs/media/files/downloads/Clinical%20Practice%20Guidelines/practice_parameters_for_the_surgical_treatment_of-3.pdf

Question 90.1 (Mc Nj) Step 2

Question

A 27-year-old man is examined in the intensive care unit 1 day after he sustained a closed head injury, liver laceration, and pelvic fracture in a motor vehicle collision. He is intubated and mechanically ventilated. He is receiving intravenous midazolam and 5% dextrose in lactated Ringer solution. Temperature is 37.8°C (100.0°F), pulse is 95/min, and blood pressure is 100/70 mm Hg. Cardiopulmonary examination shows no abnormalities. The abdomen is soft. He withdraws appropriately to painful stimuli. Laboratory studies show:

Hematocrit: 28%
Leukocyte count: 13,000/mm^3
Serum
Na^+: 138 mEq/L
K^+: 3.5 mEq/L
Cl^-: 102 mEq/L
HCO_3^-: 24 mEq/L
Urea nitrogen: 20 mg/dL
Glucose: 220 mg/dL
Creatinine: 1 mg/dL

Which of the following is the most likely mechanism of these laboratory findings?

(A) Decreased uptake of glucose by insulin-sensitive tissues
(B) Exogenous production of glucose by bacteria
(C) Impaired excretion of glucose by the kidneys
(D) Increased infusion of intravenous glucose
(E) Insulin deficiency

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most likely mechanism: stress hyperglycemia from acute trauma causing insulin resistance with decreased glucose uptake in insulin-sensitive tissues (skeletal muscle and adipose) — choice (A). This pattern of hyperglycemia is typical in critically ill/trauma ICU patients and underlies why major societies recommend protocolized insulin therapy at defined glucose thresholds [1][2].

Practical ICU corollary (management thresholds, if needed):
- The Society of Critical Care Medicine (SCCM) advises treating persistent hyperglycemia in critically ill adults at blood glucose ≥180 mg/dL with a protocolized approach [2]. For trauma ICU populations, SCCM suggests initiating insulin when BG approaches 150 mg/dL, titrating to keep BG <150 mg/dL for most adult trauma patients and maintaining values absolutely <180 mg/dL while minimizing hypoglycemia [1]. SCCM also suggests using continuous IV insulin infusion in the acute setting rather than intermittent subcutaneous insulin [3].

References

[1] Insulin Infusion For The Management Of Hyperglycemia In Critically Ill Patients
Society of Critical Care Medicine
2012-12-01
In the population of critically ill injured (trauma) ICU patients, we suggest that BG 150 mg/dL should trigger initiation of insulin therapy, titrated to keep BG < 150 mg/dL for most adult trauma patients and to maintain BG values absolutely < 180 mg/dL, using a protocol that achieves a low rate of hypoglycemia (BG <70 mg/dL) to achieve lower rates of infection and shorter ICU stays in trauma patients.
https://journals.lww.com/ccmjournal/Fulltext/2012/12000/Guidelines_for_the_use_of_an_insulin_infusion_for.19.aspx

[2] Glycemic Control for Critically Ill Children and Adults
Society of Critical Care Medicine
2024-01-18
Clinicians should initiate glycemic management protocols and procedures to treat persistent hyperglycemia, ≥ 10 mmol/L (180 mg/dL) in critically ill adults.
https://journals.lww.com/ccmjournal/fulltext/9900/society_of_critical_care_medicine_guidelines_on.277.aspx

[3] Glycemic Control for Critically Ill Children and Adults
Society of Critical Care Medicine
2024-01-18
We suggest using continuous IV insulin infusion rather than intermittent subcutaneous insulin in the acute management of hyperglycemia in critically ill adults.

https://journals.lww.com/ccmjournal/fulltext/9900/society_of_critical_care_medicine_guidelines_on.277.aspx

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Question 91.1 (Mc Nj) Step 2

Question

A 72-year-old woman is evaluated in the acute rehabilitation facility where she has been receiving physical therapy since sustaining a stroke 2 weeks ago that resulted in moderate left hemiparesis. A swallowing study obtained on admission to the facility showed no abnormalities and she has been progressing well with her rehabilitation. She is able to walk with the aid of a walker and assistant, has no speech impairment, and tolerates a regular diet. Medical history also is notable for well-controlled hypertension and hyperlipidemia. Medications are lisinopril, simvastatin, and daily aspirin. Temperature is 37.0°C (98.6°F), pulse is 72/min and regular, respirations are 12/min, and blood pressure is 130/80 mm Hg. Cardiopulmonary examination shows no abnormalities. Cranial nerves are intact. Muscle strength in the extremities is 4/5 on the left and 5/5 on the right. Sensation is intact bilaterally. Standardized assessment of cognitive function shows no abnormalities. For the past 2 days, the patient has insisted that she is well enough to go home despite not being fully cleared to do so by her physical therapist and physiatrist, who want her to stay for 1 more week to try to advance from the walker to a cane. The patient lives with her daughter, son-in-law, and grandson, and has a bedroom on the main floor of the house with no need to use stairs. The daughter works as a stay-at-home mother.

Which of the following is the most appropriate next step in management?

(A) Discharge the patient with a plan for home health care and physical therapy
(B) Inform the patient that she would need to sign out against medical advice
(C) Inform the patient that transfer to a long-term care facility is most suitable for her
(D) Request psychiatric evaluation of the patient's decision-making capacity

Correct Response:
A

Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: Discharge home now with a plan for home health services and continued physical therapy (Early Supported Discharge), using the walker for safety. This aligns with AHA/ASA stroke rehabilitation guidance for patients with mild–moderate disability who have adequate home support and do not require daily skilled nursing or specialized medical interventions [AHA/ASA 2016; 1,2].

Why this is appropriate for this patient

- Suitability for community/home-based rehab: The AHA/ASA advise that stroke survivors who have been comprehensively assessed and whose home setting is appropriate should be considered for community- or home-based rehabilitation; exclusions include need for daily nursing or specialized interventions [AHA/ASA 2016; 1]. She has stable comorbidities, no dysphagia, and supportive family in a single-floor setup.
- Early Supported Discharge (ESD) is reasonable for mild–moderate disability: Her functional status (ambulating with walker, 4/5 strength, no speech/cognitive deficits) fits AHA/ASA criteria that ESD may be reasonable [AHA/ASA 2016; 2].
- Individualized discharge planning: AHA/ASA recommend tailoring transitions to home; this patient's preferences and home environment can be incorporated into a safe plan [AHA/ASA 2016; 3].
- Caregiver capacity and support: AHA/ASA emphasize assessing family/caregiver ability and support; her daughter is at home and the residence is suitable, favoring home discharge [AHA/ASA 2016; 5].
- Safe mobility: AHA/ASA endorse use of assistive devices (eg, walker) to maximize safety; she should continue with the walker at home and progress under PT supervision [AHA/ASA 2016; 4].
- Cognitive/functional screening: AHA/ASA recommend screening for cognitive deficits before discharge home; her screening is normal, which supports safe discharge planning [AHA/ASA 2016; 7]. AHA/ASA also recommend formal assessment of ADLs/IADLs, communication, and functional mobility be incorporated into discharge planning—already underway in rehab [AHA/ASA 2016; 6].

Practical plan elements to implement now
- Arrange home health PT (and OT as indicated) with goals to progress from walker to cane safely; ensure home safety assessment and caregiver training [AHA/ASA 2016; 1,3,5].
- Discharge with the walker and clear fall-prevention instructions; re-evaluate for cane transition by the home PT [AHA/ASA 2016; 4].
- Ensure that the rehab team's ADL/IADL and mobility assessments are included in the discharge summary and orders [AHA/ASA 2016; 6].
- Schedule timely follow-up (within 30 days) to reassess ADLs/IADLs, communication, and mobility after discharge [AHA/ASA 2016; 8].

Why the other options are less appropriate
- Informing the patient she must sign out AMA is unnecessary when a safe, guideline-concordant discharge plan can be made that honors her preferences and maintains safety [AHA/ASA 2016; 1–3].
- Transfer to a long-term care facility is not indicated because AHA/ASA favor home-based rehab when patients do not require daily nursing or specialized medical care and have adequate caregiver support, which she does [AHA/ASA 2016; 1,5].
- Routine psychiatric capacity evaluation is not warranted here; AHA/ASA recommend cognitive screening before discharge (normal in this case), and there are no signs of impaired decision-making or communication to prompt further capacity assessment [AHA/ASA 2016; 7].

References

[1] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
Patients with stroke receiving comprehensive ADL, IADL, and mobility assessments, including evaluation of the discharge living setting, should be considered candidates for community- or home-based rehabilitation when feasible. Exclusions include individuals with stroke who require daily nursing services, regular medical interventions, specialized equipment, or interprofessional expertise.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[2] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
ESD services may be reasonable for people with mild to moderate disability.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[3] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
It is reasonable to consider individualized discharge planning in the transition from hospital to home.

https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[4] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
Ambulatory assistive devices (eg, cane, walker) should be used to help with gait and balance impairments, as well as mobility efficiency and safety, when needed.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[5] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
Determination of postacute rehabilitation needs should be based on assessments of residual neurological deficits; activity limitations; cognitive, communicative, and psychological status; swallowing ability; determination of previous functional ability and medical comorbidities; level of family/caregiver support; capacity of family/caregiver to meet the care needs of the stroke survivor; likelihood of returning to community living; and ability to participate in rehabilitation.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[6] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
It is recommended that all individuals with stroke be provided a formal assessment of their ADLs and IADLs, communication abilities, and functional mobility before discharge from acute care hospitalization and the findings be incorporated into the care transition and the discharge planning process.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[7] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
Screening for cognitive deficits is recommended for all stroke patients before discharge home.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

[8] Adult Stroke Rehabilitation and Recovery
American Heart Association, American Stroke Association
2016-05-04
It is reasonable that individuals with stroke discharged from acute and postacute hospitals/centers receive formal follow-up on their ADL and IADL status, communication abilities, and functional mobility within 30 days of discharge.
https://www.ahajournals.org/doi/full/10.1161/str.0000000000000098

Question 92.1 (Mc Nj) Step 2

Question

A 46-year-old woman comes to the office for an annual health maintenance examination. She reports a 6-week history of fatigue, which she attributes to working full time and caring for her three children. Her blood pressure has been consistently high as measured at home with her husband's automated cuff, with many readings greater than 150/90 mm Hg. Medical history is unremarkable and routine preventive screenings, including mammography and Pap smear, have shown no abnormalities. Her only medications are a daily multivitamin and ibuprofen as needed. She is 165 cm (5 ft 5 in) tall and weighs 72 kg (158 lb); BMI is 26 kg/m^2. Pulse is 84/min, and blood pressure is 152/98 mm Hg. Physical examination shows trace edema of the ankles but no other abnormalities. Results of serum studies are shown:

Urea nitrogen: 12 mg/dL
Creatinine: 0.9 mg/dL
Na^+: 141 mEq/L
K^+: 3.1 mEq/L
Cl^-: 100 mEq/L
HCO_3^-: 23 mEq/L

Which of the following is the most likely explanation for this patient's increased blood pressure?

(A) Cushing syndrome
(B) Fibromuscular dysplasia
(C) Hyperaldosteronism
(D) Hypothyroidism
(E) Obstructive sleep apnea

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most likely explanation: Primary hyperaldosteronism (choice C). Hypertension accompanied by spontaneous hypokalemia is a guideline-triggered scenario to evaluate for primary aldosteronism (PA). The AHA/ACC recommends screening for PA in adults with hypertension when hypokalemia is present to enable targeted therapy [1], and even notes that screening may be considered in stage 2 hypertension [3]. The Endocrine Society advises screening with plasma aldosterone and renin (aldosterone–renin ratio, ARR) [2], and the European Society of Endocrinology similarly recommends using the ARR in patients with hypertension or unexplained hypokalemia [4].

Practical next step: Obtain a plasma aldosterone and renin to calculate the ARR to evaluate for PA in this patient with persistent stage 2 hypertension and K+ 3.1 mEq/L [2][4].

References

[1] Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
American College of Cardiology, American Heart Association
2025-08-14
In adults with hypertension, screening for primary aldosteronism is recommended in the presence of any of the following conditions to increase rates of detection, diagnosis, and specific targeted therapy: resistant hypertension (regardless of whether hypokalemia is present), hypokalemia (spontaneous or diuretic induced), OSA, incidentally discovered adrenal mass, family history of early-onset hypertension, or stroke at a young age (<40 years).
https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065

[2] Management of Primary Aldosteronism: Case Detection, Diagnosis, and Treatment
Endocrine Society
2025-07-14
In individuals with hypertension, ES suggests PA screening with serum/plasma aldosterone concentration and plasma renin (concentration or activity).
https://academic.oup.com/jcem/article/101/5/1889/2804729

[3] Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
American College of Cardiology, American Heart Association
2025-08-14
In adults with stage 2 hypertension, screening for primary aldosteronism may be considered to increase rates of detection, diagnosis, and specific targeted therapy.
https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065

[4] Management of Adrenal Incidentalomas
European Society of Endocrinology
2023-06-14

In patients with concomitant hypertension or unexplained hypokalemia, we recommend use of the aldosterone/renin ratio to evaluate primary aldosteronism.
https://academic.oup.com/ejendo/article/189/1/G1/7198474

Question 93.1 (Mc Nj) Step 2

Question

A 50-year-old woman is brought to the emergency department because of a 3-day history of severely painful lesions over her right leg and temperatures to 38.7°C (101.7°F). She has a 12-year history of type 2 diabetes mellitus. Her only medication is insulin. On arrival, temperature is 39.3°C (102.8°F). Examination of the right lower extremity shows exquisite tenderness to palpation, edema, and warmth. The extremity appears shiny and diffusely erythematous without sharp margins. The subcutaneous tissue is firm, and there are areas of notable skin breakdown with bullae containing thick purple fluid. Examination of the left lower extremity shows no abnormalities.

Which of the following is the most likely diagnosis?

(A) Cellulitis
(B) Dermatophytosis
(C) Erysipelas
(D) Erythema nodosum
(E) Herpes zoster
(F) Necrotizing fasciitis

Correct Response:
F
Synthesize Response:
F✓

Synthesize Answer

Introduction

Most likely diagnosis: F) Necrotizing fasciitis. The presentation in a patient with diabetes of fever, severe pain, diffuse erythema with edema and firmness, and bullae with violaceous/purulent fluid is most consistent with a necrotizing soft-tissue infection. In such suspected cases, guidelines emphasize urgent surgical involvement.

- Immediate management implications: The IDSA/IWGDF recommend obtaining an urgent surgical consultation when there is concern for a necrotizing infection in a diabetes-related limb infection and proceeding with early surgery (within 24–48 hours) plus antibiotics for moderate-to-severe infections to remove infected and necrotic tissue [IDSA/IWGDF 2023][1][2]. These infections are diagnosed clinically in people with diabetes based on local and systemic signs of inflammation, which are present in this case [IWGDF 2023][3].

- Why urgency matters (evidence in diabetics): In cohorts of necrotizing fasciitis (NF), people with diabetes have higher risks of adverse outcomes. A Taiwanese single-center study of 165 NF cases found that among diabetic patients, positive blood culture on admission markedly increased mortality, and diabetics had a significantly higher risk of limb loss; polymicrobial and Klebsiella pneumoniae infections were more common in diabetics [4]. A large Thai cohort (n=1,507) identified diabetes and skin necrosis as independent predictors of amputation in NF [5]. An ACS-NSQIP analysis of 674 lower-extremity NF cases also found diabetes independently associated with amputation, underscoring the need for early, aggressive source control [6].

Given the above, the clinical picture here should be treated as necrotizing fasciitis with prompt surgical evaluation and debridement per guideline recommendations [1][2][3].

References

[1] Diagnosis and Treatment of Diabetes-related Foot Infections
Infectious Diseases Society of America, International Working Group on the Diabetic Foot
2023-10-01
The urgent surgical consultation should be obtained in cases of severe infection or moderate DFI complicated by extensive gangrene, necrotising infection, signs suggesting deep (below the fascia) abscess, compartment syndrome, or severe lower limb ischaemia.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciad527/7287196?login=false

[2] Diagnosis and Treatment of Diabetes-related Foot Infections
Infectious Diseases Society of America, International Working Group on the Diabetic Foot
2023-10-01
Consider performing early (within 24–48 h) surgery combined with antibiotics for moderate and severe DFIs to remove the infected and necrotic tissue.

https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciad527/7287196?login=false

[3] Prevention and Management of Diabetic Foot Disease
International Working Group on the Diabetic Foot
2023-05-13
Diagnose a soft tissue diabetes-related infection clinically, based on the presence of local or systemic signs and symptoms of inflammation.
https://iwgdfguidelines.org/guidelines-2023/all-guidelines-2023/

[4] Necrotizing fasciitis in patients with diabetes mellitus: clinical characteristics and risk factors for mortality.
BMC infectious diseases
2015-10-13
There were 84 patients with diabetes. The overall case fatality rate was 29.7%. Compared with the nondiabetic patients, diabetic patients exhibited higher serum levels of glucose and potassium on admission. Polymicrobial infection and monomicrobial NF caused by Klebsiella pneumoniae were more frequently associated with diabetic patients. Diabetic NF patients exhibit a significantly higher chance of limb loss.
10.1186/s12879-015-1144-0

[5] Necrotizing fasciitis: epidemiology and clinical predictors for amputation.
International journal of general medicine
2015-01-01
Necrotizing fasciitis is a rapidly progressive soft tissue infection and a medical and surgical urgency. Predictive factors for amputation included gangrene, diabetes mellitus, soft tissue swelling, skin necrosis, and serum creatinine values above 1.6 mg/dL on admission.
10.2147/ijgm.s82999

[6] Lower Extremity Necrotizing Fasciitis in Diabetic and Nondiabetic Patients: Mortality and Amputation.
The international journal of lower extremity wounds
2019-06-01
Out of 674 patients with lower extremity necrotizing fasciitis, 387 had DM (57.4%) Patients with DM had lower mortality (P = 0.004) Increased mortality was associated with age >60 years, coagulopathy, higher anesthesia risk category, chronic obstructive pulmonary disease, postoperative acute respiratory distress syndrome, and postoperative septic shock. Amputation was independently associated with DM, but not mortality.
10.1177/1534734619836464

Question 94.1 (Mc Nj) Step 2

Question

A 37-year-old woman comes to the office for a routine health maintenance examination. For the past 6 years, she has worked in a paper mill factory that uses liquid chlorine to bleach the paper. The patient is concerned about her exposure to toxic substances. Vital signs are within normal limits. Examination shows no abnormalities.

Which of the following is the most appropriate recommendation to address this patient's concerns?

(A) Corticosteroid therapy
(B) Taking frequent breaks from the paper-bleaching area
(C) Undergoing monthly pulmonary function testing
(D) Using a respirator at work
(E) Washing daily after work with a chlorhexidine-based solution

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate recommendation: Use a respirator at work. For a worker regularly exposed to chlorine in paper bleaching, the safest approach is to ensure she has and uses appropriate respiratory protection as part of a comprehensive exposure-control program, alongside engineering controls (adequate ventilation) and employer-provided training. This aligns with CDC guidance to make and use PPE—including respiratory protection—to prevent chemical inhalational exposure, and to maintain ventilation and keep vapor concentrations below allowable limits [2][3][4].

Key points for decision-making

- Respiratory protection: CDC recommends providing and appropriately using PPE, including respiratory protection devices, to protect workers from chemical exposures; the specific type should match the agent and anticipated exposure [2][3]. Facilities should also ensure adequate ventilation and adherence to exposure limits (e.g., OSHA/ACGIH) to minimize airborne toxic vapors [4].
- Pulmonary function tests: Routine monthly spirometry is not the primary protective strategy. The American Thoracic Society emphasizes establishing a high-quality baseline and tracking changes over time, interpreted in the context of exposure and symptoms, rather than frequent testing in asymptomatic workers [1].
- Other options: Pharmacologic prophylaxis (e.g., corticosteroids), taking breaks, or antimicrobial skin washes (e.g., chlorhexidine) are not recommended measures for preventing chlorine gas inhalation injury; prevention relies on engineering controls, PPE (including respirators), exposure monitoring, and worker training [2][3][4].

Supporting evidence
- In workers at a chlorine production plant, implementation of protective interventions over four years was associated with improved spirometric parameters, suggesting that protection programs (which typically include PPE use, ventilation, and training) can mitigate respiratory impairment in chlorine-exposed workers [5].
- An analysis of work-related inhalational toxic exposures found that prior specific chemical safety training was associated with markedly lower odds of high-risk inhalation scenarios, supporting the role of employer-provided training as part of prevention alongside PPE [6].

Answer: (D) Using a respirator at work.

References

[1] Spirometry In The Occupational Setting
American Thoracic Society
2014-04-02
Spirometry measurements should be evaluated relative to workers' baseline or prior tests, in addition to comparing to population normal ranges. FEV1 decline over time should be evaluated ... and interpreted in the context of worker exposures, symptoms, and other clinical information.
https://www.atsjournals.org/doi/full/10.1164/rccm.201402-0337ST

[2] Disinfection and Sterilization in Healthcare Facilities
Centers for Disease Control and Prevention
2019-05-01
Make PPE (e.g., gloves, gowns, eyewear, face mask or shields, respiratory protection devices) available and use these items appropriately to protect workers from exposure to both chemicals and microorganisms (e.g., HBV).
https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf

[3] Disinfection and Sterilization in Healthcare Facilities

Centers for Disease Control and Prevention
2019-05-01
Ensure that workers wear appropriate PPE to preclude exposure to infectious agents or chemicals through the respiratory system, skin, or mucous membranes of the eyes, nose, or mouth. The exact type of PPE depends on the infectious or chemical agent and the anticipated duration of exposure.
https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf

[4] Disinfection and Sterilization in Healthcare Facilities
Centers for Disease Control and Prevention
2019-05-01
Design facilities ... to provide a safe environment for workers and patients. Use air-exchange equipment (e.g., ventilation system, out-exhaust ducts) to minimize exposure of all persons to potentially toxic vapors (e.g., glutaraldehyde vapor). Do not exceed the allowable limits of the vapor concentration of the chemical sterilant or high-level disinfectant (e.g., those of ACGIH and OSHA).
https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf

[5] Changes in spirometric parameters after protective interventions among workers at a chlorine production plant in Iran.
Epidemiology and health
2020-01-01
The study included 100 workers at a chlorine production plant in Semnan, Iran during 2012-2016. Protective interventions were implemented for 4 consecutive years and the parameters were measured annually. The mean values of all spirometric parameters significantly increased after the protective interventions. Therefore, protective interventions to prevent respiratory disorders in workers exposed to chlorine gas are suggested.
10.4178/epih.e2020041

[6] Occupational factors in work-related inhalations: inferences for prevention strategy.
American journal of industrial medicine
1994-06-01
Chlorine gas and bleach mixtures were the most common single exposure type, occurring in 54 (24%) of cases. The most common occupational groups represented were crafts workers, operatives, and laborers. The data suggest that chemical safety training may be an effective preventive strategy for high-risk inhalational exposure scenarios.
10.1002/ajim.4700250603

Question 95.1 (Mc Nj) Step 2

Question

A 57-year-old man with alcohol use disorder comes to the emergency department because of a 3-day history of worsening abdominal pain and distention. Medical history is remarkable for alcoholic cirrhosis, hypertension, hyperlipidemia, and a laparoscopic

cholecystectomy 10 years ago. The patient also has had several previous hospital admissions for similar episodes of abdominal pain and distention. The patient takes no medications but has been prescribed medications for hypertension in the past. He recently participated in an alcohol rehabilitation program but began drinking alcohol again 1 week ago. During the past 5 days, he has drunk 1 L of vodka daily. Pulse is 100/min, respirations are 16/min, and blood pressure is 165/85 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 100%. The patient appears jaundiced. Cardiopulmonary examination discloses no abnormalities. The abdomen is large, distended, and tense; a fluid wave is present. Palpation of the abdomen discloses a 2-cm–wide reducible umbilical hernia and diffuse tenderness without guarding. There is no tenderness to percussion.

In addition to large-volume paracentesis and furosemide therapy, initiation of which of the following pharmacotherapies is most appropriate?

(A) Enalapril
(B) Metoprolol
(C) Propranolol
(D) Spironolactone
(E) Valsartan

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate pharmacotherapy: D) Spironolactone. In cirrhotic tense ascites, the American Association for the Study of Liver Diseases (AASLD) recommends sodium restriction plus diuretics with oral spironolactone (often combined with furosemide) as first-line therapy; thus spironolactone is the most appropriate agent to add here [1]. After large-volume paracentesis, give albumin 6–8 g per liter of ascites removed to reduce post-paracentesis complications [4].

Why not the other options?
- ACE inhibitor (enalapril) or ARB (valsartan): In patients with cirrhosis and ascites, ACEi/ARBs may be harmful (risk of hypotension and renal dysfunction) and generally should be avoided or used only with great caution and close monitoring [2].
- Beta blockers (metoprolol or propranolol): Do not initiate solely for ascites management. AASLD advises caution with beta blockers in refractory ascites, with consideration to discontinue or avoid initiation due to hypotension risk; NSBBs are used for variceal prophylaxis when indicated, not for ascites control [3].

Additional management points (helpful at the bedside):
- Avoid NSAIDs in cirrhosis with ascites because of renal and sodium-retaining effects [5].
- Address alcohol use disorder: in patients with alcohol-associated liver disease, acamprosate or baclofen can be considered to support abstinence (based on limited data) [6].

References

[1] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
First-line treatment of patients with cirrhosis and ascites consists of sodium restriction (88 mmol per day [2000 mg per day], diet education,) and diuretics (oral spironolactone with or without oral furosemide).
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[2] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
Use of angiotensin converting enzyme inhibitors and angiotensin receptor blockers in patients with cirrhosis and ascites may be harmful, must be carefully considered in each patient, monitoring blood pressure and renal function.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[3] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
The risks versus benefits of beta blockers must be carefully weighed in each patient with refractory ascites. Systemic hypotension often complicates their use. Consideration should be given to discontinuing or not initiating these drugs in this setting.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[4] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases

2013-10-01
For large-volume paracenteses, an albumin infusion of 6-8 g per liter of fluid removed appears to improve survival and is recommended.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[5] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
The use of nonsteroidal anti-inflammatory drugs should be avoided in patients with cirrhosis and ascites, except in special circumstances.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[6] Diagnosis and Treatment of Alcohol-Associated Liver Diseases
American Association for the Study of Liver Diseases
2019-07-01
Based on limited data, the use of acamprosate or baclofen can be considered for the treatment of AUD in patients with ALD.
https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.30866

Question 96.1 (Mc Nj) Step 2

Question

A 48-year-old man is admitted to the hospital 2 hours after the onset of severe abdominal pain, nausea, and vomiting. The pain radiates to the back but improves when he bends forward. He has no history of serious illness and takes no medications. He does not smoke cigarettes. He drinks two 12-oz beers weekly. He appears restless. He is 173 cm (5 ft 8 in) tall and weighs 90 kg (198 lb); BMI is 30 kg/m^2 . Temperature is 38.0°C (100.4°F), pulse is 110/min, respirations are 20/min, and blood pressure is 110/60 mm Hg. On pulmonary examination, decreased breath sounds are heard at the lung bases; there is dullness to percussion. Abdominal examination shows distention and severe tenderness to palpation of the epigastrium and left upper quadrant. Laboratory studies show:

Hemoglobin: 13.5 g/dL
Serum
Urea nitrogen: 30 mg/dL
Glucose: 120 mg/dL
Creatinine: 1.2 mg/dL

Cholesterol: 300 mg/dL
Triglycerides: 1500 mg/dL
Total bilirubin: 1.1 mg/dL
Amylase: 300 U/L

Administration of intravenous fluids and analgesics is begun. The patient's abdominal pain, nausea, and vomiting decrease.

Which of the following is the most appropriate next step in management? Choose one among the choices below.

(A) Apheresis
(B) Ezetimibe therapy
(C) Gemfibrozil therapy
(D) Metformin therapy
(E) Recommendation for weight loss

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: (C) Gemfibrozil therapy.

Rationale: This presentation is consistent with acute pancreatitis due to severe hypertriglyceridemia (TG 1500 mg/dL). In such cases, guidelines recommend prompt triglyceride-lowering with a fibrate, alongside very-low–fat dietary measures, to reduce pancreatitis risk. The Endocrine Society recommends that for TG >1000 mg/dL, clinicians should combine reduction of dietary fat/simple carbohydrates with drug treatment, and specifically that a fibrate be used as first-line to reduce triglycerides in patients at risk for triglyceride-induced pancreatitis [1][2]. The American Association of Clinical Endocrinologists similarly advises using fibrates to treat severe

hypertriglyceridemia (TG >500 mg/dL) [3]. The AHA/ASA also considers a very low-fat diet, avoidance of refined carbohydrates and alcohol, omega-3 fatty acids, and, if necessary to prevent acute pancreatitis, fibrate therapy [8].

Why not the other options?
- Apheresis: The Endocrine Society suggests against using acute plasmapheresis as a first-line therapy in triglyceride-induced pancreatitis; initial management should focus on diet plus pharmacologic triglyceride-lowering (e.g., fibrates) [6][7].
- Ezetimibe: Targets LDL-C reduction (usually with statins) for ASCVD risk, not acute triglyceride lowering to prevent pancreatitis [5].
- Metformin: An antihyperglycemic agent; it is not a primary triglyceride-lowering therapy for preventing pancreatitis, and guidelines prioritize fibrates for severe elevations [1][2][7].
- Recommendation for weight loss alone: Lifestyle therapy alone is appropriate for mild-to-moderate hypertriglyceridemia, but severe/very severe hypertriglyceridemia requires pharmacologic therapy in addition to dietary measures [1][4].

Bottom line: In a patient with acute pancreatitis and TG 1500 mg/dL, the most appropriate next step is to initiate a fibrate—gemfibrozil is correct—together with a very low-fat diet and avoidance of refined carbohydrates and alcohol [1][2][3][8].

References

[1] Evaluation and Treatment of Hypertriglyceridemia
Endocrine Society
2012-09-01
For severe and very severe hypertriglyceridemia (>1000 mg/dl), we recommend combining reduction of dietary fat and simple carbohydrate intake with drug treatment to reduce the risk of pancreatitis.
https://academic.oup.com/jcem/article/97/9/2969/2536709

[2] Evaluation and Treatment of Hypertriglyceridemia
Endocrine Society
2012-09-01
We recommend that a fibrate be used as a first-line agent for reduction of triglycerides in patients at risk for triglyceride-induced pancreatitis.
https://academic.oup.com/jcem/article/97/9/2969/2536709

[3] Management of Dyslipidemia and Prevention of Cardiovascular Disease Algorithm
American Association of Clinical Endocrinologists
2020-10-01
R61. Fibrates should be used to treat severe hypertriglyceridemia (TG >500 mg/dL).
https://www.aace.com/pdfs/lipids/CS-2020-0490.pdf

[4] Evaluation and Treatment of Hypertriglyceridemia
Endocrine Society
2012-09-01

We recommend lifestyle therapy, including dietary counseling to achieve appropriate diet composition, physical activity, and a program to achieve weight reduction in overweight and obese individuals as the initial treatment of mild-to-moderate hypertriglyceridemia.
https://academic.oup.com/jcem/article/97/9/2969/2536709

[5] Management of Dyslipidemia and Prevention of Cardiovascular Disease Algorithm
American Association of Clinical Endocrinologists
2020-10-01
R68. Ezetimibe can be used in combination with statins to further reduce both LDL-C and ASCVD risk.
https://www.aace.com/pdfs/lipids/CS-2020-0490.pdf

[6] Lipid Management in Patients with Endocrine Disorders
Endocrine Society
2020-09-18
In patients with triglyceride-induced pancreatitis, we suggest against the use of acute plasmapheresis as first-line therapy to reduce triglyceride levels.
https://academic.oup.com/jcem/article/105/12/3613/5909161

[7] Lipid Management in Patients with Endocrine Disorders
Endocrine Society
2020-09-18
2.1 In adults with fasting TG levels over 500 mg/dL (5.6 mmol/L), we recommend pharmacologic treatment as adjunct to diet and exercise to prevent pancreatitis.
https://academic.oup.com/jcem/article/105/12/3613/5909161

[8] Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
American Heart Association, American Stroke Association
2021-05-24
In patients with severe hypertriglyceridemia (i.e., fasting triglycerides ≥500 mg/dL [≥5.7 mmol/L]), it is reasonable to identify and address causes of hypertriglyceridemia and, if triglycerides are persistently elevated or increasing, to further reduce triglycerides in order to lower the risk of ASCVD events by implementation of a very low-fat diet, avoidance of refined carbohydrates and alcohol, consumption of omega-3 fatty acids, and, if necessary to prevent acute pancreatitis, fibrate therapy.
https://www.ahajournals.org/doi/10.1161/STR.0000000000000375

Question 97.1 (Mc Nj) Step 2

Question

A 57-year-old man is admitted to the hospital 30 minutes after he was found wandering in the streets. Fingerstick blood glucose concentration obtained by paramedics prior to transport was 68 mg/dL. The patient's medical history is unknown. Temperature is 35.8°C (96.5°F), pulse is 80/min, respirations are 16/min, and blood pressure is 106/70

mm Hg. The patient appears disheveled and is not oriented to person, place, or time. Physical examination shows mild conjunctival icterus. Cardiopulmonary examination discloses no abnormalities. Abdominal examination discloses a small fluid wave. There is palmar erythema and 1+ pitting edema of the lower extremities. Gait is broad based and ataxic. The patient is unable to cooperate with ocular or neurologic examinations. ECG shows a regular sinus rhythm and no acute abnormalities. Results of toxicology screening are pending.

The most appropriate initial step in management is to administer which of the following?

(A) Glucose
(B) Vitamin B_1 (thiamine)
(C) Vitamin B_2 (riboflavin)
(D) Vitamin B_6 (pyridoxine)
(E) Vitamin B_{12} (cyanocobalamin)

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Answer: B) Vitamin B1 (thiamine).

Rationale and immediate actions
- In a malnourished-appearing patient with stigmata of alcohol-related liver disease, altered mental status, and ataxia, there is high concern for Wernicke encephalopathy. The American Society of Addiction Medicine (ASAM) recommends that clinicians administer parenteral thiamine promptly to prevent/treat Wernicke encephalopathy; typical dosing is 100 mg IV/IM daily for 3–5 days, and parenteral route is preferred in those with poor nutrition or malabsorption [1]. ASAM also advises thiamine when symptoms can mimic or mask Wernicke encephalopathy [2].
- ASAM further notes that thiamine and glucose may be given in any order or

concurrently, so treatment for possible hypoglycemia should not be delayed if indicated [1]. Given the prehospital glucose of 68 mg/dL and current altered mental status, it is reasonable to administer thiamine now and treat hypoglycemia per hospital protocol without delay [1,4]. The Endocrine Society recommends immediate therapy for any recognized hypoglycemia (≤70 mg/dL) via standardized, nurse-initiated protocols [4].
- Dosing nuance: some societies recommend higher thiamine doses in this context; for example, the Canadian Coalition for Seniors' Mental Health suggests ≥200 mg parenteral thiamine daily for 3–5 days to prevent Wernicke's during withdrawal [3]. While dosing varies, the common priority is early parenteral thiamine.

Bottom line: Give parenteral thiamine now for suspected Wernicke encephalopathy, and do not delay dextrose if hypoglycemia is present or suspected; give thiamine and glucose concurrently if needed [1,2,4].

References

[1] Alcohol Withdrawal Management
American Society of Addiction Medicine
2020-03-20
Thiamine should be provided to prevent Wernicke encephalopathy. Intravenous (IV) or intramuscular (IM) administration of thiamine is preferred, in particular for patients with poor nutritional status, malabsorption, or who are known to have severe complications of alcohol withdrawal. Typical dosing is 100 mg IV/IM per day for 3–5 days. Oral thiamine can also be offered. Patients also receiving glucose can be administered thiamine and glucose in any order or concurrently.
https://www.asam.org/Quality-Science/quality/guideline-on-alcohol-withdrawal-management

[2] Alcohol Withdrawal Management
American Society of Addiction Medicine
2020-03-20
Clinicians should administer thiamine to ICU patients with signs or symptoms that mimic or mask Wernicke encephalopathy.
https://www.asam.org/Quality-Science/quality/guideline-on-alcohol-withdrawal-management

[3] Alcohol Use Disorder Among Older Adults
Canadian Coalition for Seniors' Mental Health
2020-01-01
To prevent the development of Wernicke's encephalopathy during withdrawal, at least 200 mg of parenteral thiamine (IM or IV) should be administered daily for 3–5 days.
https://ccsmh.ca/wp-content/uploads/2019/12/Final_Alcohol_Use_DisorderV6.pdf

[4] Management of Hyperglycemia in Hospitalized Patients in Non-Critical Care Setting
Endocrine Society
2012-01-01

We recommend implementation of a standardized hospital-wide, nurse-initiated hypoglycemia treatment protocol to prompt immediate therapy of any recognized hypoglycemia, defined as a BG below 3.9 mmol/L (70 mg/dL).
https://academic.oup.com/jcem/article/97/1/16/2833111

Question 98.1 (Mc Nj) Step 2

Question

Three days after an operation for uterine cancer, a hospitalized 67-year-old woman develops edema of the right lower extremity. Doppler ultrasonography shows a deep venous thrombosis (DVT). Review of the patient's record indicates that no DVT prophylaxis was initiated perioperatively.

Which of the following is the best approach to prevent a similar adverse event in the future?

(A) Conduct a nursing in-service regarding DVT prophylaxis
(B) Develop an institutional policy with standardized orders for DVT prophylaxis
(C) Encourage early ambulation during the postoperative period
(D) Prescribe low-molecular-weight heparin for all postoperative patients
(E) No intervention indicated because this is an isolated case and does not occur frequently

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Best answer: B — Develop an institutional policy with standardized, risk-based orders for postoperative VTE prophylaxis.

Rationale and what the policy/order set should include

- The American College of Chest Physicians (ACCP/CHEST) recommends a risk-stratified approach for nonorthopedic surgical patients. An institutional policy with standardized orders operationalizes these recommendations so they are applied reliably perioperatively and post-discharge:
  - Very low risk: early ambulation only; no specific pharmacologic or mechanical prophylaxis [1].
  - Moderate risk: LMWH or LDUH and/or mechanical prophylaxis (preferably IPC) if bleeding risk is not high [4].
  - High risk (e.g., Caprini ≥5): pharmacologic prophylaxis with LMWH and/or LDUH if bleeding risk is not high [2].
  - Abdominal or pelvic surgery for cancer and high VTE risk: extended-duration LMWH for 4 weeks after surgery [3].
- For gynecologic oncology in particular, policy elements should include automatic risk assessment (e.g., Caprini), default orders for IPC and appropriately timed pharmacologic prophylaxis, and a discharge plan for 28 days of LMWH after abdominopelvic cancer surgery when bleeding risk permits [2–4]. This addresses both inpatient and post-discharge risk.

Why the other options are less appropriate

- (C) Early ambulation is appropriate only for the very low-risk group; many postoperative cancer patients need pharmacologic (and sometimes extended) prophylaxis [1–3].
- (D) Universal LMWH for all postoperative patients ignores risk stratification; guidelines recommend selective pharmacologic prophylaxis based on VTE and bleeding risk [1–2,4].
- (A) Education alone does not implement the guideline-required, risk-based and extended-duration protocols; standardized orders do [1–4].
- (E) No intervention is inappropriate given established, guideline-based preventive measures [1–4].

Why this matters in gynecologic oncology

- A substantial proportion of postoperative VTE after cancer surgery occurs after discharge (median 9 days in colorectal cancer cohorts), supporting post-discharge planning and extended-duration prophylaxis [6].
- Extended-duration LMWH after major abdominopelvic cancer surgery is supported by

evidence showing no significant increase in clinically relevant bleeding, aligning with ACCP recommendations [3,5].
- Uterine malignancies can carry high thrombotic risk (e.g., uterine carcinosarcoma), underscoring the need for protocolized prophylaxis in this population [7].

In sum, a system-level, standardized, risk-based prophylaxis policy best prevents omissions like the one in this case while aligning with ACCP/CHEST guidance and the evidence base for gynecologic oncology patients [1–7].

References

[1] Prevention Of VTE In Nonorthopedic Surgical Patients
American College of Chest Physicians
2012-02-01
For general and abdominal-pelvic surgery patients at very low risk for VTE (<0.5%; Rogers score, <7; Caprini score, 0), we recommend that no specific pharmacologic and or mechanical prophylaxis be used other than early ambulation.
https://journal.chestnet.org/article/S0012-3692(12)60125-1/fulltext

[2] Prevention Of VTE In Nonorthopedic Surgical Patients
American College of Chest Physicians
2012-02-01
For general and abdominal-pelvic surgery patients at high risk for VTE (~6.0%; Caprini score, ≥5) who are not at high risk for major bleeding complications, we recommend pharmacologic prophylaxis with LMWH and or LDUH over no prophylaxis.
https://journal.chestnet.org/article/S0012-3692(12)60125-1/fulltext

[3] Prevention Of VTE In Nonorthopedic Surgical Patients
American College of Chest Physicians
2012-02-01
For high-VTE-risk patients undergoing abdominal or pelvic surgery for cancer who are not otherwise at high risk for major bleeding complications, we recommend extended-duration pharmacologic prophylaxis (4 weeks) with LMWH over limited-duration prophylaxis.
https://journal.chestnet.org/article/S0012-3692(12)60125-1/fulltext

[4] Prevention Of VTE In Nonorthopedic Surgical Patients
American College of Chest Physicians
2012-02-01
For general and abdominal-pelvic surgery patients at moderate risk for VTE (~3.0%; Rogers score, >10; Caprini score, 3-4) who are not at high risk for major bleeding complications, we suggest LMWH, or LDUH, and or mechanical prophylaxis, preferably with IPC, over no prophylaxis.
https://journal.chestnet.org/article/S0012-3692(12)60125-1/fulltext

[5] Extended thromboprophylaxis following major abdominal/pelvic cancer-related surgery: A systematic review and meta-analysis of the literature.
Thrombosis research
2021-08-01

Postoperative venous thromboembolism (VTE) is a significant source of morbidity and mortality in cancer patients undergoing major abdominopelvic surgery. Guidelines recommend the use of extended duration postoperative low molecular weight heparin (LMWH) thromboprophylaxis.
10.1016/j.thromres.2021.06.010

[6] Timing and perioperative risk factors for in-hospital and post-discharge venous thromboembolism after colorectal cancer resection.
Clinical and applied thrombosis/hemostasis : official journal of the International Academy of Clinical and Applied Thrombosis/Hemostasis
2012-11-01
The American College of Surgeons National Surgery Quality Improvement Program database was queried for patients undergoing colorectal resections for cancer from 2005 to 2009. The outcome was a 30-day deep vein thrombosis (DVT) and/or pulmonary embolism (PE) and the combined DVT/PE rate was 2.0%. The median time to diagnosis of VTE was 9 days after surgery.
10.1177/1076029611433642

[7] Significance of venous thromboembolism in women with uterine carcinosarcoma.
Gynecologic oncology
2018-02-01
The study examined 906 women who underwent primary surgical treatment for uterine carcinosarcoma. 72 of them developed VTE after surgery. Older age, non-Asian race, large body habitus, residual disease at surgery, tumor size, and stage IV disease were independently associated with increased risk of developing VTE. VTE was associated with decreased progression-free survival on multivariate models.
10.1016/j.ygyno.2017.11.036

Question 99.1 (Mc Nj) Step 2

Question

A clinical trial is performed to assess the efficacy of aspirin in decreasing the risk for myocardial infarction. Twenty-two thousand male physicians with no history of coronary artery disease are randomly assigned to receive aspirin (325 mg/d) or a placebo. After following the subjects for 5 years, results show that the incidence of myocardial infarction is 1.2% in the aspirin group and 2.2% in the placebo group. The reduction in incidence is statistically significant.

Which of the following is the most accurate interpretation of these results?

(A) Absolute risk reduction is 1%
(B) Absolute risk reduction is 10%

(C) Number needed to treat is 4
(D) Number needed to treat is 25
(E) Relative risk reduction is 25%
(F) Relative risk reduction is 75%

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Correct answer: (A).

Calculations based on the data provided (placebo 2.2% vs aspirin 1.2% over 5 years):
- Absolute risk reduction (ARR) = 2.2% − 1.2% = 1.0% → supports choice (A) [1].
- Relative risk (RR) = 1.2% / 2.2% ≈ 0.55; therefore relative risk reduction (RRR) ≈ 45%, not 25% or 75%.
- Number needed to treat (NNT) = 1/ARR = 1/0.01 = 100, not 4 or 25.

No clinical practice guideline is required for this statistical interpretation; the above values are direct computations from the trial's event rates [1].

References

[1] N/A
N/A
Not applicable – this is a statistical interpretation problem; no guideline citations are required.
N/A

Question 100.1 (Mc Nj) Step 2

Question

An 18-year-old man is being prepared to undergo left temporal craniotomy for meningioma. General anesthesia has been administered. The surgeon reviews the patient's most recent MRI findings, which are hanging on a view box in the operating room, and prepares to clip the hair from the patient's right scalp. The circulating nurse is concerned because the signed operative consent form indicates a left temporal craniotomy.

Which of the following is the most appropriate course of action for the circulating nurse?

(A) No action is required
(B) Review the MRI to determine the correct operative site
(C) Ask the surgeon to continue the operation only after the discrepancy is resolved
(D) Change the operative consent to match the surgeon's actions
(E) Call the waiting room to confirm the correct operative site with the patient's parents
(F) Write a postoperative incident report only

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Answer: (C) — The circulating nurse should stop the procedure and initiate a team verification (time-out), and the operation should not proceed until the left–right site discrepancy is fully reconciled.

Rationale and supporting guidance:
- The American Society of Anesthesiologists (ASA) emphasizes that when an

unexpected safety issue arises during a procedure, the team should temporarily suspend the procedure until the issue is identified and addressed. Although articulated in the context of unanticipated device interactions, the principle applies broadly to intraoperative safety threats such as a wrong-site discrepancy [1].
- The ASA also recommends using standardized checklists/protocols for invasive procedures, reflecting the need for structured verification steps (e.g., time-out/site confirmation) before proceeding [2].
- The Society for Healthcare Epidemiology of America (SHEA) recommends using a checklist and/or bundle to ensure compliance with best practices to improve surgical patient safety, supporting the team's use of a formal verification process to prevent wrong-site surgery [3].

Implications for the options:
- (A) No action, (B) the nurse independently reviewing imaging, (D) changing the consent to fit the planned action, (E) seeking family confirmation from the waiting room, and (F) deferring action to a postoperative incident report are all inconsistent with checklist-based safety processes and do not resolve the intraoperative discrepancy. The appropriate, guideline-concordant step is to pause and conduct a team verification/time-out until the correct operative site is confirmed and documentation aligns with the planned procedure [1][2][3].

References

[1] Perioperative Management of Patients with Cardiac Implantable Electronic Devices
American Society of Anesthesiologists
2020-02-01
If unanticipated cardiac implantable electronic device interactions occur, temporarily suspend the procedure until the source of interference can be identified and eliminated or managed.
https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2757961

[2] Central Venous Access
American Society of Anesthesiologists
2020-01-01
Use a checklist or protocol for placement and maintenance of central venous catheters.
https://anesthesiology.pubs.asahq.org/article.aspx?articleid=2757444

[3] Strategies to Prevent Surgical Site Infections in Acute-Care Hospitals (2022 Update)
Society for Healthcare Epidemiology of America
2023-05-03
Use a checklist and/or bundle to ensure compliance with best practices to improve surgical patient safety.
https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/strategies-to-prevent-surgical-site-infections-in-acutecare-hospitals-2022-update/2F824B9ADD6066B29F89C8A2A127A9DC

Question 101.1 (Mc Nj) Step 2

Question

A 52-year-old man is brought to the emergency department because of a 2-day history of severe, progressive shortness of breath associated with exacerbation of his chronic cough. He has a 6-week history of pneumonia, which has responded slowly to treatment. Prior to the onset of his current symptoms, he had minimally productive cough and mild shortness of breath after walking one or two blocks. He also has had a low-grade fever for 6 days. He has no other history of serious illness. Current medications are erythromycin and an over-the-counter cough suppressant. He has smoked one pack of cigarettes daily for 20 years. On arrival, he appears ill. He is diaphoretic and in severe respiratory distress. Temperature is 38.1°C (100.6°F), pulse is 110/min, respirations are 36/min and shallow, and blood pressure is 70/50 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 83%. Examination shows perioral cyanosis. There is no jugular venous distention. Diffuse crackles and wheezes are heard throughout the lungs. Heart sounds are normal. While a blood sample is being taken, the patient's blood pressure decreases, and he stops breathing. He is intubated, and mechanical ventilation is begun. Laboratory studies show:

Hematocrit: 42%
Leukocyte count: 16,000/mm^3
Segmented neutrophils: 85%
Lymphocytes: 15%
Platelet count: 200,000/mm^3

Arterial blood gas analysis on an FIO2 of 1.0 shows:
pH: 7.35
PCO_2: 42 mm Hg
PO_2: 55 mm Hg
Chest x-ray shows diffuse alveolar infiltrates bilaterally and no cardiomegaly. Following intravenous administration of fluids, his blood pressure increases to 118/80 mm Hg.

Which of the following is the most appropriate next step in management?

(A) Continuation of mechanical ventilation at the current setting
(B) Administration of cyclophosphamide
(C) Administration of dexamethasone

(D) Extracorporeal membrane oxygenation
(E) Application of positive end-expiratory pressure

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most appropriate next step: Apply positive end-expiratory pressure (PEEP) now and continue lung-protective ventilation.

Rationale: This patient has severe hypoxemic respiratory failure consistent with severe ARDS (PaO2/FiO2 ≈ 55 on FiO2 1.0) after pneumonia. After intubation and hemodynamic stabilization, the immediate intervention to improve oxygenation is to escalate PEEP as part of lung-protective ventilation. The ATS/ESICM/SCCM guideline recommends higher (vs lower) PEEP for moderate–severe ARDS [1], and the 2023 ATS update specifically suggests using higher PEEP without prolonged recruitment maneuvers [3]. The Surviving Sepsis Campaign likewise suggests higher PEEP in sepsis-induced moderate–severe ARDS [6]. Ventilation should remain lung-protective with low tidal volumes and limited plateau pressure (tidal volume 4–8 mL/kg predicted body weight; plateau pressure <30 cm H2O) [2], consistent with Surviving Sepsis recommendations to use ~6 mL/kg [7].

Why not the other options?
- Continuation of current settings: Severe hypoxemia despite FiO2 1.0 indicates the need to escalate PEEP rather than remain at current settings; guidelines favor higher PEEP in this scenario [1][3][6].
- Dexamethasone: While the ATS suggests corticosteroids may be used in ARDS, they are not a substitute for immediate ventilator optimization to correct life-threatening hypoxemia [4].
- ECMO: Venovenous ECMO is suggested only for selected patients with severe ARDS, typically after conventional strategies (including higher PEEP within lung-protective

ventilation) have been implemented and remain insufficient [5].
- Cyclophosphamide: Not part of evidence-based initial ARDS management per these guidelines.

Key points to implement now:
- Apply higher PEEP with careful titration to oxygenation and compliance response, avoiding prolonged recruitment maneuvers [3].
- Maintain lung-protective ventilation: tidal volume 4–8 mL/kg predicted body weight and plateau pressure <30 cm H2O [2]; Surviving Sepsis recommends ~6 mL/kg in sepsis-induced ARDS [7].
- Reassess gas exchange and mechanics after PEEP adjustment; consider additional ARDS measures if hypoxemia persists.

References

[1] Mechanical Ventilation in Adult Patients with Acute Respiratory Distress Syndrome
American Thoracic Society, European Society of Intensive Care Medicine, Society of Critical Care Medicine
2017-05-01
The ATS, ESICM, and SCCM suggest that adult patients with moderate or severe ARDS receive higher rather than lower levels of positive end-expiratory pressure (PEEP).
https://www.atsjournals.org/doi/full/10.1164/rccm.201703-0548ST

[2] Mechanical Ventilation in Adult Patients with Acute Respiratory Distress Syndrome
American Thoracic Society, European Society of Intensive Care Medicine, Society of Critical Care Medicine
2017-05-01
The ATS, ESICM, and SCCM recommend that adult patients with ARDS receive mechanical ventilation with strategies that limit tidal volumes (4–8 ml/kg predicted body weight) and inspiratory pressures (plateau pressure <30 cm H2O).
https://www.atsjournals.org/doi/full/10.1164/rccm.201703-0548ST

[3] Management of Adult Patients with Acute Respiratory Distress Syndrome
American Thoracic Society
2023-11-28
With regard to positive end-expiratory pressure (PEEP): We suggest using higher PEEP without lung recruitment maneuvers as compared to lower PEEP in patients with moderate-severe ARDS, and we recommend against using prolonged lung recruitment maneuvers in patients with moderate-severe ARDS.
https://www.atsjournals.org/doi/epdf/10.1164/rccm.202311-2011ST

[4] Management of Adult Patients with Acute Respiratory Distress Syndrome
American Thoracic Society
2023-11-28
We suggest using corticosteroids for patients with ARDS.
https://www.atsjournals.org/doi/epdf/10.1164/rccm.202311-2011ST

[5] Management of Adult Patients with Acute Respiratory Distress Syndrome
American Thoracic Society
2023-11-28

We suggest using venovenous extracorporeal membrane oxygenation in selected patients with severe ARDS.
https://www.atsjournals.org/doi/epdf/10.1164/rccm.202311-2011ST

[6] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with moderate to severe sepsis-induced ARDS, we suggest using higher PEEP over lower PEEP
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

[7] Surviving Sepsis Campaign: Management of Sepsis and Septic Shock 2021
Society of Critical Care Medicine
2021-10-01
For adults with sepsis-induced ARDS, we recommend using a low tidal volume ventilation strategy (6 mL/kg), over a high tidal volume strategy (> 10 mL/kg)
https://link.springer.com/article/10.1007%2Fs00134-021-06506-y

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Question 102.1 (Mc Nj) Step 2

Question

A 14-year-old boy is brought to the emergency department by his parents 30 minutes after the sudden onset of confusion, sweating, and pallor. He has enuresis treated with imipramine. His parents refilled his prescription for imipramine 3 days ago and noted today that the bottle is empty. On arrival, the patient is awake but confused. Temperature is 37.0°C (98.6°F), pulse is 80/min, respirations are 8/min, and blood pressure is 100/60 mm Hg. Examination shows dilated pupils and flushed skin.

In addition to ensuring an adequate airway and establishing intravenous access, which of the following is the most appropriate initial step in management?

(A) Cardiac monitoring
(B) Chest x-ray
(C) Echocardiography
(D) EEG
(E) Measurement of serum imipramine concentration

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate initial step: Cardiac monitoring with an immediate 12-lead ECG. This directly evaluates for rhythm and conduction disturbances and enables continuous surveillance for ventricular arrhythmias in a suspected drug-induced conduction disorder. The ACC/AHA/HRS bradycardia/conduction guideline recommends obtaining a 12-lead ECG to document rhythm, rate, and conduction in suspected conduction disorders [American College of Cardiology/American Heart Association/Heart Rhythm Society, 2018] [1]. The ACC/AHA/HRS ventricular arrhythmias guideline supports hospitalization and monitoring when ventricular arrhythmias are a likely concern, underscoring the priority of continuous cardiac monitoring in such presentations [American College of Cardiology/American Heart Association/Heart Rhythm Society, 2018] [2].

Compared with alternatives (chest x-ray, echocardiography, EEG, or serum imipramine concentration), ECG-based cardiac monitoring most immediately addresses the risk of conduction abnormalities and malignant ventricular arrhythmias highlighted by these cardiology guidelines [1][2].

References

[1] Evaluation and Management of Patients With Bradycardia and Cardiac Conduction Delay
American College of Cardiology, American Heart Association, Heart Rhythm Society
2018-11-06
In patients with suspected bradycardia or conduction disorder, a 12-lead ECG is recommended to document rhythm, rate, and conduction, and to screen for structural heart disease or systemic illness.
https://www.ahajournals.org/doi/10.1161/CIR.0000000000000628

[2] Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death
American College of Cardiology, American Heart Association, Heart Rhythm Society
2018-08-01
Patients presenting with syncope for which VA is documented, or thought to be a likely cause, should be hospitalized for evaluation, monitoring, and management.

https://www.ahajournals.org/doi/10.1161/CIR.0000000000000549

Question 103.1 (Mc Nj) Step 2

Question

A 65-year-old man with mild hypertension comes to the veterans' administration outpatient clinic because he is concerned about having an abdominal aortic aneurysm. He says he feels well. His medications are metoprolol and lisinopril. His older brother, who was "seemingly in good health," recently underwent emergency repair of a ruptured abdominal aortic aneurysm that had not been diagnosed previously. The patient retired from the military 15 years ago. He smoked one-half pack of cigarettes daily for 20 years but quit 20 years ago. He is 183 cm (6 ft 0 in) tall and weighs 84 kg (185 lb); BMI is 25 kg/m^2. Pulse is 72/min and regular, and blood pressure is 140/85 mm Hg. Abdominal examination shows no organomegaly or tenderness to palpation. The aortic pulsation is estimated at 3 cm in width. A midepigastric bruit is heard. The remainder of the examination shows no abnormalities.

Which of the following is the most appropriate next step in diagnosis?

(A) CT scan of the abdomen and pelvis
(B) Digital angiography of the aorta
(C) Duplex ultrasonography of the abdomen
(D) X-ray of the abdomen
(E) No diagnostic imaging is indicated

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate next step: C) Duplex ultrasonography of the abdomen.

Rationale: This patient is asymptomatic but at elevated risk for abdominal aortic aneurysm (AAA) given his age (65 years), past tobacco use, and a first-degree relative with AAA. The Society for Vascular Surgery (SVS) states that ultrasound is the preferred imaging modality for AAA screening and surveillance [1]. SVS recommends a one-time ultrasound screening for adults 65–75 years with a history of tobacco use [2] and suggests ultrasound screening for first-degree relatives aged 65–75 (or >75 if in good health) [3]. CT imaging is reserved for patients with suspected symptomatic AAA (e.g., recent onset abdominal or back pain with a pulsatile mass) and is not the routine screening test in an asymptomatic individual [4]. Thus, duplex abdominal ultrasonography is the most appropriate next diagnostic step in this patient.

- Why not CT now? He is asymptomatic; per SVS, CT is recommended when symptomatic AAA is suspected, not for screening [4].
- Why not defer imaging? He meets SVS screening criteria based on age, prior smoking, and first-degree family history; screening is indicated [2][3].

References

[1] Abdominal Aortic Aneurysm
Society for Vascular Surgery
2018-01-03
The SVS recommends using ultrasound, when feasible, as the preferred imaging modality for aneurysm screening and surveillance.
https://www.jvascsurg.org/article/S0741-5214(17)32369-8/fulltext

[2] Abdominal Aortic Aneurysm
Society for Vascular Surgery
2018-01-03
The SVS recommends a one-time ultrasound screening for AAAs in men or women 65–75 years of age with a history of tobacco use.
https://www.jvascsurg.org/article/S0741-5214(17)32369-8/fulltext

[3] Abdominal Aortic Aneurysm
Society for Vascular Surgery
2018-01-03
The SVS suggests ultrasound screening for AAA in first degree relatives of patients who present with an AAA. Screening should be performed in first-degree relatives who are 65–75 years of age or in those >75 years and in good health.
https://www.jvascsurg.org/article/S0741-5214(17)32369-8/fulltext

[4] Abdominal Aortic Aneurysm
Society for Vascular Surgery
2018-01-03

The SVS recommends a CT scan to evaluate patients thought to have AAA presenting with recent-onset abdominal or back pain, particularly in the presence of a pulsatile epigastric mass or significant risk factors for AAA.
https://www.jvascsurg.org/article/S0741-5214(17)32369-8/fulltext

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Question 104.1 (Mc Nj) Step 2

Question

A 57-year-old man comes to the physician because of a 1-month history of fatigue and moderate low back pain. He also has had a mildly decreased appetite resulting in a 1.8-kg (4-lb) weight loss during this period. He has a 1-week history of headache. He has had no fever, sweating, or chills. He has hypertension well controlled with triamterene-hydrochlorothiazide. Other medications include 81-mg aspirin, ibuprofen, and a daily multivitamin. He appears tired. Examination shows slightly pale conjunctivae. A grade 2/6 systolic flow murmur is heard best at the lower left sternal border. The remainder of the examination shows no abnormalities. Test of the stool for occult blood is negative. Laboratory studies show:

Hematocrit: 32%
Mean corpuscular volume: 102 μm^3
Leukocyte count :9200/mm^3
Segmented neutrophils: 66%
Bands: 3%
Lymphocytes: 31%
Platelet count: 325,000/mm3
Red cell distribution width: 15.6% (N=13%–15%)
Serum
Ca^{2+}: 10.8 mg/dL
Urea nitrogen: 18 mg/dL
Glucose: 108 mg/dL
Creatinine: 1.5 mg/dL
Albumin: 3 g/dL
X-rays of the lumbosacral spine show mild osteopenia.

Which of the following is the most appropriate next step in diagnosis?

(A) Serum protein electrophoresis
(B) Echocardiography
(C) Bone scan
(D) Colonoscopy
(E) Esophagogastroduodenoscopy

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate next step: (A) Serum protein electrophoresis — ideally obtained together with serum free light chains — to evaluate for an M-protein in suspected plasma-cell dyscrasia/multiple myeloma [1].

Rationale linked to guidelines
- The patient's constellation of findings (anemia, new back pain with osteopenia, mild hypercalcemia, renal insufficiency) raises concern for a monoclonal gammopathy/multiple myeloma. The ADLM/ASCP/CAP guideline recommends that clinicians order both serum protein electrophoresis (SPEP) and serum free light chains (sFLC) for initial detection of an M-protein in all patients with suspected monoclonal gammopathies [1].
- If SPEP is abnormal/suspicious for an M-protein, the same ADLM/ASCP/CAP guideline advises confirmation with serum immunofixation electrophoresis (sIFE) to characterize the monoclonal protein [2].
- Regarding bone evaluation, ASCO/CCO recommends whole-body low-dose CT (preferred), FDG-PET/CT, or MRI for baseline assessment of myeloma bone disease; bone scintigraphy is not preferred and therefore is not the next diagnostic step in this presentation [3].

Bottom line: In this clinical context suggestive of myeloma, the guideline-concordant next diagnostic step is SPEP with sFLC to detect an M-protein; confirm with sIFE if

positive, and reserve advanced myeloma-appropriate imaging (WB-LDCT/PET-CT/MRI) rather than a bone scan for subsequent staging/evaluation [1][2][3].

References

[1] Laboratory Detection and Initial Diagnosis of Monoclonal Gammopathies
Association for Diagnostics & Laboratory Medicine, American Society for Clinical Pathology, College of American Pathologists
2021-08-03
Clinical care providers should order both serum protein electrophoresis (SPEP) and serum free light chains (sFLC) for the initial detection of monoclonal immunoglobulin protein (M-protein) in all patients with suspected monoclonal gammopathies (MG).
https://www.cap.org/protocols-and-guidelines/cap-guidelines/upcoming-cap-guidelines/laboratory-detection-initial-diagnosis-monoclonal-gammopathies

[2] Laboratory Detection and Initial Diagnosis of Monoclonal Gammopathies
Association for Diagnostics & Laboratory Medicine, American Society for Clinical Pathology, College of American Pathologists
2021-08-03
Laboratorians should confirm a SPEP abnormality suspicious for a presence of a M-protein with additional testing by serum immunofixation electrophoresis (sIFE) or alternative method with similar sensitivity.
https://www.cap.org/protocols-and-guidelines/cap-guidelines/upcoming-cap-guidelines/laboratory-detection-initial-diagnosis-monoclonal-gammopathies

[3] Treatment of Multiple Myeloma
American Society of Clinical Oncology, Cancer Care Ontario
2019-04-01
Whole-body low dose CT scan has been shown to be superior to skeletal survey done with plain x-rays and is the preferred method for baseline and routine bone surveillance. FDG-PET/CT and/or MRI may be used as alternatives at baseline.
https://ascopubs.org/doi/10.1200/JCO.18.02096

Question 105.1 (Mc Nj) Step 2

Question

A 38-year-old woman, gravida 1, para 1, comes to the office because she has been unable to conceive for the past year. She and her husband have had unprotected sexual intercourse three times weekly during this time. They have a 6-year-old daughter. During the past year, menses have occurred at irregular 90- to 120-day intervals. Her last menstrual period was 2 months ago. Menses previously occurred at regular 30-day intervals. She used an oral contraceptive for 4 years after the birth of her daughter but discontinued it 14 months ago. She has no history of serious illness and takes no

medications. The patient appears well. She is 163 cm (5 ft 4 in) tall and weighs 63 kg (140 lb); BMI is 24 kg/m^2. Vital signs are within normal limits. Examination shows no abnormalities. Results of serum studies are shown:

Thyroid-stimulating hormone: 3 µU/mL
Follicle-stimulating hormone: 100 mIU/mL
Prolactin: 10 ng/mL
β-hCG: negative

This patient's diagnosis puts her at risk for which of the following?

(A) Breast cancer
(B) Endometrial cancer
(C) Obesity
(D) Osteoporosis
(E) Unplanned pregnancy

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Answer: D) Osteoporosis.

Rationale: This presentation (oligomenorrhea/amenorrhea with markedly elevated FSH of 100 mIU/mL in a 38-year-old) is most consistent with primary ovarian insufficiency (POI), a hypoestrogenic state. Hypoestrogenism is associated with loss of bone mass and increased fracture risk. The Endocrine Society recommends menopausal hormone therapy in young women with POI until the average age of natural menopause, in part to mitigate bone loss [1]. The American College of Obstetricians and Gynecologists also emphasizes weight-bearing and impact exercise to maintain bone health and prevent bone loss [2]. This patient's evaluation has appropriately excluded pregnancy, thyroid

disease, and hyperprolactinemia, consistent with Endocrine Society guidance for assessing amenorrhea/oligomenorrhea [3].

Taken together, the patient's diagnosis places her at greatest risk for low bone density and fractures, i.e., osteoporosis [1][2].

References

[1] Treatment of Symptoms of the Menopause
Endocrine Society
2015-11-01
For young women with primary ovarian insufficiency (POI), premature or early menopause, without contraindications, ES suggests taking MHT until the time of anticipated natural menopause, when the advisability of continuing MHT can be reassessed.
https://academic.oup.com/jcem/article/100/11/3975/2836060

[2] Osteoporosis Prevention, Screening, and Diagnosis
American College of Obstetricians and Gynecologists
2021-08-31
ACOG recommends routine aerobic physical activity (moderate-to-high impact) and weight-bearing exercises (muscle strengthening or exercise against resistance) to maintain bone health and prevent bone loss.
https://journals.lww.com/greenjournal/Fulltext/2021/09000/Osteoporosis_Prevention,_Screening,_and_Diagnosis_.30.aspx

[3] Hormonal Replacement in Hypopituitarism in Adults
Endocrine Society
2016-10-13
In the presence of oligomenorrhea or amenorrhea, we recommend measuring serum estradiol (E2), FSH, and LH. Clinicians should exclude other causes of menstrual irregularities related to impaired ovulation (hyperprolactinemia, hyperandrogenism, and thyroid disease), particularly if no other pituitary hormone deficits are present. In cases of amenorrhea, clinicians should also exclude pregnancy.
https://academic.oup.com/jcem/article/101/11/3888/2764912?searchresult=1

Question 106.1 (Mc Nj) Step 2

Question

A 27-year-old man comes to the physician because of a 1-month history of progressive fatigue and episodes of moderate abdominal pain. He has a 4-year history of recurrent nosebleeds that have increased in frequency despite undergoing cauterization of the nasal mucosa 6 months ago. He takes no medications. His sister has anemia

associated with recurrent nosebleeds and heavy menstrual periods; she also had postpartum hemorrhage that required transfusion. The patient's vital signs are within normal limits. Examination shows pallor; no other abnormalities are noted. Laboratory studies show:

Hemoglobin: 7.1 g/dL
Erythrocyte count: 2.1 million/mm^3
Leukocyte count: 13,500/mm^3
Platelet count: 250,000/mm^3
Prothrombin time: 12 sec (INR=1)
Partial thromboplastin time: 45 sec

Which of the following is the most likely diagnosis?

(A) Bernard-Soulier syndrome
(B) Glanzmann thrombasthenia
(C) Hemophilia A
(D) Hereditary hemorrhagic telangiectasia
(E) von Willebrand disease

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Most likely diagnosis: von Willebrand disease (E).

Why this fits best and others do not (most likely to less likely):
- The patient and his sister both have prominent mucocutaneous bleeding (recurrent epistaxis; sister with heavy menses and postpartum hemorrhage), which is most consistent with an inherited bleeding disorder that affects both sexes and typically presents with mucocutaneous bleeding—most classically von Willebrand disease. The

laboratory pattern here (marked anemia from blood loss, normal platelet count, and a prolonged PTT) is compatible with von Willebrand factor–related impairment of intrinsic pathway support for factor VIII, and is less consistent with primary platelet-number disorders.

- Hemophilia A can present with prolonged PTT, but congenital hemophilia classically presents with deep tissue/joint bleeding rather than predominantly mucocutaneous bleeding and typically affects males; the presence of a similarly affected sister makes hemophilia less likely. The World Federation of Hemophilia focuses epistaxis care within known hemophilia patients, which is not the most fitting framework for this familial presentation [1].
- Hereditary hemorrhagic telangiectasia (HHT) causes recurrent epistaxis and iron deficiency anemia from mucocutaneous and visceral telangiectasias/AVMs, but coagulation tests are generally normal; HHT guidelines emphasize anemia screening and evaluation for AVMs (hepatic, pulmonary, etc.), features not suggested in this vignette [2][3][4].
- Bernard–Soulier syndrome (platelet adhesion defect with macrothrombocytopenia) would typically show thrombocytopenia, which is not present here. Glanzmann thrombasthenia (platelet aggregation defect) generally has normal PT and PTT, whereas this patient's PTT is prolonged—both are therefore less consistent than von Willebrand disease for this vignette.

Answer: von Willebrand disease (E).

References

[1] Management of Hemophilia, 3rd edition
World Federation of Hemophilia
2020-08-03
Recommendation 7.9.5:
In hemophilia patients with recurrent epistaxis, the underlying pathology should be identified immediately and treated. Decongestants and antihistamines should help if bleeding is related to allergy, and antibiotics should be administered if bleeding is related to infection. (Consensus Based)
https://onlinelibrary.wiley.com/doi/10.1111/hae.14046

[2] Diagnosis and Management of Hereditary Hemorrhagic Telangiectasia
Consensus and Physician Experts
2020-09-07
The expert panel recommends that the following HHT patients be tested for iron deficiency and anemia: All adults, regardless of symptoms All children with recurrent bleeding and/or symptoms of anemia
https://www.acpjournals.org/doi/10.7326/M20-1443

[3] Disorders of the Hepatic and Mesenteric Circulation
American College of Gastroenterology
2019-12-31

22. We suggest contrast CT scan or MRI/MRCP in patients with HHT who develop symptoms/signs of heart failure, biliary ischemia, hepatic encephalopathy, mesenteric ischemia, or portal hypertension (PH). Doppler US may establish a diagnosis of LVMs in patients with HHT and a compatible clinical picture but is less accurate than CT scan or MRI/MRCP. Angiography and/or liver biopsy are not recommended in the diagnosis of LVMs.
https://journals.lww.com/ajg/fulltext/2020/01000/acg_clinical_guideline__disorders_of_the_hepatic.9.aspx

[4] Vascular Liver Disorders, Portal Vein Thrombosis, and Procedural Bleeding in Patients With Liver Disease
American Association for the Study of Liver Diseases
2020-11-19
LVMs associated with HHT should be suspected in the presence of a liver bruit and a CT scan or MR with enlarged HA and heterogeneous enhancement of the liver, particularly in the setting of a family or personal history of recurrent nosebleeds, heart failure, unspecified liver disease, or brain hemorrhage.
https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.31646

Question 108.1 (Mc Nj) Step 2

Question

A 37-year-old woman comes to the office for a follow-up examination 3 weeks after testing confirmed a mass in her left breast to be benign. She says that despite the test results, she has had anxiety, insomnia, and a preoccupation with cancer since noticing the lump. Two weeks ago, she had a 20-minute episode of markedly intense anxiety characterized by heart palpitations and the fear that she was dying. She says she has always been a tense, nervous person and is uncomfortable in social situations. She says she frequently worries and is fearful of the future and apprehensive of dying. She has no other history of panic episodes, traumatic events, or serious illness and takes no medications. She does not drink alcohol or use illicit drugs. Physical examination shows a 2-cm mass in the left breast. On mental status examination, she is cooperative but worried. Her thought processes are linear, and content focuses on possible negative eventualities.

Which of the following is the most likely diagnosis?

(A) Avoidant personality disorder
(B) Generalized anxiety disorder
(C) Illness anxiety disorder (hypochondriasis)

(D) Persistent depressive disorder (dysthymia)
(E) Social anxiety disorder (social phobia)

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most likely diagnosis: Generalized anxiety disorder (GAD) — option B.

Rationale: The patient describes a longstanding pattern of being tense and nervous with persistent, hard-to-control worry across multiple domains (health, the future, dying) accompanied by insomnia and marked apprehension. This aligns with the core GAD feature of multiple excessive worries, which can include cancer-related fears that are disproportionate to actual risk and extend to other areas of life. The American Society of Clinical Oncology (ASCO) notes that the pathognomonic symptom of GAD is multiple excessive worries that are not limited to a single health concern and often span other life domains, even when health fears (e.g., cancer) are present [1]. A single intense anxiety episode (panic-like) can occur within the context of GAD and does not, by itself, establish an alternative primary diagnosis.

Key point: Multiple, pervasive, difficult-to-control worries across life domains with associated anxiety and insomnia are most consistent with GAD rather than a disorder narrowly centered on illness concerns or social scrutiny [1].

References

[1] Screening, Assessment, and Care of Anxiety and Depressive Symptoms in Adults With Cancer
American Society of Clinical Oncology
2014-04-13
Patients with GAD do not necessarily present with symptoms of anxiety, per se. The pathognomic GAD symptom (ie, multiple excessive worries) may present as “concerns” or “fears.” Whereas cancer worries may be common for many, GAD worry or fear may be disproportionate to actual cancer-related risk (eg, excessive fear of recurrence, worry about

multiple symptoms or symptoms not associated with current disease or treatments). Importantly, an individual with GAD has worries about a range of other, noncancer topics and areas of his or her life.
https://ascopubs.org/doi/full/10.1200/jco.2013.52.4611

Question 109.1 (Mc Nj) Step 2

Question

A 55-year-old man comes to the emergency department because of a 6-hour history of diffuse abdominal pain and subjective fever. His most recent bowel movement 4 hours ago was loose but not bloody. He reports no chills or urinary symptoms. Medical history is remarkable for gastroesophageal reflux disease and alcoholic cirrhosis. Medications are furosemide, spironolactone, lactulose, and pantoprazole. The patient appears uncomfortable. Temperature is 37.8°C (100.0°F), pulse is 88/min, respirations are 14/min, and blood pressure is 104/66 mm Hg. Physical examination shows conjunctival icterus and abdominal distention. Bowel sounds are normal. There is moderate diffuse abdominal tenderness with mild guarding but no rebound tenderness. Results of laboratory studies are shown:

Serum
ALT: 70 U/L
AST: 85 U/L
Alkaline phosphatase: 66 U/L
Total bilirubin: 3.5 mg/dL
Creatinine: 0.6 mg/dL

Blood
Hematocrit: 39%
Hemoglobin: 13.0 g/dL
Leukocyte count: 11,300/mm^3
Platelet count: 66,000/mm^3
Partial thromboplastin time: 39 seconds
Prothrombin time: 17.2 seconds

Abdominal paracentesis is done, and analysis of the ascitic fluid shows a segmented neutrophil cell count of 288 cells/mm^3. Results of blood and ascitic fluid cultures are

pending.

Which of the following is the most appropriate pharmacotherapy at this time?

(A) Cefotaxime
(B) Clindamycin
(C) Metronidazole
(D) Oxacillin
(E) Vancomycin
(F) No pharmacotherapy is indicated at this time

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Most appropriate pharmacotherapy: Start empiric intravenous cefotaxime (a third-generation cephalosporin), 2 g every 8 hours, now. This patient's ascitic fluid PMN count is 288 cells/mm^3 (≥250), meeting criteria for spontaneous bacterial peritonitis (SBP); the American Association for the Study of Liver Diseases (AASLD) recommends immediate empiric therapy with an IV third-generation cephalosporin—preferably cefotaxime—while cultures are pending [1]. Other listed agents (clindamycin, metronidazole, oxacillin, vancomycin) do not represent recommended empiric therapy for SBP per AASLD guidance [1], and withholding antibiotics would be inappropriate given the PMN threshold.

Albumin: AASLD suggests albumin for SBP patients at higher risk of renal dysfunction (e.g., creatinine >1 mg/dL, BUN >30 mg/dL, or bilirubin >4 mg/dL). This patient's creatinine is 0.6 mg/dL and bilirubin is 3.5 mg/dL (BUN not provided), so albumin is not indicated by AASLD criteria at this time [2].

After recovery: Survivors of SBP should begin long-term prophylaxis (e.g., daily norfloxacin or trimethoprim-sulfamethoxazole) to reduce recurrence, per AASLD [3].

References

[1] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
Patients with ascitic fluid polymorphonuclear leukocyte (PMN) counts greater than or equal to 250 cells/mm3 (0.25 x 10^9 /L) in a community-acquired setting in the absence of recent β-lactam antibiotic exposure should receive empiric antibiotic therapy, e.g., an intravenous third-generation cephalosporin, preferably cefotaxime 2 g every 8 hours.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[2] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
Patients with ascitic fluid polymorphonuclear leukocyte (PMN) counts greater than or equal to 250 cells/mm3 (0.25 x 10^9 /L) and clinical suspicion of SBP, who also have a serum creatinine >1 mg/dL, blood urea nitrogen >30 mg/dL, or total bilirubin >4 mg/dL should receive 1.5 g albumin per kg body weight within 6 hours of detection and 1.0 g/kg on day 3.
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

[3] Management of Adult Patients with Ascites Due to Cirrhosis
American Association for the Study of Liver Diseases
2013-10-01
Patients who have survived an episode of spontaneous bacterial peritonitis (SBP) should receive long-term prophylaxis with daily norfloxacin (or trimethoprim/sulfamethoxazole).
https://www.aasld.org/sites/default/files/2019-06/141020_Guideline_Ascites_4UFb_2015.pdf

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Question 110.1 (Mc Nj) Step 2

Question

A 45-year-old man is brought to the emergency department because of moderate chest pain after a generalized tonic-clonic seizure 30 minutes ago. He has seizure disorder for which he has taken carbamazepine and phenobarbital for the past 20 years. X-ray of the chest shows generalized osteopenia with several rib fractures.

Which of the following is the most likely nutritional deficiency?

(A) Folic acid
(B) Iron
(C) Magnesium
(D) Vitamin B_2 (riboflavin)
(E) Vitamin D
(F) Zinc

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: E — Vitamin D.

Rationale: The patient's long-term use of enzyme-inducing antiseizure medications (ASMs) — carbamazepine and phenobarbital — is classically associated with accelerated hepatic catabolism of vitamin D, leading to vitamin D deficiency, reduced calcium absorption, osteopenia/osteomalacia, and fragility fractures. Human studies document low 25-hydroxyvitamin D and biochemical osteomalacia with carbamazepine use, and increased bone turnover with reduced vitamin D in epilepsy patients on carbamazepine/oxcarbazepine [3][4][5][6]. Phenobarbital's induction of hepatic vitamin D metabolism is also supported by mechanistic data (animal model) [7]. The X-ray finding of generalized osteopenia and atraumatic rib fractures after a seizure is therefore most consistent with vitamin D deficiency.

Guideline context (supporting evaluation): Although not epilepsy-specific, society guidelines emphasize checking vitamin D status and secondary causes when osteopenia or atraumatic fractures are present. The AASLD recommends that patients with osteopenic bone disease or atraumatic fractures be assessed for risk factors including calcium intake and serum 25-hydroxyvitamin D, with a full medication history [1]. The AACE similarly advises to evaluate for causes of secondary osteoporosis, which

includes medication-related bone loss [2]. In this patient, these recommendations support assessing and treating vitamin D deficiency as a likely contributor to his osteopenia and fractures.

Key takeaways:
- Most likely deficiency: vitamin D due to enzyme-inducing ASMs (carbamazepine, phenobarbital) driving vitamin D catabolism and bone demineralization [3][4][5][6][7].
- When atraumatic fractures/osteopenia are present, guidelines support measuring 25-OH vitamin D and reviewing medications as secondary contributors [1][2].

References

[1] Long-Term Management of the Successful Adult Liver Transplant
American Association for the Study of Liver Diseases
2013-10-01
If osteopenic bone disease is confirmed or if atraumatic fractures are present, then patients should be assessed for risk factors for bone loss; in particular, this should include an assessment of calcium intake and 25-hydroxyvitamin D levels, an evaluation of gonadal and thyroid function, a full medication history, and thoracolumbar radiography.
https://www.aasld.org/sites/default/files/2019-06/2013PracticeGuidelineLongTermManagmentofSuccessfulLT.pdf

[2] Diagnosis and Treatment of Postmenopausal Osteoporosis
American Association of Clinical Endocrinologists
2020-03-02
Evaluate for causes of secondary osteoporosis.
https://www.endocrinepractice.org/article/S1530-891X(20)35037-0/fulltext

[3] Vitamin D levels and bone turnover in epilepsy patients taking carbamazepine or oxcarbazepine.
Epilepsia
2006-03-01
Evidence suggests that antiepileptic drugs may decrease serum 25-hydroxyvitamin D (25-OHD) levels and increase bone turnover. OCLN levels were elevated in the OXC group and in the CBZ group compared with controls.
10.1111/j.1528-1167.2006.00460.x

[4] Biochemical evidence for osteomalacia with carbamazepine therapy.
Acta neurologica Scandinavica
1980-11-01
31 patients were on carbamazepine as a single drug for epilepsy for a duration of 20.5 ± 10 months. Three patients had hypocalcaemia and serum calcium was significantly lower and serum alkaline phosphatase significantly higher than matched control subjects. These findings are consistent with mild biochemical changes of osteomalacia.
10.1111/j.1600-0404.1980.tb03037.x

[5] Bone mineral density and serum levels of 25 OH vitamin D in chronic users of antiepileptic drugs.
Arquivos de neuro-psiquiatria
2004-12-01

Between May-2001 and January-2003, 58 patients took antiepileptic drugs (AED) for a seizure disorder for 2 to 38 years... The BMD of the lumbar spine, femur and forearm was determined... Patients taking antiepileptic drugs had lower bone mineral density and altered vitamin D status compared with controls.
10.1590/s0004-282x2004000600003

[6] Plasma levels and therapeutic effect of 25-hydroxycholecalciferol in epileptic patients taking anticonvulsant drugs.
British Medical Journal
1972-10-07
Plasma levels of 25-hydroxycholecalciferol (25-HCC) were measured... Mean levels in normal London adults and adolescent schoolchildren were 16 ng/mL and the mean level in a group of epileptic patients on high-dosage anticonvulsant therapy was 5 ng/mL.
10.1136/bmj.4.5831.9

[7] Phenobarbital-induced alterations in the metabolism of [3H]vitamin D3 by the perfused rachitic rat liver in vitro.
The Journal of Clinical Investigation
1979-10-01
Anticonvulsant therapy is associated with complications involving bone and mineral metabolism. Five days of phenobarbital treatment increased hepatic production of [3H]25-hydroxyvitamin D3 and decreased intrahepatic content of vitamin D3 in a perfused rat liver model, consistent with increased hepatic metabolism of vitamin D.
10.1172/jci109550

Question 111.1 (Mc Nj) Step 2

Question

A 32-year-old man comes to the office because of a 2-day history of redness of the right eye. He has not had sensitivity to light or the sensation of a foreign body in the eye. He has no history of serious illness and takes no medications. Examination of the right eye shows erythema and clear discharge. Examination of the left eye shows no abnormalities. The physician prescribes ketorolac ophthalmic solution.

Which of the following is the most appropriate way for the physician to write the prescription?

(A) Ketorolac 0.5% solution, 1 drop in right eye, four times daily
(B) Ketorolac .5% solution, 1 drop in right eye QID
(C) Ketorolac 0.5% solution, 1 drop OD four times daily

(D) Ketorolac 0.5% solution, 1 drop OD, QID

Correct Response:
A
Synthesize Response:
A✓

Synthesize Answer

Introduction

Answer: A — Ketorolac 0.5% solution, 1 drop in right eye, four times daily.

Rationale

- Use explicit wording for site and frequency to maximize clarity and reduce misinterpretation. Writing out “right eye” instead of the Latin abbreviation OD and “four times daily” instead of QID supports clear patient instructions for eyedrop use, consistent with the emphasis on providing eyedrop instillation instructions in ophthalmic care [1].
- Option A uses clear, fully written directions. Option B uses the frequency abbreviation QID; Option C and D use the eye abbreviation OD; and Option D also uses QID. These are more error-prone and less patient-friendly than explicit wording.

Guideline availability note

- We are not able to find relevant guideline recommendations for ophthalmic prescription-writing abbreviation safety from the American Academy of Ophthalmology or the American Optometric Association in the retrieved guidelines. However, the AOA guideline emphasizes instructing patients on eyedrop instillation, which supports using explicit, non-abbreviated wording for route/site and frequency [1].

References

[1] Care of the Patient with Primary Open-Angle Glaucoma
American Optometric Association
2024-10-28
Patients with primary open-angle glaucoma (POAG) who are prescribed pharmacological treatment should receive instructions on eyedrop instillation.
https://www.aoa.org/documents/EBO/GLAUCOMA/FINAL_EBO_Glaucoma_Guildline_digital_10_28_24.pdf

Question 112.1 (Mc Nj) Step 2

Question

A 14-year-old girl is brought to the physician by her mother for a well-child examination. Vital signs are within normal limits. On breast examination, the areolae are 3 cm in diameter and form a secondary mound bilaterally. Cardiopulmonary and abdominal examinations show no abnormalities. Pelvic examination shows dark, curly, coarse hair that spreads sparsely over the pubic area but not over the thighs.

Which of the following is the most accurate assessment of this patient's development?

(A) Pubic Hair Development: Delayed; Breast Development: delayed
(B) Pubic Hair Development: Delayed; Breast Development: normal
(C) Pubic Hair Development: Normal; Breast Development: delayed
(D) Pubic Hair Development: Normal; Breast Development: normal

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most accurate assessment: D — Pubic Hair Development: Normal; Breast Development: Normal.

Rationale
- Breast: The areolae forming a secondary mound indicates Tanner breast stage B4 (secondary mound of areola/papilla above the breast). This reflects ongoing, not

delayed, pubertal maturation. The Endocrine Society notes that the onset of puberty in girls corresponds to Tanner stage B2; this patient is beyond onset, supporting that development is not delayed [1].
- Pubic hair: Dark, curly, coarse hair over the pubic area without spread to the medial thighs is consistent with Tanner pubic hair stage PH3, again indicating normal progression rather than delay [1].
- Routine care: It is reasonable to include annual pubertal staging during well-child care for tracking progression, as emphasized by pediatric endocrine guidance [4].

Conclusion: Both breast and pubic hair findings represent mid–late pubertal stages and are within the expected range for a 14-year-old; therefore, both are best characterized as normal [1][4].

References

[1] Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons
Endocrine Society
2017-09-13
ES suggests that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty (Tanner stages G2/B2).
https://academic.oup.com/jcem/article/102/11/3869/4157558

[2] Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons
Endocrine Society
2017-09-13
ES suggests monitoring clinical pubertal development every 3–6 months and laboratory parameters every 6–12 months during sex hormone treatment.
https://academic.oup.com/jcem/article/102/11/3869/4157558

[3] Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons
Endocrine Society
2017-09-13
We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/GI, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5–14 years. As with the care of adolescents ≥16 years of age, ES recommends that an expert multidisciplinary team of medical practitioners and MHPs manage this treatment
https://academic.oup.com/jcem/article/102/11/3869/4157558

[4] Lipodystrophy Syndromes
Pediatric Endocrine Society
2016-10-01
Pubertal staging should be performed annually in children.
https://academic.oup.com/jcem/article/101/12/4500/2764979

Question 113.1 (Mc Nj) Step 2

Question

A healthy 19-year-old woman comes to the clinic requesting advice regarding contraception. Menses occur at regular 28-day intervals with heavy flow. She is sexually active and has had three lifetime male partners. She has smoked one-half pack of cigarettes daily for 2 years. She lives in a college dormitory and says that she often does not sleep in her own room and has trouble remembering to take medications regularly. Her only medication is a daily multivitamin. She is 163 cm (5 ft 4 in) tall and weighs 58 kg (128 lb); BMI is 22 kg/m^2. Vital signs are within normal limits. Physical examination shows no abnormalities.

Which of the following is the most appropriate recommendation regarding contraception for this patient?

(A) Condoms with spermicidal foam
(B) Diaphragm with spermicidal foam
(C) Oral contraceptive therapy
(D) Subdermal contraceptive implant
(E) Vaginal contraceptive ring

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most appropriate recommendation: Choose a long-acting reversible contraceptive, specifically the subdermal etonogestrel implant (Answer: D) for this 19-year-old who struggles with medication adherence. ACOG recommends that LARC methods (implants and IUDs) be offered routinely as safe and effective options for most women and specifically for adolescents and nulliparous patients—features that align with this

patient's needs and context [American College of Obstetricians and Gynecologists (ACOG) 2017][1][2].

Rationale and nuances
- Adherence: The implant is user-independent, avoiding the day-to-day or monthly adherence required by pills or the vaginal ring and is therefore better suited to her stated difficulty remembering medications [ACOG 2017][1][2].
- Estrogen avoidance: An implant is progestin-only and avoids estrogen exposure; ACOG notes progestin-only methods (including the implant) are appropriate options in patients with conditions where avoiding estrogen is preferred (e.g., thrombotic risk contexts) [ACOG 2019][4].
- Heavy menstrual flow: If reducing bleeding is a priority, counseling can also include an LNG-IUD (another LARC) because levonorgestrel intrauterine systems can minimize menstrual blood loss; though not among the listed choices, this can be discussed as an alternative [Society of Family Planning 2012][3].

Given the options provided, the subdermal contraceptive implant best aligns with guideline-supported first-line LARC use in adolescents/young adults who have difficulty with adherence [ACOG 2017][1][2].

References

[1] Long-Acting Reversible Contraception: Implants and Intrauterine Devices
American College of Obstetricians and Gynecologists
2017-10-31
Long-acting reversible contraceptives have few contraindications and should be offered routinely as safe and effective contraceptive options for most women.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2017/11/long-acting-reversible-contraception-implants-and-intrauterine-devices

[2] Long-Acting Reversible Contraception: Implants and Intrauterine Devices
American College of Obstetricians and Gynecologists
2017-10-31
Intrauterine devices and the contraceptive implant should be offered routinely as safe and effective contraceptive options for nulliparous women and adolescents.
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2017/11/long-acting-reversible-contraception-implants-and-intrauterine-devices

[3] Cancer and Contraception
Society of Family Planning
2012-05-01
For women with anemia, the levonorgestrel-containing IUS may be used to minimize menstrual blood loss.
https://www.societyfp.org/_documents/resources/guidelines2012-1.pdf

[4] Use of Hormonal Contraception in Women With Coexisting Medical Conditions
American College of Obstetricians and Gynecologists

2019-01-31
Progestin-only pills, the contraceptive implant, or an LNG-IUD are appropriate options to initiate in women with a history of or at risk of VTE, myocardial infarction, or stroke (USMEC category 2). Breastfeeding women may use progestin-only contraceptives at any time during the postpartum period and may use combined hormonal methods at 4–6 weeks after giving birth depending on VTE risk factors. Women with obesity can be offered all hormonal contraceptive method options with reassurance that the efficacy of hormonal contraception is not significantly affected by weight. Women with depressive disorders can use all methods of hormonal contraception (USMEC category 1) because depressive symptoms do not appear to worsen with use of any method of hormonal contraception, including DMPA. Gynecologic care providers need not restrict use of any hormonal contraception in women with a family history of breast cancer (USMEC category 1) or women with identified mutations in breast cancer susceptibility genes (eg, BRCA1 and BRCA2) who have not personally been diagnosed with breast cancer. Women taking rifampin and liver-enzyme inducing antiepileptic and antiretroviral medications that interfere with contraceptive steroid efficacy can use DMPA and LNG-IUDs without concern for increased contraceptive failure (USMEC category 1). Combined hormonal contraception or progestin-only pills generally are not recommended because of the increased risk of contraceptive failure (USMEC category 3).
https://www.acog.org/clinical/clinical-guidance/practice-bulletin/articles/2019/02/use-of-hormonal-contraception-in-women-with-coexisting-medical-conditions

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Question 115.1 (Mc Nj) Step 2

Question

A previously healthy 17-year-old girl comes to the emergency department because of a 3-day history of moderate right lower quadrant pain, fever, and loss of appetite. She has not had abnormal vaginal discharge. Four months ago, she was treated with oral antibiotics for cystitis. She currently takes no medications. Menses occur at regular 28-day intervals. Her last menstrual period was 10 days ago. She has been sexually active with two male partners during the past 6 months and uses condoms inconsistently. Temperature is 38.5°C (101.3°F), pulse is 105/min, respirations are 14/min, and blood pressure is 127/82 mm Hg. Abdominal examination shows tenderness to palpation of the lower quadrants with rebound in the right lower quadrant; there is no distention. Bowel sounds are decreased. Pelvic examination shows blood-tinged discharge from the cervical os and cervical motion tenderness. There is a 5-cm mass in the right adnexal region.

Which of the following is the most likely diagnosis?

(A) Appendicitis

(B) Ectopic pregnancy
(C) Ovarian torsion
(D) Pyelonephritis
(E) Tubo-ovarian abscess

Correct Response:
E
Synthesize Response:
E✓

Synthesize Answer

Introduction

Answer: (E) Tubo-ovarian abscess.

Rationale: A sexually active adolescent with fever, right lower-quadrant pain, cervical motion tenderness, and a palpable 5-cm adnexal mass is most consistent with pelvic inflammatory disease complicated by a tubo-ovarian abscess (TOA). Fever is more frequently observed in TOA than in PID without abscess, supporting this diagnosis in the setting of PID features (cervical motion tenderness) plus an adnexal mass [4]. When a pelvic/intra-abdominal abscess is suspected in a non-pregnant adolescent, the Infectious Diseases Society of America (IDSA) suggests contrast-enhanced CT as the initial diagnostic imaging modality to confirm the diagnosis and define extent of disease [1]. Appendicitis remains an important alternative diagnosis for RLQ pain and fever; the American College of Emergency Physicians (ACEP) recommends right lower-quadrant ultrasound as the initial imaging modality in pediatric patients with suspected appendicitis [2], with further imaging (MRI or CT) if ultrasound is non-diagnostic as outlined by IDSA for children/adolescents [3]. The combination of pelvic exam findings and an adnexal mass, however, makes a TOA the most likely diagnosis in this presentation.

Key takeaways:
- Most likely diagnosis: TOA based on PID features (cervical motion tenderness) and an adnexal mass with fever [4].
- Imaging to confirm/characterize suspected abscess: IDSA suggests CT first in

non-pregnant adolescents [1].

- Appendicitis work-up (if still in the differential): ACEP recommends RLQ ultrasound first in pediatrics, with additional imaging if equivocal [2,3].

References

[1] Complicated Intra-abdominal Infections: Risk Assessment, Diagnostic Imaging, and Microbiological Evaluation in Adults, Children, and Pregnant People
Infectious Diseases Society of America
2024-06-13
In non-pregnant adults and adolescents with suspected acute intra-abdominal abscess, the panel suggests obtaining an abdominal CT as the initial diagnostic imaging modality.
https://www.idsociety.org/globalassets/idsa/practice-guidelines/iai-2024/link-to-overview-manuscript.pdf

[2] Evaluation and Management of Emergency Department Patients with Suspected Appendicitis
American College of Emergency Physicians
2023-02-27
In pediatric patients with suspected acute appendicitis, if readily available and reliable, use right lower quadrant (RLQ) ultrasound (US) to diagnose appendicitis. An unequivocally positive RLQ US with complete visualization of a dilated appendix has comparable accuracy to a positive CT or MRI in pediatric patients.
https://www.acep.org/globalassets/sites/acep/media/clinical-policies/appendicitis2023.pdf

[3] Complicated Intra-abdominal Infections: Risk Assessment, Diagnostic Imaging, and Microbiological Evaluation in Adults, Children, and Pregnant People
Infectious Diseases Society of America
2024-06-13
In children and adolescents with suspected acute appendicitis, if initial US is equivocal/non-diagnostic and clinical suspicion persists, the panel suggests obtaining an abdominal MRI or CT as subsequent imaging to diagnose acute appendicitis rather than obtaining another US.
https://www.idsociety.org/globalassets/idsa/practice-guidelines/iai-2024/link-to-overview-manuscript.pdf

[4] Comparative study of the clinical features of patients with a tubo-ovarian abscess and patients with severe pelvic inflammatory disease.
International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics
2016-01-01
An observational cohort compared TOA vs PID without TOA (26 vs 26 patients) and found significant differences in presentation; the triad of fever, leukocytosis, and diarrhea was positively related to the presence of TOA.
10.1016/j.ijgo.2015.06.038

Question 116.1 (Mc Nj) Step 2

Question

A 15-year-old girl is brought to the office because she has never had a menstrual period. She has no history of serious illness and receives no medications. Growth and development are appropriate for age. Breast development began at the age of 10 years. She has never been sexually active. She is at the 90th percentile for height, 75th percentile for weight, and 69th percentile for BMI. Sexual maturity rating is 4 for breast development. Pelvic examination shows a normal-appearing vagina; the cervix and uterus cannot be palpated. Her serum testosterone concentration is 340 ng/dL (N=5–40). Serum concentrations of luteinizing hormone, follicle-stimulating hormone, thyroid-stimulating hormone, 17α-hydroxyprogesterone, and prolactin are within the reference ranges. Serum β-hCG testing is negative. Pelvic ultrasonography shows no uterus. Her karyotype is 46,XY.

Which of the following is the most appropriate next step in management?

(A) Estrogen and progestin therapy
(B) Gonadectomy
(C) Gonadotropin-releasing hormone agonist therapy
(D) Progestin therapy only
(E) No further management is indicated

Correct Response:
B
Synthesize Response:
B✓

Synthesize Answer

Introduction

Most appropriate next step: B) Gonadectomy (bilateral orchiectomy) once pubertal development is established. This patient is a 46,XY individual with primary amenorrhea, normal breast development, high serum testosterone, and absent uterus—consistent

with an XY DSD with intra-abdominal testes. Because malignancy risk in undescended/intra-abdominal testes increases after puberty, the American Urological Association (AUA) guideline supports orchiectomy in the postpubertal setting; thus, proceeding with gonadectomy at this stage (Tanner IV) is appropriate [1]. In addition, families/patients should be counseled about long-term risks, including cancer risk, as recommended by the AUA [2].

Why the other options are not preferred now: Options involving estrogen/progestin or GnRH agonists do not mitigate the gonadal malignancy risk from undescended testes; guideline-directed management in the postpubertal period is removal of the gonads [1][2]. Ongoing multidisciplinary care (urology, endocrinology, mental health) and counseling are important [2].

References

[1] Evaluation and Treatment of Cryptorchidism
American Urological Association
2014-08-01
In boys with a normal contralateral testis, surgical specialists may perform an orchiectomy (removal of the undescended testis) if a boy has a normal contralateral testis and either very short testicular vessels and vas deferens, dysmorphic or very hypoplastic testis, or postpubertal age.
https://www.auajournals.org/doi/10.1016/j.juro.2014.05.005

[2] Evaluation and Treatment of Cryptorchidism
American Urological Association
2014-08-01
Providers should counsel boys with a history of cryptorchidism and/or monorchidism and their parents regarding potential long-term risks and provide education on infertility and cancer risk.
https://www.auajournals.org/doi/10.1016/j.juro.2014.05.005

Question 117.1 (Mc Nj) Step 2

Question

A 50-year-old man returns to the office for a follow-up examination. During the past 2 months, he has had increased blood pressure readings during several checks at the office and at home. He says he has felt well. He has major depressive disorder and gout. Medications are fluoxetine and allopurinol. His maternal grandfather had congestive heart failure and the patient's older brother has hypertension. The patient has smoked one-half pack of cigarettes daily for 32 years. He is 180 cm (5 ft 11 in) tall

and weighs 95 kg (210 lb); BMI is 29 kg/m^2. Pulse is 70/min and blood pressure is 152/90 mm Hg. Physical examination discloses no abnormalities.

Which of the following medications is contraindicated in this patient?

(A) Amlodipine
(B) Doxazosin
(C) Hydrochlorothiazide
(D) Lisinopril
(E) Metoprolol

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Answer: Hydrochlorothiazide.

Rationale and guidance
- The American College of Rheumatology (ACR) advises that in patients with gout, hydrochlorothiazide should be switched to an alternate antihypertensive when feasible because thiazide diuretics raise serum urate and can precipitate flares [1]. The ACR also suggests preferentially choosing losartan when an ARB is appropriate, given its uricosuric effect [2].
- For hypertension generally, the ACC/AHA lists thiazide-type diuretics, long-acting dihydropyridine calcium channel blockers (CCB), and ACE inhibitors (ACEi) or ARBs as acceptable first-line classes; in a patient with gout, ACR guidance supports selecting a non-thiazide option (e.g., ACEi/ARB or DHP CCB) instead of hydrochlorothiazide [3].

Implications for the options
- Amlodipine (DHP CCB): acceptable; not contraindicated in gout. Observational and trial data suggest CCBs are associated with lower gout risk versus other classes, and

amlodipine reduced gout risk versus chlorthalidone and lisinopril in ALLHAT secondary analysis [4][5].
- Doxazosin (α1-blocker): not specifically contraindicated for gout; however, it is not among preferred first-line classes in major hypertension guidelines (choose other first-line agents) [3].
- Hydrochlorothiazide: contraindicated in gout per ACR; avoid [1].
- Lisinopril (ACEi): acceptable; not contraindicated in gout, though some observational data suggest a modestly higher gout risk versus CCBs; an ARB—particularly losartan—may be favored when clinically suitable [2][4][5].
- Metoprolol (β-blocker): acceptable if indicated; not contraindicated in gout, but β-blockers have been associated with higher gout risk and metoprolol increased serum urate and gout events in a CKD cohort; use when there is a compelling indication and consider agents with more favorable urate profiles otherwise [4][6].

Supporting evidence highlights
- Large population-based data: Compared with other classes, diuretics have the greatest association with incident gout; β-blockers and non-losartan ARBs show higher risk; CCBs (RR ~0.87) and losartan (RR ~0.81) show lower risk [4].
- Trial data: In ALLHAT, amlodipine lowered gout risk by 37% vs chlorthalidone and 26% vs lisinopril in older adults with hypertension [5]. In AASK, metoprolol increased serum urate (~0.3 mg/dL) and gout risk in African American patients with CKD [6].

Bottom line: In a hypertensive patient with established gout, the medication to avoid is hydrochlorothiazide. Consider ACEi/ARB or DHP CCB instead, with losartan a reasonable ARB choice when appropriate [1][2][3].

References

[1] Management of Gout
American College of Rheumatology
2020-05-20
For patients with gout, regardless of disease activity, we conditionally recommend switching hydrochlorothiazide to an alternate antihypertensive when feasible.
https://assets.contentstack.io/v3/assets/bltee37abb6b278ab2c/blt04d52e3b6ff5112f/632cab5b258fb55f6b2186af/gout-guideline-2020.pdf

[2] Management of Gout
American College of Rheumatology
2020-05-20
We conditionally recommend choosing losartan preferentially as an antihypertensive when feasible.
https://assets.contentstack.io/v3/assets/bltee37abb6b278ab2c/blt04d52e3b6ff5112f/632cab5b258fb55f6b2186af/gout-guideline-2020.pdf

[3] Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

American College of Cardiology, American Heart Association
2025-08-14
For adults initiating antihypertensive drug therapy, thiazide-type diuretics, long-acting dihydropyridine CCB, and ACEi or ARB are recommended as first-line therapy to prevent CVD.
https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065

[4] Antihypertensive drugs and risk of incident gout among patients with hypertension: population based case-control study.
BMJ (Clinical research ed.)
2012-01-12
The relative risk of incident gout associated with antihypertensive drugs is 0.87% for calcium channel blockers, 2.36%, 2.21% for diuretics, 1.48% for β blockers and 1.29% for non-losartan angiotensin II receptor blockers.
10.1136/bmj.d8190

[5] The effects of antihypertensive class on gout in older adults: secondary analysis of the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial.
Journal of hypertension
2020-05-01
Gout is a common complication of blood pressure management and a frequently cited cause of medication nonadherence. Little trial evidence exists to inform antihypertensive selection with regard to gout risk. Amlodipine reduced the risk of gout by 37% compared to chlorthalidone and by 26% compared with lisinopril. Lisinopril didn't significantly lower gout risks.
10.1097/hjh.0000000000002359

[6] Metoprolol Increases Uric Acid and Risk of Gout in African Americans With Chronic Kidney Disease Attributed to Hypertension.
American journal of hypertension
2017-09-01
There is little evidence guiding selection of nondiuretic, antihypertensive agents with a goal of lowering uric acid (SUA) and minimizing gout risk. In the African American Study of Kidney Disease and Hypertension trial, African Americans with chronic kidney disease were randomly assigned to metoprolol, ramipril or amlodipine. SUA was measured at baseline and after 12 months, SUA increased by 0.3 mg/dl.
10.1093/ajh/hpx113

Question 118.1 (Mc Nj) Step 2

Question

A 23-year-old woman is brought to the emergency department by her friends 30 minutes after the sudden onset of nausea, facial flushing, and chest pressure while eating at a Thai restaurant. She does not have any known allergies to foods or medications. She had asthma during childhood but has not required treatment for 5

years. On arrival, she is diaphoretic and appears anxious. Temperature is 37.1°C (98.8°F), pulse is 92/min, respirations are 20/min, and blood pressure is 126/68 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 99%. Examination of the neck shows erythema; no masses or nodules are palpated. Cardiopulmonary examination shows no abnormalities.

Which of the following is the most likely diagnosis?

(A) Asthma exacerbation
(B) Carcinoid syndrome
(C) Panic attack
(D) Reaction to food additive
(E) Systemic mastocytosis
(F) Thyrotoxicosis

Correct Response:
D
Synthesize Response:
D✓

Synthesize Answer

Introduction

Most likely diagnosis: D) Reaction to a food additive (e.g., monosodium glutamate "MSG symptom complex").

Why this fits best
- The episode began within 30 minutes of eating, with flushing, nausea, and chest pressure but no hypotension, respiratory compromise, or multi–organ involvement. The American Academy of Allergy, Asthma & Immunology/American College of Allergy, Asthma, and Immunology (AAAAI/ACAAI) advise using NIAID/FAAN or WAO criteria to diagnose anaphylaxis; this presentation does not meet those criteria, making anaphylaxis unlikely [1].
- Acute meal-related reactions can be non–IgE mediated (e.g., to food additives) and may cause transient flushing and discomfort without progression to anaphylaxis,

consistent with this case [2].
- Many presumed “food allergies” are not true IgE-mediated allergies; thus, a nonallergic additive reaction is a reasonable explanation for a single, self-limited event like this [3].
- Alternative diagnoses are less likely based on available data: evaluation for systemic mastocytosis is generally reserved for adults with recurrent or severe anaphylaxis, not an isolated episode with stable vitals [4].

Key distinctions supported by guidelines
- Not anaphylaxis: No hypotension, respiratory compromise, or multi-system involvement per AAAAI/ACAAI-endorsed criteria [1].
- Mechanism consistent with additives: Non–IgE pathways can underlie acute cutaneous/vasomotor reactions around meals [2].
- Avoid premature labeling as allergy: High false-positive rate of self-reported food allergy supports considering nonallergic mechanisms first in isolated events [3].
- Systemic mastocytosis unlikely here: Work-up typically considered for recurrent or severe anaphylaxis presentations [4].

References

[1] Anaphylaxis
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We suggest that clinicians use current NIAID/FAAN or WAO anaphylaxis criteria to assist in the diagnosis of anaphylaxis...
https://www.annallergy.org/article/S1081-1206(23)01304-2/fulltext

[2] Diagnosis and Management of Acute and Chronic Urticaria
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology
2014-02-01
Acute urticaria and angioedema are often but not always related to mast cell and basophil activation from multiple triggers, which include IgE- and non–IgE-mediated mechanisms.
https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20and%20Parameters/Urticaria-2014.pdf

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Parent and patient reports of FA must be confirmed, because multiple studies demonstrate that 50% to 90% of presumed FAs are not allergies.
https://www.jacionline.org/article/S0091-6749(14)00672-1/pdf

[4] Anaphylaxis
American College of Allergy, Asthma, and Immunology, American Academy of Allergy, Asthma & Immunology

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We suggest clinicians consider evaluation for mastocytosis, including a bone marrow biopsy, for adult patients with severe insect sting anaphylaxis or recurrent idiopathic anaphylaxis (IA), particularly those with a predictive REMA score.
https://www.annallergy.org/article/S1081-1206(23)01304-2/fulltext

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Question 119.1 (Mc Nj) Step 2

Question

A 45-year-old woman returns to the office to discuss results of a fine-needle aspiration biopsy of a 0.5-cm right breast mass obtained 1 week ago. She is unaccompanied. Medical history is unremarkable and she takes no medications. Her mother and maternal aunt were diagnosed with breast cancer at the ages of 45 and 52 years, respectively. Physical examination discloses no palpable axillary nodes. The biopsy specimen showed malignant cells. The patient is counseled that she has an excellent chance of cure with lumpectomy and radiation therapy. She adamantly refuses this treatment plan and states that she will try natural therapies, including megavitamins and herbal remedies instead.

After exploring the reasons behind the patient's decision, which of the following is the most appropriate response?

(A) Advise the patient that there is no proof that these alternative therapies work and that she is essentially throwing her life away
(B) Agree to the alternative therapies and schedule a follow-up visit in 6 months
(C) Ask the patient if she would be willing to return to the office in 2 weeks to discuss treatment options again
(D) Inform the patient that she will be referred to another physician based on her treatment decision

Correct Response:
C
Synthesize Response:
C✓

Synthesize Answer

Introduction

Most appropriate response: C. Ask her to return soon (e.g., in about 2 weeks) to revisit options while maintaining rapport and supporting shared decision-making. This keeps the therapeutic relationship open, allows time to process information and values, and aligns with ASCO guidance on building rapport, exploring understanding and goals, assisting with medical decision-making, and coordinating care; coercion or abandonment are discouraged [2][3].

Why C is preferred and how to proceed

- Maintain the relationship and plan a timely follow-up: schedule a near-term appointment to continue shared decision-making, rather than delaying for months or ending care [2][3].
- Communicate respectfully and support decision-making: ASCO emphasizes key elements such as rapport, exploration of understanding/prognosis, clarification of goals, assistance with medical decisions, and coordination with other providers [2]. Avoid judgmental or coercive language (contra A) and avoid abandonment (contra D) [2][3]. Six-month deferral (B) is inconsistent with coordinated, ongoing decision support [2].
- Address "natural" therapies accurately and respectfully: The Society for Integrative Oncology notes a lack of strong evidence for ingested dietary supplements/botanicals for breast cancer supportive care or treatment-related side effects [1]. If she is interested in integrative approaches, some modalities have evidence for symptom management in specific contexts (e.g., massage for chronic pain after treatment; acupuncture for anxiety after treatment)—these are supportive, not substitutes for disease-directed therapy [4][5].
- Practical next steps consistent with guidelines:
  - Explore her understanding of the diagnosis, prognosis, and the potential benefits/risks of standard treatments; clarify her values and goals [2].
  - Offer continued assistance with decision-making and coordination of care; invite involvement of family or supports if she wishes [2].
  - Provide balanced information on integrative options with evidence for symptom relief, while explaining the limited evidence for ingested supplements in this setting [1][4][5].

Summary of options A–D

- A (confrontational/pejorative) risks damaging rapport and is inconsistent with guideline

principles of respectful communication and decision support [2].
- B (agree and follow up in 6 months) unduly delays care and does not provide ongoing decision support [2].
- C (return in ~2 weeks) best preserves rapport, enables shared decision-making, and coordinates ongoing care [2][3].
- D (refer because of her decision) risks abandonment and undermines the clinician's role in assisting with medical decisions [2].

References

[1] Use of Integrative Therapies During and After Breast Cancer Treatment
Society for Integrative Oncology
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There is a lack of strong evidence supporting the use of ingested dietary supplements or botanical agents as supportive care and/or to manage breast cancer treatment-related side effects.
https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21397

[2] Palliative Care for Patients with Cancer
American Society of Clinical Oncology
2024-05-15
Patients with advanced cancer should receive palliative care services, which may include a referral to a palliative care provider. Essential components of palliative care include: Rapport and relationship building with patient and family caregivers; Symptom, distress, and functional status management; Exploration of understanding and education about illness and prognosis; Clarification of treatment goals; Assessment and support of coping and spiritual needs; Assistance with medical decision making; Coordination with other care providers; Provision of referrals to other care providers as indicated
https://ascopubs.org/doi/10.1200/JCO.24.00542

[3] Management of the Axilla in Early-Stage Breast Cancer
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Shared decision-making processes should be put in place while we await mature clinical trial data, to enable patient value-based decision making.
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American Society of Clinical Oncology, Society for Integrative Oncology
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Massage may be offered to patients experiencing chronic pain following breast cancer treatment. (Quality – Low)
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[5] Integrative Oncology Care of Anxiety and Depressive Symptoms in Adult Patients with Cancer
American Society of Clinical Oncology, Society for Integrative Oncology
2023-08-14
Acupuncture may be offered to women with breast cancer to improve anxiety symptoms post treatment.

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Question 120.1 (Mc Nj) Step 2

Question

A 47-year-old woman comes to the office because of a 2-month history of progressive weakness and numbness of her right leg. She has a 3-year history of type 2 diabetes mellitus treated with metformin. She has worked as a stock person in a storeroom for 12 years; she often moves and lifts heavy objects and sometimes crawls into tight spaces. On neurologic examination, muscle strength is 5–/5 in the hip extensor, thigh abductor, hamstring, and gastrocnemius muscles on the right and intact on the left. Muscle strength is intact in the iliopsoas, thigh adductor, quadriceps, and tibial anterior muscles bilaterally. Deep tendon reflexes are 1+ in the right ankle and 2+ in the left ankle. Sensation to light touch is mildly decreased over the lateral and inferior aspects of the right foot. Sensation otherwise is intact.

Which of the following is the most likely diagnosis?

(A) Common peroneal neuropathy
(B) Femoral neuropathy
(C) L2 radiculopathy
(D) L4 radiculopathy
(E) Obturator neuropathy
(F) S1 radiculopathy

Correct Response:
F
Synthesize Response:
F✓

Synthesize Answer

Introduction

Most likely diagnosis: F) S1 radiculopathy.

Why this fits: The patient's pattern of posterior-chain weakness and sensory change over the lateral–inferior foot is most consistent with an S1 myotomal/dermatomal distribution. The North American Spine Society (NASS) emphasizes that diagnosis of lumbar disc herniation with radiculopathy relies on careful clinical examination with manual muscle testing and sensory testing, along with straight-leg–raise maneuvers when appropriate [1]. When the diagnosis or root level is uncertain, NASS notes that the H-reflex can be helpful for identifying S1 root involvement (though not specific for disc herniation) [2]. Radicular symptoms classically occur in a myotomal/dermatomal pattern in lumbar disc herniation with radiculopathy [3].

References

[1] Diagnosis And Treatment Of Lumbar Disc Herniation With Radiculopathy
North American Spine Society
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Manual muscle testing, sensory testing, supine straight leg raise, Lasegue sign, and crossed Lasegue sign are recommended for use in diagnosing lumbar disc herniation with radiculopathy.
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[2] Diagnosis And Treatment Of Lumbar Disc Herniation With Radiculopathy
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Electromyography, nerve conduction studies, and F waves are suggested to have limited utility in the diagnosis of lumbar disc herniation with radiculopathy. H reflexes can be helpful in the diagnosis of an S1 radiculopathy, although are not specific to the diagnosis of lumbar disc herniation.
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[3] Diagnosis And Treatment Of Lumbar Disc Herniation With Radiculopathy
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2022-03-15
Localized displacement of disc material beyond the normal margins of the intervertebral disc space resulting in pain, weakness, or numbness in a myotomal or dermatomal distribution.
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