

1. A 55 year old Caucasian male comes to your clinic for a routine follow up visit. His past medical history is significant for HTN, DM Type II, and back pain for which he occasionally uses NSAIDs for pain relief. His medications include hydrochlorothiazide, metformin, and ASA. The patient recently had routine blood work done which was significant only for a BUN 28, Cr 1.6, glucose 102. The patient states that he has no new complaints; he tries his best to eat right and is compliant with his medications. He states that he occasionally exercises on the treadmill every now and then for 30 min/day. He also says that his glucose readings at home range from 90 – 120 mg/dL and his blood pressure readings at home average around 120/80. The patient is in a good mood and is asking what is your advice regarding his health. Which of the following statements would be most appropriate to state to the patient?

- A. "You can take several NSAIDs a day as needed; I understand that your back pain is bothering you."
- B. "You're doing great, let's stay the course, and I will see you in another 6 months for a follow up visit."
- C. "I think it is time I referred you for your biennially diabetic ophthalmological and podiatry visits."
- D. "I think I need to review your medications."
- E. "Beginning at 55 in men with no risks factors for colon cancer a colonoscopy is recommended."

2. A 84 y/o female is in the ICU in the state of Maryland due to presenting to the hospital 3 weeks prior to complaints of altered mental status. Her condition is complicated due to metastatic small cell lung carcinoma, COPD, DM, and HTN. She is currently intubated but is now showing signs and symptoms of sepsis her prognosis seems poor. She was being followed by a pulmonologist and cardiologist both individuals has recently written in the patient's chart that the patient will likely expire due to her current condition and continued maximal medical treatment is not going to benefit. Prior to being intubated the patient did express that she would like you to 'give her something' if her symptoms became worse to make her last few days relatively comfortable rather than suffering to her end. According to the current generally accepted guidelines you should:

- A. Prescribe a medication that will lead to the patient's demise
- B. Prescribe a medication, but wait 24 hrs and reassess the patient and then possible administer drug
- C. The patient's own words override any previous legal document, so you must administer the drug
- D. The patient does not seem to want to suffer, withhold medications and treatment, palliative care.
- E. Continue to offer supportive treatment

3. A 55 y/o male presents to clinic presents to his primary care physician complaining of recent onset generalized muscle pain with chronic onset. His medications include Lisinopril, Atorvastatin, ASA, and occasional Viagra. The patient states that he heard from one of his friends that supplementation with a certain vitamin, mineral, or substance can alleviate the symptoms. Which of the following substances could he be talking about?

- A. Calcium
- B. CoQ-10
- C. Omega 3 Fatty Acids
- D. Selenium
- E. Zinc

4. A 42 y/o female whose mother suffers from DM Type II and has a BMI of 28 undergoes a screening test to diagnose diabetes, which of the following tests was most likely performed:

- A. Overnight fasting glucose
- B. HbA1c Measurement
- C. Random Glucose
- D. Urine Dipstick for Glucose
- E. Oral Glucose Tolerance Test

5. A 27 y/o male who is sexually active with several partners asks to be tested for HIV, since he admits to a history of recent risky sexual behavior. The patient concedes that he will most likely test positive, he wants to know more about HIV/AIDS. You start having a conversation about what HIV and AIDS is, related health conditions, and possible outcomes. During this conversation which of the following statements is most accurate:

- A. "If the tests come back and it is positive, unfortunately, I am sorry to say you will have AIDS"
- B. "Research trials indicate that a vaccine will be available soon due to the stable nature of gp120"
- C. "To diagnose the condition, an ELISA test will be done and if that is positive a confirmatory Western Blot test will be done. The former is specific while the later is sensitive"
- D. "If the test is positive then I will have to report it to the CDC, HIV is a reportable disease and the government keeps track of who has it to prevent or monitor any possible epidemic."
- E. "You or an immediate family member are eligible under certain conditions for a leave from work to deal with the condition."

6. Which of the following interventions is the most effective method to reduce blood pressure?

- A. Stop Smoking
- B. Weight Loss
- C. Reduce Alcohol Consumption
- D. Dietary Sodium Restriction
- E. Physical Activity

7. For which of the following conditions is there not an established screening method?

- A. Lung Cancer
- B. Colorectal Cancer
- C. Congenital Hypothyroidism
- D. PKU
- E. Breast Cancer

8. A patient who has a recently diagnosed DVT in her left lower extremity is now on Warfarin therapy for anticoagulation purposes. In an outpatient setting she goes to a Warfarin clinic to monitor her anticoagulation. Her INR is 3.2 and she is told that is a therapeutic value. Which of the following medical conditions can account for this?

- A. Congestive Heart Failure
- B. Chronic GI Bleed
- C. Bioprosthetic Valve
- D. Hyperlipidemia
- E. Mechanical Prosthetic Valve

9.

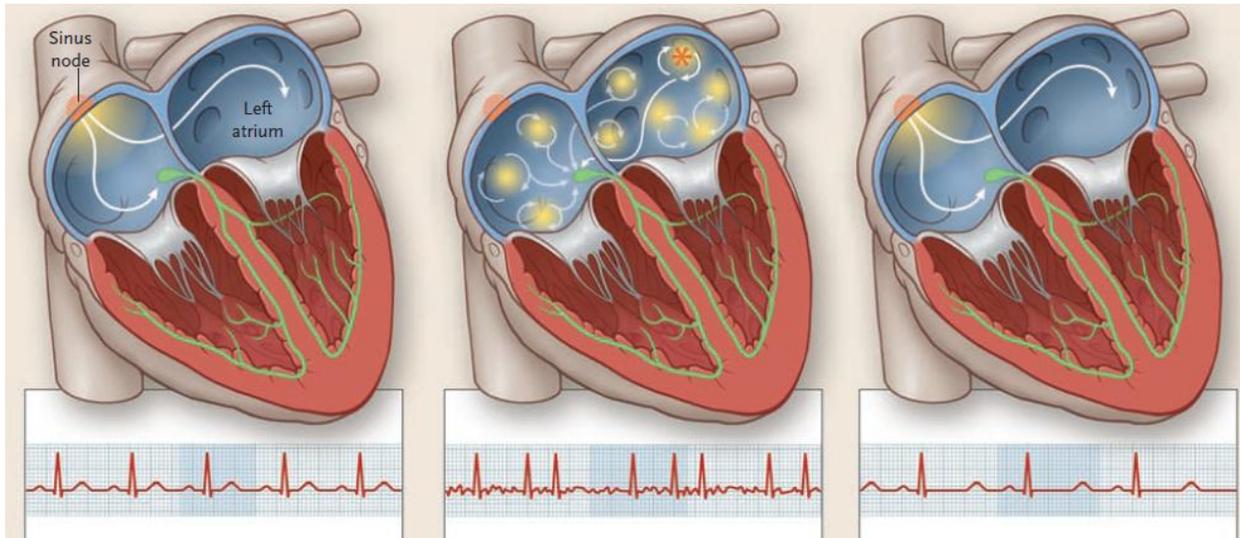


Image Source: N Engl J Med 356;9 937.

How would you describe the preceding image? What is the most appropriate description of the three EKG tracings from left to right?

- A. Sinus Tachycardia, Atrial Fibrillation, Sick Sinus Syndrome
- B. Atrial Tachycardia, Atrial Flutter, Prolonged QT
- C. Sinus Arrhythmia, Multi Focal Atrial Tachycardia, Sinus Bradycardia
- D. Wolf-Parkinson-White, Atrial Tachycardia, Mobitz II
- E. Sinus Rhythm, Atrial Fibrillation, Prolonged QT

10. A 34 year old female presents to your clinic today inquiring about birth control pills, OCP (Oral Contraceptive Pill). Her blood pressure today was 159/89, recent HbA1c of 7.5, focal migraine symptoms, she occasionally drinks beer, and a family history of breast cancer in her mother and grandmother. Which of her medical conditions is the strongest indicator that an OCP is contraindicated?

- A. Hypertension
- B. Migraines
- C. Alcohol Use
- D. Diabetes
- E. Family History of Breast Cancer

**Answers:**

**1. Correct Answer D.**

A. Although the patient seems to have some sort of chronic pain issue, increased NSAID use is commonly associated with gastric ulcers. Allowing the patient unlimited NSAID use would predispose him to peptic ulcer disease. If the patient did develop these ulcers, the treatment of choice would be to stop the NSAID and start a PPI.

Source: NSAIDs and Peptic Ulcer

<http://digestive.niddk.nih.gov/ddiseases/pubs/nsaids/>

B. Although the patient's blood pressure and home glucose readings imply the patient is responding well to treatment, it is not the best statement especially considering his medications.

C. It is true that diabetic patients need ophthalmological and podiatry exams, it should occur yearly not every other year. This is done to monitor for diabetic retinopathy and peripheral neuropathy.

Source: National Diabetes Education Program

<http://ndep.nih.gov/publications/OnlineVersion.aspx?Ndepld=NDEP-54>

D. The patient is using medications that are commonly used to treat both DM and HTN, but due to his increased Cr and DM some changes are required. If a patient does not have any comorbidity than HCTZ is the first line treatment for HTN, but with DM ACEIs are considered frontline medications as it has been linked to the slowed progression of diabetic related kidney damage which is seen with proteinuria. Also, with the elevated Cr metformin is contraindicated due to the possible risk of lactic acidosis. An alternative medication such as a sulfonyleurea can be used.

Source: Antihypertensive agents for preventing diabetic kidney disease

<http://www2.cochrane.org/reviews/en/ab004136.html>

Do risk factors for lactic acidosis influence dosing of metformin?

<http://www.ncbi.nlm.nih.gov/pubmed/15482389>

E. According to the American Cancer Society:

Beginning at age 50, both men and women should follow one of these testing schedules:

Tests that find polyps and cancer

Flexible sigmoidoscopy every 5 years\*, or

Colonoscopy every 10 years, or

Double-contrast barium enema every 5 years\*, or

CT colonography (virtual colonoscopy) every 5 years\*

Tests that primarily find cancer

Yearly fecal occult blood test (gFOBT)\*\*, or

Yearly fecal immunochemical test (FIT) every year\*\*, or

Stool DNA test (sDNA), interval uncertain\*\*

\* If the test is positive, a colonoscopy should be done.

\*\* The multiple stool take-home test should be used. One test done by the doctor in the office is not adequate for testing. A colonoscopy should be done if the test is positive.

Source:

[http://www.cancer.org/docroot/ped/content/ped\\_2\\_3x\\_acs\\_cancer\\_detection\\_guidelines\\_36.asp](http://www.cancer.org/docroot/ped/content/ped_2_3x_acs_cancer_detection_guidelines_36.asp)

## 2. Correct Answer: E

A, B, C: The current accepted practice is that it is not the accepted practice for a patient to be involved in euthanasia. A key point: Euthanasia: Physician initiates and administers the lethal drug. Physician Assisted Suicide: Patient gives the drug to the patient and the patient self-administers the medication. The location of Maryland is stated since Oregon is known to accept euthanasia as legal.

There is no current accepted basis to wait 24 hours then administer euthanasic medications. A patient's words are a key factor in dealing with end of life care issues, but once again a health care provider should not actively cause the death of the patient no matter how willing a patient is. The most logical answers out of the choices is E, to continue supportive treatment.

"The American College of Physicians–American Society of Internal Medicine (ACP–ASIM) does not support the legalization of physician-assisted suicide. The routine practice of physician assisted suicide raises serious ethical and other concerns. Legalization would undermine the patient–physician relationship and the trust necessary to sustain it; alter the medical profession's role in society; and endanger the value our society places on life, especially on the lives of disabled, incompetent, and vulnerable individuals. The ACP–ASIM remains thoroughly committed to improving care for patients at the end of life"

Source: Physician-Assisted Suicide

<http://www.annals.org/content/135/3/209.full.pdf>

## 3. Correct Answer: B

B: There is mild evidence that CoQ-10 deficiency may be linked with statin-induced rhabdomyolysis. Statins have been linked to decreasing CoQ-10. The other listed substances have not been linked to reducing the myopathy. According to the *Archives of Neurology*:

"In summary, our data suggest that statin drugs may decrease the concentration of CoQ<sub>10</sub> in muscle to a modest extent in some patients. Although these data do not support a pathogenic role of CoQ<sub>10</sub> deficiency in statin drug–related myopathy, it may be prudent to advocate that patients with statin drug–related myopathy be given oral CoQ<sub>10</sub> supplementation."

Source: Muscle Coenzyme Q10 Level in Statin-Related Myopathy

<http://archneur.highwire.org/cgi/content/full/62/11/1709>

There is also a study currently underway to see how close this association is.

Source: Benefit of CoQ-10 in Patients on Statins

<http://clinicaltrials.gov/ct2/show/NCT00997269>

## 4. Correct Answer: A

A: The traditional method of diagnosing DM is through an overnight fast and then measuring the blood glucose levels. Below 99 mg/dL is considered normal, 100 – 125 mg/dL is impaired fasting glucose, >126 mg/dL is considered diabetic and a repeat test is indicated to confirm the diagnosis. This is the fasting plasma glucose test (FPT).

B. HbA1c is a diagnostic tool usually used to measure the long term glycemic control in an individual. Currently this is not a screening test.

C. Random fasting glucose can diagnose DM if the levels are about 200 mg/dL with symptoms of polyuria, polydipsia, or unexplained weight loss. The results can be skewed due to the patient having a recent meal. Abnormal values are confirmed though a FGT or OGTT

D. Urine dipstick for glucose indicating glycosuria indicates abnormal glucose levels and further workup is indicated, not the most common method to diagnose patient.

E. OGTT: Involves a patient fasting for 8 hr prior to a 75 g oral glucose load, if the 2hr post load glucose is above 200 mg/dL indicate diabetes and repeat test, between 140 – 199 mg/dL indicate impaired glucose tolerance, and below 139 mg/dL indicate normal results.

In pregnancy a 100g oral glucose tolerance is used, gestational diabetes mellitus (GDM) can be diagnosed if the fasting glucose is > 95 mg/dL, 1 hr > 180 mg/dL, 2 hr > 155 mg/dL, 3 hr > 140 mg/dL

Source: Diagnosis of Diabetes (a great site to understand these tests)

<http://diabetes.niddk.nih.gov/dm/pubs/diagnosis/>

## 5. Answer E

A. Remember that HIV is a virus that causes AIDS with today's treatment HIV is becoming a chronic condition. There are several AIDS defining conditions and following HIV viral load with CD4 counts area are part of the management of an HIV positive patient.

B. Classically gp120 is a highly variable glycoprotein that has been the target of vaccine research, but there is no cure or vaccine that has been found for the virus. There is a lot of active research to find a vaccine, a recent study from the the *New England Journal of Medicine* stated:

"This ALVAC-HIV and AIDSVAX B/E vaccine regimen may reduce the risk of HIV infection in a community-based population with largely heterosexual risk. Vaccination did not affect the viral load or CD4+ count in subjects with HIV infection. Although the results show only a modest benefit, they offer insight for future research.

Source: Vaccination with ALVAC and AIDSVAX to Prevent HIV-1 Infection in Thailand

<http://content.nejm.org/cgi/reprint/361/23/2209.pdf>

C. The opposite statement is actually true. The ELISA test is sensitive and the Western Blot is specific.

Source: The Different HIV Tests

<http://www.avert.org/testing.htm>

D. While it is true that HIV is a mandatory reportable disease, it is not the current policy to have a national database of each individual who has the disease. According to the U.S. Department of Health and Human services:

"If your HIV test is positive, the clinic or other testing site will report the results to your state health department. They do this so that public health officials can monitor what's happening with the HIV epidemic in your city and state. (It's important for them to know this, because Federal and state funding for HIV/AIDS services is often targeted to areas where the epidemic is strongest.)

Your state health department will then remove all of your personal information (name, address, etc.) from your test results and send the information to the U.S. Centers for Disease Control and Prevention (CDC). CDC is the Federal agency responsible for tracking national public health trends. CDC does not share this information with anyone else, including insurance companies."

Source: Legal Disclosure

<http://aids.gov/hiv-aids-basics/diagnosed-with-hiv-aids/your-legal-rights/legal-disclosure/index.html>

E. Federal regulation allows for individuals under certain circumstances to a leave from work, as per the Federal Medical Leave Act of 1993:

“Applies to private-sector employers with 50 or more employees within 75 miles of the work site. If you are eligible, you can take leave for serious medical conditions or to provide care for an immediate family member with a serious medical condition, including HIV/AIDS. You are entitled to a total of 12 weeks of job-protected, unpaid leave during any 12-month period.”

Source: Workplace

<http://aids.gov/hiv-aids-basics/diagnosed-with-hiv-aids/your-legal-rights/workplace/>

#### **6. Correct Answer B**

- A. Cigarette smoking is a key risk factor for cardiovascular disease risk overall not blood pressure.
- B. Weight loss of 10 lbs is associated with a 5 – 20 mmHg SBP (systolic blood pressure) reduction.**
- C. Reducing alcohol consumption is associated with a 2 - 4 mmHg SBP reduction.
- D. Reducing sodium intake is associated with a 2 – 8 SBP mmHg
- E. Moderate exercise is associated with a 4 – 9 SBP mmHg reduction.

Source: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure

<http://www.nhlbi.nih.gov/guidelines/hypertension/express.pdf>

#### **7. Correct Answer A**

**A.** The U.S. Preventive Services Task Force (USPSTF) concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for lung cancer with either low dose computerized tomography (LDCT), chest x-ray (CXR), sputum cytology, or a combination of these tests.

**B.** The USPSTF recommends screening for colorectal cancer (CRC) using fecal occult blood testing, sigmoidoscopy, or colonoscopy, in adults, beginning at age 50 years and continuing until age 75 years. The risks and benefits of these screening methods vary.

Grade: A Recommendation.

The USPSTF recommends against routine screening for colorectal cancer in adults age 76 to 85 years. There may be considerations that support colorectal cancer screening in an individual patient.

Grade: C Recommendation.

The USPSTF recommends against screening for colorectal cancer in adults older than age 85 years.

Grade: D Recommendation.

The USPSTF concludes that the evidence is insufficient to assess the benefits and harms of computed tomographic colonography and fecal DNA testing as screening modalities for colorectal cancer.

Grade: I Statement.

**C.** The USPSTF recommends screening for congenital hypothyroidism (CH) in newborns.

**D.** The USPSTF recommends screening for phenylketonuria (PKU) in newborns

**E.** The USPSTF recommends biennial screening mammography for women aged 50 to 74 years.

Grade: B recommendation.

The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms.

Grade: C recommendation.

8. Correct Answer E: Mechanical Prosthetic Valve

**Table 1. Indications for and Effect of Long-Term Anticoagulation.\***

Indication	Incidence of Thromboembolism <i>percent</i>	Absolute Risk Reduction with Anticoagulation Alone <i>percentage points</i>	Intensity of Treatment <i>target INR</i>
Prevention of systemic embolism			
Mechanical prosthetic heart valve <sup>2,3</sup>	8.6/yr <sup>4</sup>	4–8 <sup>2,4</sup>	2.0–3.5 <sup>2,3†</sup>
Bioprosthetic heart valve <sup>2,3</sup>	5–6 in first 3 mo <sup>5</sup>	Controversial <sup>2</sup>	2.0–3.0 <sup>2</sup>
Nonvalvular atrial fibrillation <sup>6,7</sup>	4.5/yr <sup>8</sup>	3 <sup>9</sup>	2.0–3.0 <sup>6</sup>
Myocardial infarction <sup>10</sup>	1.2–2.6/yr <sup>11</sup>	1–2 <sup>12</sup>	2.0–3.0 <sup>10</sup>
Mitral-valve disease in sinus rhythm <sup>13</sup>	8/yr <sup>14</sup>	6 <sup>15</sup>	2.0–3.0 <sup>13</sup>
Prevention of recurrent disease			
Ischemic stroke in atrial fibrillation <sup>9</sup>	12/yr <sup>16</sup>	8 <sup>16</sup>	2.0–3.0 <sup>6</sup>
Myocardial infarction <sup>10</sup>	5–7/yr <sup>11</sup>	Approximately 4 <sup>11,12</sup>	2.0–3.0 <sup>10</sup> or 2.5–3.5 <sup>17‡</sup>
Venous thromboembolism <sup>18</sup>	22–29 in first 3 mo <sup>19,20</sup>	≤22 <sup>19</sup>	2.0–3.0 <sup>18</sup>

\* INR denotes international normalized ratio. References cited in the table provide more detailed information.

† The target INR may be split into narrower recommended ranges according to the risk associated with the valve position (lower with aortic than with mitral and lower with mitral than with both) and type of valve prosthesis (lower with a bileaflet valve than with a tilting disk and lower with a tilting disk than with a caged ball or caged disk).

‡ The recommendation for a target INR of 2.5 to 3.5 refers to anticoagulation without the addition of aspirin.

N Engl J Med 349;7 676

<http://content.nejm.org/cgi/reprint/349/7/675.pdf>

9. Correct Answer E: Sinus Rhythm, Atrial Fibrillation, Prolonged QT

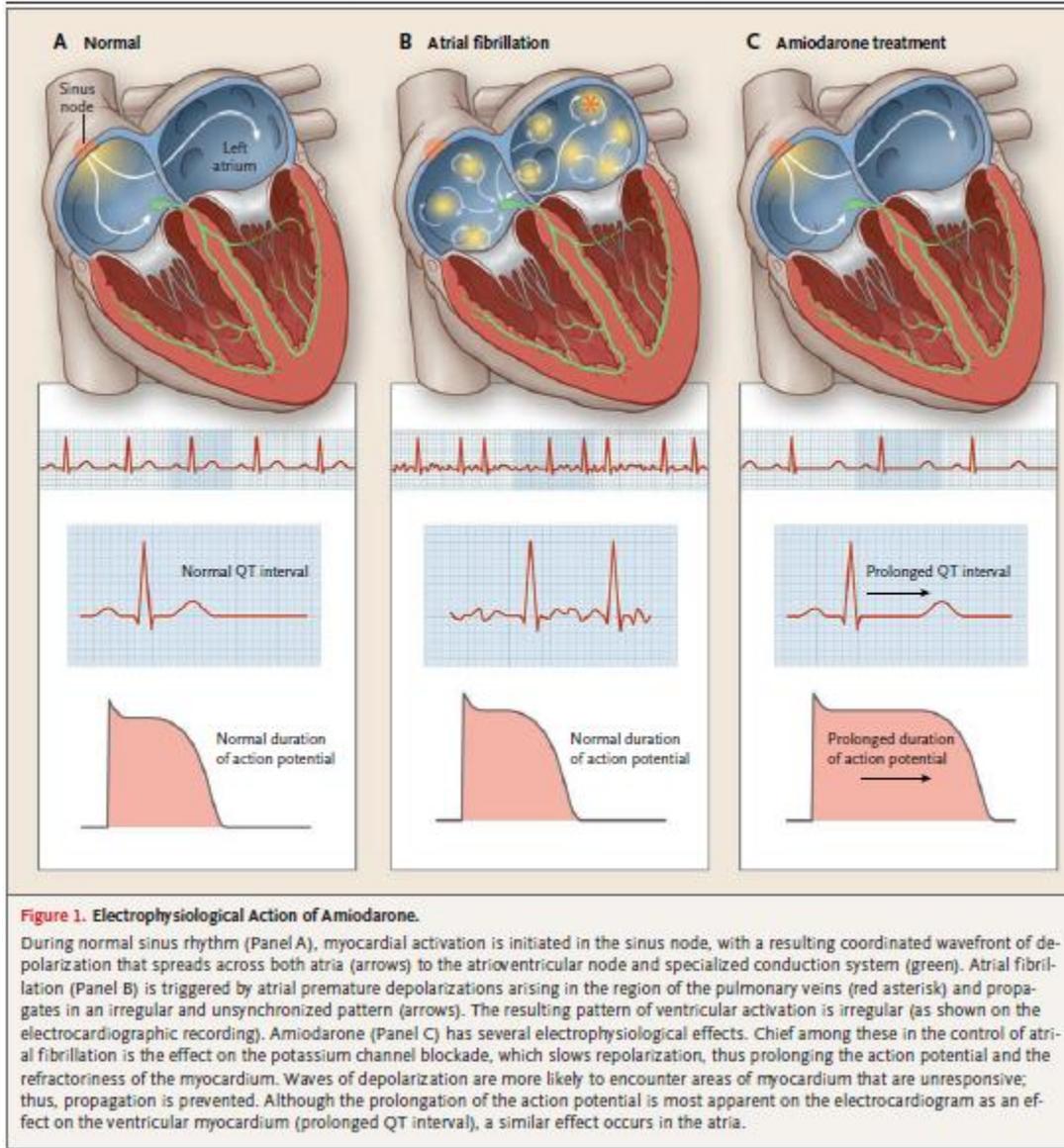


Image Source: N Engl J Med 356;9 937.

10. Correct Answer B: Migraines

**Table 3. Summary of Guidelines for the Use of Combination Estrogen–Progestin Oral Contraceptives in Women with Characteristics That Might Increase the Risk of Adverse Effects.\***

Variable	ACOG Guidelines	WHO Guidelines
Smoker, >35 yr of age <15 cigarettes/day ≥15 cigarettes/day	Risk unacceptable Risk unacceptable	Risk usually outweighs benefit Risk unacceptable
Hypertension Blood pressure controlled	Risk acceptable; no definition of blood-pressure control	Risk usually outweighs benefit if systolic blood pressure is 140–159 mm Hg and diastolic blood pressure is 90–99 mm Hg
Blood pressure uncontrolled	Risk unacceptable; no definition of uncontrolled blood pressure	Risk unacceptable if systolic blood pressure is ≥160 mm Hg or diastolic blood pressure is ≥100 mm Hg
History of stroke, ischemic heart disease, or venous thromboembolism	Risk unacceptable	Risk unacceptable
Diabetes	Risk acceptable if no other cardiovascular risk factors and no end-organ damage	Benefit outweighs risk if no end-organ damage and diabetes is of ≤20 yr duration
Hypercholesterolemia	Risk acceptable if LDL cholesterol <160 mg/dl and no other cardiovascular risk factors	Benefit–risk ratio is dependent on the presence or absence of other cardiovascular risk factors
Multiple cardiovascular risk factors	Not addressed	Risk usually outweighs benefit or risk unacceptable, depending on risk factors
Migraine headache Age ≥35 yr Focal symptoms	Risk usually outweighs benefit Risk unacceptable	Risk usually outweighs benefit Risk unacceptable
Breast cancer Current disease Past disease, no active disease for 5 yr Family history of breast or ovarian cancer	Risk unacceptable Risk unacceptable Risk acceptable	Risk unacceptable Risk usually outweighs benefit Risk acceptable

\* The American College of Obstetricians and Gynecologists (ACOG) guidelines recommend the use of formulations containing less than 50 µg of ethinyl estradiol with the “lowest progestin dose,” without mention of the type of progestin. The World Health Organization (WHO) guidelines pertain explicitly to formulations containing 35 µg or less of ethinyl estradiol and do not mention the dose or type of progestin. To convert values for low-density lipoprotein (LDL) cholesterol to millimoles per liter, multiply by 0.02586.

Source: N Engl J Med 349;15 1443

<http://content.nejm.org/cgi/reprint/349/15/1443.pdf>