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United States Medical Licensing Step 3

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QUESTION 1

Which of the following patients is most likely to progress to develop cirrhosis?

A. a man with chronic liver disease due to cytomegalovirus infection

B. a man with chronic liver disease due to hepatitis B

C. a man with chronic liver disease due to hepatitis C

D. a man chronic with liver disease due to hepatitis D

E. a man with chronic liver disease due to human immunodeficiency virus

Correct Answer: C Section: (none)

Explanation:

Hepatitis C which is caused by a singlestranded RNA virus is responsible for over 90% of the cases of hepatitis associated with transfusion of blood and blood products in the United States. The disease also occurs in drug abusers and transplant recipients, as well as renal dialysis patients. It is associated with a higher incidence of chronic hepatitis, which occurs in 50% of those affected and cirrhosis complicates 20% of the cases.

QUESTION 2

A recent study compared two drugs--exemestane and tamoxifen--for the treatment of estrogenreceptor positive breast cancer in postmenopausal women. At the end of the study, 91.5% of the women treated with the drug exemestane and 86.8% of the women treated with tamoxifen were disease free (P

What is the absolute risk reduction (ARR) for the development of recurrent breast cancer for women taking exemestane compared to women taking tamoxifen?

A. 95.3%

B. 72%

C. 64%

D. 36%

E. 4.7%

Correct Answer: E Section: (none)

Explanation: Explanations: Relative risk is the percentage of subjects who achieve an outcome in one experimental group divided by the percentage of subjects who achieve the same outcome in another group. This statistic is used frequently in placebo-controlled trials, where the comparison occurs between the experimental group and the control group. In the study referenced in this set of questions, the comparison is between two groups who were given two different active medications exemestane and tamoxifen. The outcome studied here is the development of recurrent

breast cancer. The data presented state that after the course of treatment, 91.5% of the women in the exemestane group and 86.8% of the women in the tamoxifen group were disease free. Therefore, 8.5% in the exemestane group and 13.2% in the tamoxifen group developed the outcome of recurrent breast cancer. The relative risk is then calculated as 0.085/0.132 = 0.64 = 64%. The relative risk reduction is the percentage by which the risk in one group has been reduced when compared to the other group. In other words, if the rate of an outcome in one group is 100%, the relative risk reduction is the difference between 100% and the measured relative risk. It is calculated by the formula: Relative risk reduction = 1 -relative risk In this example, the relative risk reduction is 1 -0.64 = 0.36 = 36%.

The ARR, also known as the risk difference, is calculated by subtracting the percentage of subjects who achieve an outcome in one group from the percentage who achieve the outcome in another. In this study, the ARR for those in the exemestane group compared to those in the tamoxifen group is 13.2% -8.5% = 4.7%. The NNT is the number of subjects who need to receive an intervention (such as a medication) in order for one of them to have a beneficial outcome. In this study, the beneficial outcome would be one less case of recurrent breast cancer. The NNT is calculated as 1/ARR. In this case, the NNT = 1/0.047 = 21. In other words, 21 women need to be treated with exemestane in order for there to be one fewer case of recurrent breast cancer compared to women treated with tamoxifen.

QUESTION 3

A 4-year-old child is seen in the emergency department after having a seizure at home. This is the first time that this has happened. The mother says that the child was sitting on the couch watching television when she suddenly became limp, started drooling, and having generalized tonic-clonic movements of her arms and legs. The mother relates that the child felt like she was "burning up" and that the tonic-clonic activity stopped after a few minutes. The mother says that the child is otherwise healthy, does not take any medicines, and has never been hospitalized. The child\\'s immunizations are up-todate, and she has no known drug allergies. On examination, the vital signs are temperature of 104°F, BP 97/49, HR 112, and RR

26. The child is sitting on the examination table playing with stickers and drawing. She has a mild amount of clear nasal congestion but her examination is otherwise normal. When asked, the child replies that she feels fine.

What is the most likely diagnosis?

A. bacterial meningitis

B. first seizure in an epilepsy syndrome

C. viral encephalitis

D. typical febrile seizure

E. hypocalcemic tetany

Correct Answer: D Section: (none)

Explanation:

Febrile seizures are the most common cause of seizures in childhood. These are classically seen early in an illness and when there is a rapid rise in the child\\'s temperature. These seizures usually last less than 23 minutes (typical febrile seizures last no longer than 15 minutes) and have a very mild, short, postictal phase. Children who have seizures that are the result of bacterial meningitis will not subsequently be normal. For typical febrile seizures, in an otherwise healthy and well-appearing child, no evaluation (outside of treating any underlying cause of the fever) is warranted. Blood and urine cultures would not be necessary in evaluation of the seizures, but they may be warranted in evaluation of the fever. An EEG and head CT will nearly universally be normal and are unwarranted. A single typical febrile seizure routinely does not require any anticonvulsant therapy. If the child has had multiple febrile seizures, or the seizures are

not typical, anticonvulsant therapy may be entertained. Prophylactic anticonvulsant therapy is usually initiated after the third febrile seizure. Occasionally, children may have convulsions associated with fevers which do not fall into the typical features. Some criteria which would make a febrile seizure atypical would be prolonged duration (greater than 15 minutes) and a prolonged postictal state

QUESTION 4

A 34-year-old woman with a history of type 1 diabetes mellitus presents to your office for a routine follow-up visit. She is feeling well and has no complaints. Her fasting blood sugars usually run 140 160 and her HgbA1C was recently measured at 8.2. She tells you that she would like to become pregnant but wants to know if there are any risks for her and a baby due to her diabetes.

Which of the following statements regarding the risk of pregnancy to the diabetic mother is true?

A. Pregnancy significantly exacerbates diabetic nephropathy.

B. Most diabetic women will develop neuropathic symptoms while pregnant.

C. About 10% of diabetic women will develop ketoacidosis during pregnancy.

D. Most diabetic women develop at least one infection during pregnancy.

E. The occurrence of preeclampsia is directly related to diabetic control

Correct Answer: D Section: (none)

Explanation: Explanations: Pregestational diabetes is associated with numerous risks to both the mother and the fetus. Stillbirths are more common in pregnancies to diabetic women and stillbirths without an identifiable cause, called "unexplained" stillbirths, are a well-described phenomenon. Similarly, preterm births are more common in diabetics than nondiabetics. While congenital malformations are more common in pregnancies to diabetic women, fetal chromosomal abnormalities are not more common. Children of women with diabetes have an approximately 13% incidence of developing type 1 diabetes. While earlier obstetrical teaching suggested that maternal diabetes delayed fetal lung maturation, more recent studies do not support this. Gestational age is likely the most significant factor in the development of respiratory distress. While there are significant maternal risks from the interaction of diabetes and pregnancy, with the possible exception of diabetic retinopathy, the long-term course of diabetes does not appear to be affected by pregnancy. Pregnancy neither exacerbates nor modifies diabetic nephropathy and the development of diabetic peripheral neuropathy during pregnancy is uncommon. While preeclampsia is a significant risk and the perinatal mortality rate is 20 times higher in preeclamptic diabetic women compared to normotensive women, the occurrence of preeclampsia does not appear to be related to diabetic control. Diabetic ketoacidosis is a serious complication with an approximately 20% rate of fetal loss. However, it is estimated to occur in 1% of pregnancies of diabetic women. Infections occur in approximately 80% of pregnancies in insulin-dependent diabetics, with candida vaginitis, urinary tract infections, and respiratory infections being common. Preconception counseling in diabetic women who desire to become pregnant is a critical issue that often is best served by a team that includes the obstetrician, primary care physician, endocrinologist, and diabetic educators. When possible, attempts should be made to attain optimal diabetic control. Women with good diabetic control have been shown in observational studies to have a lower rate of having infants with congenital anomalies than women with poorer diabetic control. Optimal diabetic control has been defined as glycated hemoglobin levels within or near the upper limit of the normal range. This can be obtained with multiple daily insulin injections or, in selected patients, a continuous infusion via an insulin pump. All women--diabetic or not should be counseled to take folic acid prior to conception in order to lower the rate of neural tube defects. ACE inhibitors are contraindicated during pregnancy and should, whenever possible, be discontinued prior to conception.

QUESTION 5

A 16-year-old girl is brought into the family practice clinic for her yearly health maintenance examination. Her height is average and her weight is above average. When this is mentioned to her, she blushes and quickly states that she is trying to lose weight. When asked further about her dieting habits, she eventually admits to routinely eating large amounts of food at one sitting, such as two pizzas, a large sandwich, and a gallon of ice cream. She also confides that she frequently will self-induce vomiting in order to compensate

but denies laxative use. She realizes that her behavior is unhealthy, but she feels "out of control."

After discussion of her condition with her parents, it is decided to begin her on psychotropic medication and

refer her to an eating disorder program.

What class of pharmacotherapy would be the most efficacious in this patient?

A. anticonvulsants

B. antipsychotics

C. benzodiazepines

D. mood stabilizers

E. SSRIs

Correct Answer: E Section: (none)

Explanation:

This patient is suffering from bulimia nervosa, categorized by recurrent episodes of binge eating associated with compensatory behaviors including self-induced emesis, diuretic, or laxative abuse. Because of the repeated vomiting of gastric fluids, patients are prone to develop various electrolyte abnormalities, such as hypochloremic alkalosis or hypokalemia. Hypernatremia and leukopenia are not commonly seen. Anticonvulsants, such as valproic acid and carbamazepine, as well as mood stabilizers such as lithium, may be helpful for treating comorbid bipolar disorder but are not in and of themselves efficacious in the treatment of bulimia nervosa. Similarly, antipsychotics and benzodiazepines may be used in co-occurring psychotic or anxiety disorders, but do not help with binging or purging. Antidepressants, especially the SSRIs, have been shown to be successful in decreasing both the binging and purging behaviors