



AchieveCE

CE Questions Immunization Updates 2022

1. What information could you provide to a patient concerned about how vaccines work?

- A. Vaccines work with our immune system to protect us from disease
- B. Vaccines contain non-harmful forms of the pathogen to stimulate the immune system
- C. Vaccines stimulate immune cells in your body to produce memory cells that remember the virus and are ready to defend your body if you come into contact with the virus
- D. The ultimate goal of any vaccine is to eliminate the infectious pathogen from your body
- E. all of the available choices

ANSWER WALK THROUGH TO QUESTION 1.

- A. It is true that vaccines work with our immune system to protect us from disease. Vaccines stimulate specific cells of our immune system to become activated and 'train' to fight the pathogen
- B. It is true that vaccines contain non-harmful forms of the pathogen to stimulate the immune system. In this case, the mRNA vaccines only contain the viral genetic material that codes for the SARS-CoV-2 spike protein.
- C. It is true that vaccines stimulate immune cells in your body to produce memory cells that remember the virus and are ready to defend your body if you come into contact with the virus. The ultimate goal of a vaccine is to produce 'memory' immune cells that will be primed and ready to fight the infectious pathogen should it enter our body.
- D. It is true that the ultimate goal of any vaccine is to eliminate the infectious pathogen from your body. Ideally the trained 'memory' immune cells will fight the pathogen upon entry and eliminate it before it can cause harm or disease.
- E. Is the correct answer - all of the available choices**

2. What portion of the SARS-CoV-2 virus is contained in the EUA Pfizer and Moderna mRNA vaccines?

- A. the entire virus in weakened form
- B. actual spike proteins from the SARS-CoV-2 virus
- C. the entire SARS-CoV-2 viral genome
- D. the portion of the viral genome that codes for the spike proteins
- E. all of the available choices

ANSWER WALK THROUGH TO QUESTION 2.

- A. It is false that the mRNA vaccines contain the entire virus in weakened form. The EAU mRNA vaccines only contain the portion of the viral genome that codes for the spike proteins.

- B. It is false that the mRNA vaccines contain actual spike proteins from the SARS-CoV-2 virus. While this is a strategy for some formulations of vaccines, the EAU mRNA vaccines only contain the portion of the viral genome that codes for the spike proteins.
- C. It is false that the mRNA vaccines contain the entire SARS-CoV-2 viral genome. The EAU mRNA vaccines only contain the portion of the viral genome that codes for the spike proteins.
- D. It is true that the mRNA vaccines only contain the portion of the viral genome that codes for the spike proteins.**
- E. It is false that all of the available choices are correct

3. What information could you provide to a patient concerned that the mRNA in the vaccines will interfere with the genetic material in our cells?

- A. mRNA does not enter the nucleus of our cells, where our DNA (genetic instructions) resides.
- B. mRNA is a normal product of every cell in our body and will not be detected as foreign or dangerous
- C. mRNA has a short half-life and degrades very quickly (<24 hours) within the cells of our body that receive the injection.
- D. mRNA from the vaccine is used to make SARS-CoV-2 spike proteins by our cellular machinery and will degrade soon after it is used
- E. all of the available choices

ANSWER WALK THROUGH TO QUESTION 3.

- A. It is true that the mRNA, whether from the vaccine or produced by our own body, does not enter the nucleus of our cells, where our DNA (genetic instructions) resides.
- B. It is true that mRNA is a normal product of every cell in our body and that the mRNA in the vaccine will not be detected as foreign or dangerous.
- C. It is true that all mRNA, whether from the vaccine or produced by our own body, has a short half-life and degrades very quickly (<24 hours) within the cells of our body that receive the injection. The reason the mRNA vaccines must be stored at excessively cold temperatures is due to the fact that mRNA is fragile and will degrade quickly if stored at warmer temperatures.
- D. It is true that the mRNA from the vaccine is used to make SARS-CoV-2 spike proteins by our cellular machinery and will degrade soon after it is used.
- E. Is the correct answer - all of the available choices**

4. What information could you provide to a patient concerned about the formulation of the mRNA vaccine?

- A. the mRNA vaccines only contain the portion of the viral genome that code for the SARS-CoV-2 spike proteins
- B. the mRNA is surrounded by a lipid nanoshell or 'bubble'
- C. the mRNA vaccines do not contain live virus
- D. the mRNA vaccines are simply composed of mRNA surrounded by a lipid nanoshell
- E. all of the available choices

ANSWER WALK THROUGH TO QUESTION 4.

- A. It is true that the mRNA vaccines only contain the portion of the viral genome that code for the SARS-CoV-2 spike proteins. The remainder of the viral genome has been excluded.

- B. It is true that the mRNA is surrounded by a lipid nanoshell or 'bubble' that provides protection during delivery and easily enters the cells into which it is injected.
- C. It is true that the mRNA vaccines do not contain live virus. There is no way to become infected with SARS-CoV-2 through administration of the mRNA vaccines; they do not contain the virus.
- D. It is true that the mRNA vaccines are simply composed of mRNA surrounded by a lipid nanoshell and contain no other components.
- E. Is the correct answer - all of the available choices**

5. What information could you provide to a patient concerned about the production time of new mRNA vaccines that would provide protection against variants of the SARS-CoV-2 virus (spike protein) that are not included in the current formulation of the mRNA vaccine?

- A. RNA-based vaccines are relatively simple and quick to produce as they only contain a portion of the viral genome (and not the actual virus)
- B. RNA-based vaccines are time-consuming to produce due to the length of viral incubation
- C. RNA-based vaccines are time-consuming to produce due to the creation of the perfectly spherical lipid nanoshell
- D. all of the available choices
- E. none of available choices

ANSWER WALK THROUGH TO QUESTION 5.

A. Is the correct answer - It is true that RNA-based vaccines are relatively simple and quick to produce as they only contain a portion of the viral genome (and not the actual virus)

- B. It is false that RNA-based vaccines are time-consuming to produce due to the length of viral incubation. The RNA-based vaccines do not contain the actual virus, only a small portion of the genetic material that can be rapidly produced by vaccine manufacturers.
- C. It is false that RNA-based vaccines are time-consuming to produce due to the creation of the perfectly spherical lipid nanoshell. The lipid nanoshell forms a perfect sphere on its own due to the biochemical properties of lipids.
- D. all of the available choices
- E. none of available choices

6. Which of the following is a key difference between the Pfizer and Moderna mRNA vaccines?

- A. They have a different number of days between doses.
- B. They have significantly different efficacy rates.
- C. Pfizer is contraindicated in those with immunocompromising conditions.
- D. They enrolled significantly different number of individuals during clinical trials.

ANSWER WALK THROUGH TO QUESTION 6.

- A. This is correct. Pfizer is dosed 21 days apart. Moderna is 28 days.
- B. Incorrect, both are at least 95% efficacious.
- C. Incorrect, neither Pfizer or Moderna is contraindicated in immunocompromised. Because these individuals are at increased risk of serious COVID disease they should be vaccinated.
- D. Incorrect, both trials included over 30k individuals.

7. True or False: Efficacy of the vaccine is different in different ethnicities.

ANSWER WALK THROUGH TO QUESTION 7.

This is false. The efficacy of both vaccines is approximately 95% after the series is completed and does not differ by age, race/ethnicity or comorbidity.

8. Why is storage at cold temperatures important for mRNA vaccines?

- A. mRNA is very fragile.
- B. Allows vials to last longer if they are stored at recommended (cold) temperatures.
- C. mRNA vaccines may be safely stored for several weeks at 4 C.
- D. Both A and B.
- E. All of the above.

ANSWER WALK THROUGH TO QUESTION 8.

- A. This is correct-mRNA is very temperature sensitive.
- B. This is correct-storing at the recommended temperatures will allow the vaccine to last until the listed expiration date. Although they could be stored at a higher temperature, the Pfizer vaccine would expire after 2 weeks.
- C. Incorrect-Vaccines should be stored at at least -25 to -15 C for up to two weeks (Pfizer) or until the expiration date (Moderna.)
- D. This answer is correct.**
- E. Incorrect.

9. Which vaccine requires dilution prior to use?

- A. Pfizer
- B. Moderna

ANSWER WALK THROUGH TO QUESTION 9

- A. Correct-Pfizer vaccine needs to be diluted with provided diluent prior drawing up into syringes.
- B. Incorrect-Moderna vaccine does not need to be diluted and be drawn up directly into syringes.

10. Which COVID vaccine series would you recommend for an uncomplicated 25 year-old female?

- A. Doses 1 and 2 of Pfizer. Booster dose of Moderna.
- B. Doses 1 and 2 of Pfizer. No booster.
- C. Doses 1 and 2 of Moderna. Booster dose of Janssen.
- D. Doses 1 and 2 of Janssen. Booster dose of either Pfizer or Moderna.

ANSWER WALK THROUGH TO QUESTION 10

- A. Correct- doses 1 and 2 of Pfizer vaccine followed by a booster dose of Moderna will yield the highest level of protection.
- B. Incorrect-At this time it is recommended that everyone eligible who received doses 1 and 2 of an mRNA vaccine receive a third booster dose.
- C. Incorrect-Janssen is not recommended as a booster dose.
- D. Incorrect-Janssen is recommended in 1 dose.

11. How many doses of Hepatitis A vaccine are required to be fully protected?

- A. 1
- B. 2
- C. 3
- D. 4

ANSWER WALK THROUGH TO QUESTION 11

- A. Incorrect- 2 doses are required to be fully protected.
- B. Correct- 2 doses are required to be fully protected.
- C. Incorrect- 2 doses are required to be fully protected.
- D. Incorrect- 2 doses are required to be fully protected.

12. A 60-year-old healthy male patient comes to your pharmacy interested in a COVID-19 booster. You note they have not received a shingles vaccine. Which of the following recommendations is appropriate?

- A. Provide the COVID-19 vaccine in one arm, and recommend they return in 4 weeks for Shingrix.
- B. Provide the COVID-19 vaccine in one arm, and recommend they return in 2 weeks for Shingrix.
- C. Provide the COVID-19 vaccine in one arm, and Zostavax in the other arm.
- D. Provide the COVID-19 vaccine in one arm, and Shingrix in the other arm.

ANSWER WALK THROUGH TO QUESTION 12

- A. Incorrect-Recombinant and adjuvanted vaccines, such as Shingrix, can be administered concomitantly, at different anatomic sites, with other adult vaccines, including COVID-19 vaccines.
- B. Incorrect- Recombinant and adjuvanted vaccines, such as Shingrix, can be administered concomitantly, at different anatomic sites, with other adult vaccines, including COVID-19 vaccines.
- C. Incorrect-CDC recommends Shingrix (recombinant zoster vaccine, or RZV) for the prevention of herpes zoster (shingles) and related complications in adults over the age of 50.
- D. Correct-Recombinant and adjuvanted vaccines, such as Shingrix, can be administered concomitantly, at different anatomic sites, with other adult vaccines, including COVID-19 vaccines.

13. Healthy adults over age 65 can now opt to receive only 1 dose of which pneumococcal vaccine (PCV) to be protected. Which of the following formulations is recommended?

- A. PCV13
- B. PCV15
- C. PCV20
- D. PPSV23

ANSWER WALK THROUGH TO QUESTION 13

- A. Incorrect-CDC recommends 1 dose of PCV20 for adults over the age of 65. PCV13 is recommended in a 4 doses series for children at age 2, 4, 6 and 12-15 months.
- B. Incorrect-CDC recommends 1 dose of PCV20 for adults over the age of 65. 1 dose of PCV15 would need to be followed by PPSV23 to be complete.

- C. Correct-CDC recommends 1 dose of PCV20 for adults over the age of 65
- D. Incorrect- CDC recommends 1 dose of PCV20 for adults over the age of 65. 1 dose of PPSV23 would *follow* 1 dose of PCV15 to be complete.

14. Which of the following would be considered contraindications for the COVID-19 vaccines?

- A. Any immediate allergic reaction to other, non-COVID vaccines or injectable therapies
- B. Non-severe, immediate onset of an allergic reaction (within 4 hours) after a previous dose of COVID-19 vaccine
- C. Any immediate allergic reaction to the Janssen COVID-19 vaccine
- D. All of the available choices

ANSWER WALK THROUGH TO QUESTION 14

- A. Incorrect-This option is true but incorrect on its own as the most correct answer is 'all of the available choices.'
- B. Incorrect- This option is true but incorrect on its own as the most correct answer is 'all of the available choices.'
- C. Incorrect- This option is true but incorrect on its own as the most correct answer is 'all of the available choices.'
- D. Correct-All of the listed choices are precautions for COVID-19 vaccination.

15. The number of reported cases and estimated infections with hepatitis A in the US has been on the rise since 2012

- A. True
- B. False

ANSWER WALK THROUGH TO QUESTION 15

- A. Correct-This is true. The number of reported and estimated cases has been on the rise since 2012.
- B. Incorrect-The number of reported and estimated cases has been on the rise since 2012.

16. Which of the following ways can Hepatitis A be spread person-to-person?

- A. Fecal-oral route
- B. Contaminated food/water
- C. Respiratory droplets
- D. A. and B.
- E. A. and C.

ANSWER WALK THROUGH TO QUESTION 16

- A. Incorrect-This is true but for accuracy this option is combined with contaminated food/water
- B. Incorrect-This is true but for accuracy this option is combined with fecal-oral route
- C. Incorrect-This is not a way in which Hepatitis A is spread
- D. Correct-This is true as Hepatitis A is spread via the fecal-oral route and contaminated food/water
- E. . Incorrect-While the fecal-oral route is true, Hepatitis A is not spread via respiratory droplets

17. Which of the following acute complications are rare in healthy children but can occur with varicella (chickenpox) pathology?

- A. bacterial sepsis
- B. pneumonia
- C. encephalitis
- D. hemorrhagic complications
- E. all of the available choices

ANSWER WALK THROUGH TO QUESTION 17

- A. Incorrect-This is true but for accuracy this option is combined with all options listed
- B. Incorrect-This is true but for accuracy this option is combined with all options listed
- C. Incorrect-This is true but for accuracy this option is combined with all options listed
- D. Incorrect-This is true but for accuracy this option is combined with all options listed
- E. Correct-This is true as all of the complications listed can occur with varicella pathology

18. The CDC recommends Shingrix (recombinant zoster vaccine, or RZV) for the prevention of herpes zoster (shingles) and related complications. At what age is routine vaccination recommended?

- A. People 40 years and older
- B. People 50 years and older
- C. People 60 years and older
- D. People of any age

ANSWER WALK THROUGH TO QUESTION 18

- A. Incorrect-Routine vaccination is recommended in people 50 Years old and older
- B. Correct-Routine vaccination is recommended in people 50 Years old and older
- C. Incorrect-Routine vaccination is recommended in people 50 Years old and older
- D. Incorrect-Routine vaccination is recommended in people 50 Years old and older

19. Shingrix should not be administered to?

- A. A person with a history of severe allergic reaction
- B. A person experiencing an acute episode of herpes zoster
- C. A pregnant person
- D. All of the available choices

ANSWER WALK THROUGH TO QUESTION 19

- A. Incorrect-This is true but for accuracy this option is combined with all options listed
- B. Incorrect-This is true but for accuracy this option is combined with all options listed
- C. Incorrect-This is true but for accuracy this option is combined with all options listed
- D. Correct-This is true as all of the options listed are contraindications for the administration of Shingrix

20. Children are recommended to receive a 4-dose series between 2 months and 12-15 months of age of pneumococcal vaccine (PCV) to be protected. Which of the following formulations is recommended?

- A. PCV13
- B. PCV15
- C. PCV20

D. PPSV23

ANSWER WALK THROUGH TO QUESTION 20

- A. Correct-PCV13 is the recommended formulation for this age group
- B. Incorrect-PCV13 is the recommended formulation for this age group
- C. Incorrect-PCV13 is the recommended formulation for this age group
- D. Incorrect-PCV13 is the recommended formulation for this age group