Storage and Handling of Temperature-Sensitive Medications

Posttest Exam

1. Classes of medications that are considered biologics include which of the following:
   
   A. Monoclonal antibodies  
   B. Vaccines  
   C. Recombinant proteins  
   D. All of the above***

Correct Answer D: Biologics are medications produced from natural sources. Monoclonal antibodies, vaccines, and recombinant proteins are all derived from natural sources.

2. The system used to maintain the stability and viability of temperature-sensitive medications is known as the
   
   A. Biologics chain  
   B. Cold chain***  
   C. Manufacturing chain  
   D. Transportation chain

Correct Answer B: The cold chain is the system used to maintain the stability and viability of temperature-sensitive medications while they are transported from one location to another.

3. The recommended temperature range for refrigerated medications is
   
   A. 0° to 10° Celsius  
   B. 2° to 8° Celsius***  
   C. -5° to 0° Celsius  
   D. All the temperatures are within the recommendations.

Correct Answer B: The Centers for Disease Control and Prevention (CDC) guidelines recommend refrigerated medications be stored between the temperatures of 2° to 8° Celsius.

4. Which of the following statements is TRUE regarding the findings from the National Institute of Standards and Technology (NIST) study and vaccination storage:
   
   A. Coolant packs in the freezer may cause temperature fluctuations
B. Combination refrigerator/freezer units had less temperature variations in the freezer portion compared with stand-alone freezer units

C. Pharmaceutical grade refrigerators are preferred over household refrigerators

D. Water bottles in the refrigerator door may minimize temperature variations***

Correct Answer D: Coolant packs and water bottles minimize temperature variations. Pharmaceutical grade refrigerators and household refrigerators were comparable in terms of temperature control. Combination refrigerator/freezer units had more temperature variations and should not be used.

5. The most appropriate location for vaccine storage is

A. Along the door shelves

B. Along the walls of the refrigerator

C. In the center of the refrigerator***

D. In the vegetable/fruit drawers

Correct Answer C: The most consistent temperatures are in the middle of the refrigerator.

6. Which one of the following statements is TRUE regarding the transportation of vaccines during an emergency:

A. Dry ice should be used to transport frozen medications

B. Unconditioned ice packs should be used to transport refrigerated medications

C. An insulated barrier should be placed between the ice pack and the medication***

D. Coolers should be placed in the trunk to maintain consistent temperatures

Correct Answer C: An insulated barrier should be placed between the ice pack and the medication to avoid the potential for freezing the medication. Dry ice should never be used and ice packs should be conditioned (defrosted) prior to use.

7. Resources available to assist pharmacists with stability data include which of the following:
A. Manufacturer package insert
B. Center for Biologics Evaluation and Research (CBER)
C. Centers for Disease Control and Prevention (CDC)
D. All of the above***

Correct Answer D: There are numerous resources available including the manufacturer, CDC, CBER, U.S. Food and Drug Administration (FDA), and medical literature (publications).

8. Proper patient education about the storage of biologics should include which of the following:
   A. The temperature at which the medication should be stored
   B. Where the biologic should be stored in the storage unit
   C. Instructions about what to do if the biologic is left at room temperature
   D. All of the above***

Correct Answer D: All of the above should be mentioned to the patient when counseling about the appropriate storage of the biologic.

9. Emergency vaccine storage plans should be updated at the minimum
   A. Annually***
   B. Every 3 years
   C. Every 5 years
   D. Every 10 years

Correct Answer A: The CDC recommends that emergency vaccine storage plans be reviewed and updated, if necessary, annually or sooner.

10. General guidelines for biologics accidentally left at room temperature include which of the following:
A. Placing the biologic back in the same location within the storage unit
B. Labeling the biologic “Do Not Use”***
C. Allowing use if the biologic is left out for less than 24 hours
D. Inspecting for visual changes and only using the medication when no changes are observed

Correct Answer B: The biologic should not be used and should be labeled “Do Not Use” until further guidance can be found from resources such as the manufacturer or the medical literature.