

## **GUIDELINES FOR MAINTAINING VACCINE COLD CHAIN**

The “Cold Chain” is the system of transporting and storing vaccines within the temperature range of 35°F (2°C) to 45°F (8°C). The cold chain begins when vaccine is manufactured, moves through to the state distribution center and ends with the local immunization provider at the time of administration.

### **Cold Chain Management**

Anyone handling vaccines is responsible for their potency, at each step in transport, storage and administration of vaccines. Vaccines are delicate biological substances that can become less effective or destroyed if they are:

- Frozen
- Allowed to get too hot
- Exposed to direct sunlight or fluorescent light

Vaccines should be maintained within the recommended temperature range of 35°F (2°C) to 45°F (8°C). The loss of vaccine effectiveness is cumulative and cannot be reversed.

### **Equipment for Transporting and Storing Vaccines**

The essential cold chain equipment needed to transport and store vaccines within a consistent safe temperature range include:

- A refrigerator for storing vaccines
- A digital, electronic or mercury/maximum thermometer and chart for recording daily temperature reading
- Cold boxes for transporting and storing vaccines
- Ice packs to keep vaccines cool
- Material to separate ice packs from the vaccines when using cold boxes (e.g. shredded paper, cardboard, bubble wrap or Styrofoam).

## **Refrigerators and Freezers**

It is recommended that one refrigerator should be dedicated to store vaccines. Points to consider when purchasing a refrigerator. Estimate the amount of vaccines required for your clinic's supply period, and choose a refrigerator that can store this amount in the middle and upper shelves with out crowding. At least 50% of the space needs to be filled at all times to allow for adequate circulation of cold air, and to stabilize the refrigerator temperature. [Vaccines should be maintained with the recommended temperature range of 35°F (2°C) to 45°F (8°C)]. Safe vaccines storage is possible with refrigerators if the following procedures or modifications are carried out.

### **Maintenance of the vaccine refrigerator**

- Report breakdowns immediately so repairs can be made
- Regularly check refrigerator seals to ensure cold air cannot leak out. If they are brittle or torn arrange for replacement
- Defrost refrigerators are required to prevent ice build up which reduces efficiency.
- Ensure the area around (including behind and under) the refrigerator is clean and dust free
- Arrange for regular maintenance inspections by the manufacturer or technician. Inspections may need to be more frequent as the refrigerator ages.

### **Defrosting or Cleaning**

When defrosting or cleaning the refrigerator, move the vaccines to second refrigerator. This temporary storage refrigerator must also be monitored to ensure the correct temperature 35°F (2°C) to 45°F (8°C) is maintained. If you don't have a storage refrigerator, store the vaccines in a pre-cooler insulated container with icepacks. Continue to monitor the temperature inside the container until the normal vaccine refrigerator is ready for use again.

### **Power Failures**

During a power failure of 4 hours or less, the refrigerator door should be kept closed. If the power failure continues for more than 4 hours, store vaccines in an insulated container with ice packs. If power failures are a common occurrence consider purchasing a portable power generator, or, vaccines could be transferred to another site with power.

## **Maintaining and Monitoring Refrigerator Temperatures**

The thermometer needs to measure the refrigerator temperature close to the vaccine vials. Choosing a thermometer to monitor the vaccine refrigerator. Digital-type thermometers or mercury minimum-maximum thermometers are the reliable and easiest to read.

## **Ordering Vaccines**

Keep vaccine stock to a minimum by regularly ordering only the quantity of vaccine required for the period until the next scheduled delivery. Should always have at least 14-day supply of vaccine in the refrigerator when you are re-ordering. Storing excess vaccines supplies in the refrigerator can increase the risk of wastage from vaccines.

## **Equipment for Transporting Vaccines**

A number of issues should be considered when choosing equipment to transport vaccines. They should include:

- Space required for the amount of vaccine transported
- Number of icepacks needed to keep the vaccines at less than 50°F
- The length of time in transit
- How the cold box will be handled

## **Criteria for Selecting a Cold Box**

- It needs to be large enough to store vaccines and icepacks during transport
- External surface material needs to be durable and robust
- Lid needs to be tight fitting
- Strong handles for carrying the cold box

## **Icepacks, Freezer Blocks, Ice Blocks**

Icepacks are used to cool insulated containers or cold boxes. Icepacks are flat plastic containers that are filled with water and froze. Some commercial icepacks contain a chemical product that ensures the icepack remains colder than 23°F (0°) longer than water-filled icepacks.

## **Unpacking Vaccines after Transport**

Unpack vaccines from the transport container and store them in their packaging regardless of their bulkiness. Removing vaccines from the original packaging exposes vaccines to room temperature and light. Check the temperature to ensure the vaccines have not been exposed to temperatures above 35°F or below 32°F.

## **Placing Vaccines in Refrigerator**

- Store IPV, MMR on the top shelf
- If diluent accompanies MMR, Hib vaccine within vial packaging, the diluent must be removed and stored on the middle or next lower shelf
- All freezer sensitive vaccines should be stored on the middle shelves
- Diluent and emergency drugs can be stored on the lower shelves

Vaccines should remain in the refrigerator until immediately before they are administered. They should be returned to the refrigerator immediately after drawing up each recommended dose.

**Refer to the New Jersey Vaccine For Children Vaccine return procedure and call Automated Health at 1(800)-900-4832 for information and vouches for lost and expired vaccines.**