# Vaccine Management: Storage and Handling

It is essential to store and handle vaccines correctly. Too much exposure to heat, cold, or light can damage vaccines, resulting in loss of vaccine potency. By following the three main elements below, you can assure vaccines are stored and handled properly and that when administered, vaccine will be effective in preventing diseases.

## 1. Reliable Storage and Temperature Monitoring Equipment:

To ensure the safety of vaccines, the following equipment is recommended:

- Stand-alone pharmaceutical grade refrigerator and freezer large enough to accommodate your maximum inventory without crowding
- Digital data logger with a current and valid certificate of calibration for each unit and at least one back-up in case of a broken or malfunctioning device
- Do **NOT** store any vaccine in a dormitory or bar-style combined refrigerator/freezer unit under any circumstances
- Use a portable vaccine refrigerator or qualified container and pack-out for transport of refrigerated vaccine(s)
- It is not recommended to transport varicella-containing vaccine, but if vaccine must be transported use a portable freezer

## 2. Accurate Vaccine Inventory Management:

Temperature Documentation and Ranges:

- Refrigerators should maintain temperatures between 36˚F and 46˚F (2˚C and 8˚C)
- Freezers should maintain temperatures between -58˚F and +5˚F (-50˚C and -15˚C)
- Check and record refrigerator and freezer temperatures twice a day
    a. In the AM when clinic opens
    b. 30-60 minutes before leaving for the day
- Check and record minimum/maximum temperatures from a digital data logger once each workday, preferably in the morning
- Document the temperature, time taken, and staff initials for both the refrigerator and freezer on a temperature log
- Keep the current log posted on the storage unit; keep temperature data for **3 years – required for Vaccines For Children (VFC) providers**
- Download digital data logger on a weekly basis and save the file

Storage Unit Setup:

- Good air circulation on the outside of the unit is important; place storage units in a well-ventilated area, leaving space between the unit, ceiling, and any walls.
- Nothing should block the cover of the motor compartment

Power Supply:

- Use an outlet cover to prevent the unit from being unplugged
- Post “DO NOT UNPLUG” warning signs at outlets and on storage units
- Label fuses and circuit breakers to alert people not to turn off power to the storage units
- Do not use power outlets that can be tripped or switched (i.e., multi-outlet power strips, built-in circuit switches with a reset button

Organizing and Storing Vaccine in Storage Units:

- Keep vaccine in the original box until to protect from light until it is ready to be used
- Clearly label the space where the vaccine is stored to decrease errors
- Place vaccines and diluents in the center of the unit, 2-3 inches away from the walls, ceiling, floor, and door
- Avoid storage on the top shelf near cooling vent
- Do not store vaccines in deli, fruit, or vegetable drawers or in the door
- Place vaccines and diluents with the earliest expiration date in front of those with later expiration dates
- Do not pack a storage unit too tightly; allow space for good air circulation
- Place water bottles on the top shelf, floor, and in the door racks to help stabilize temperature
- Place the buffered probe of the digital data logger in the center of the unit with the vaccines
- Food and beverages should never be stored in the unit with vaccines
- Store diluent with corresponding vaccine
    a. Diluents for Pentacel (DTaP-IPV/Hib) and Menveo (meningococcal conjugate vaccine) contain antigen and must be stored with their corresponding (freeze-dried) vaccines

b. Some diluents can be stored at room temperature (no warmer than 77˚F (25˚C))
c. **NEVER** store diluent in the freezer

Out of Range Temperatures:

- Take **IMMEDIATE** action and notify the vaccine coordinator or back-up coordinator whenever an alarm or temperature excursion is noticed
- Label the exposed vaccines "DO NOT USE," and place them in a separate container apart from other vaccines in the storage unit (DO NOT DISCARD THESE VACCINES OR REMOVE FROM THE STORAGE UNIT)
- Contact your immunization program and/or vaccine manufacturer for further guidance on the viability of the vaccine; **be prepared to provide documentation of the event (e.g., temperature log data) to ensure you receive the best guidance**
- **Never** allow vaccines to remain in a nonfunctioning unit for an extended period of time; if you believe the unit has failed, begin to implement your emergency plan

Vaccine Deliveries

- Ensure that vaccines are delivered during office hours
- Never leave a vaccine shipping container unpacked and/or unattended
- All staff who may receive deliveries must be aware of the importance of maintaining the "cold chain"

Unpacking Deliveries

- Examine the shipping container and vaccines for signs of physical damage
- Check the contents against the packing list to be sure they match
    a. For varicella-containing (frozen) vaccines, the packing list will show the maximum time vaccines can be in transit based on shipment date
- Store vaccines at the recommended temperatures **IMMEDIATELY** upon arrival
- If the shipment includes lyophilized (freeze-dried) vaccines, make sure they came with the correct type and quantity of diluents
    a. Diluents for varicella-containing (frozen) vaccines are stored in a separate compartment in the lid of the shipping container and should be stored separately in the refrigerator or at room temperature (no warmer than 77˚F (25˚C))
- Check the cold chain monitor (CCM) for any indication of a temperature excursion during transit; note: CCMs are for one-time use and should be thrown away after being checked, may not be included when shipped directly from manufacturer
- If there are discrepancies between the contents and the packing list or other concerns about the content:
    a. **Private Vaccine:** contact the manufacturer
    b. **VFC Vaccine:** contact your Local Health Department

Emergency Plan

- Develop an emergency plan for emergency situations such as equipment malfunctions, power failure, or natural disasters; an emergency plan is critical in protecting your vaccine supply and ultimately your patients
- Ensure 24-hour access to the building where vaccines are stored, and designate responsible personnel
- Set up a system to notify you and/or your back-up person during power outages
- Identify steps to assure proper storage and handling of vaccines during an emergency
- Identify an alternate power source (generator) if your clinic does not have one, or identify alternate storage units or facilities (nearby hospital, pharmacy, other provider's office); identify procedures that allow access to alternate facilities
- Keep a portable vaccine refrigerator or qualified container and transport supplies in the office
- Follow and complete the Emergency Response Plan and worksheet (post on refrigerator and inside the transport cooler)
- Do **NOT** automatically discard the vaccine that has been compromised
- Communicate your vaccine management plan to all staff

## 3. Well-Trained Staff:

Staff Training:

- All staff who receive deliveries and/or handle or administer vaccines should be familiar with storage and handling policies and procedures at your facility
- Designate a person to be the primary vaccine coordinator and a back-up person
- Conduct training in the following situations:
    a. New employee orientation
    b. Annually as a refresher for all staff involved in immunization activities
    c. When new vaccines are added to the inventory
    d. When recommendations are updated