Don't Be Guilty of These Preventable Errors in Vaccine Storage and Handling!

Do you see your clinic or practice making any of these frequently reported errors in vaccine storage and handling? Although some of these errors are much more serious than others, none of them should occur. Be sure your healthcare setting is not making any of these ***preventable*** *errors.*

ERROR: Designating only one person, rather than at least two, to be responsible for storage and handling of vaccines

- Everyone in the office should know the basics of vaccine handling, including what to do when a shipment arrives and what to do in the event of an equipment failure or power outage.
- Train at least one back-up person. The back-up and primary individuals should be equally familiar with all aspects of vaccine storage and handling, including knowing how to handle vaccines when they arrive, how to properly record refrigerator and freezer temperatures, what to do when an out-of-range temperature occurs, and how to appropriately respond to an equipment problem or power outage.

ERROR: Storing vaccine inappropriately

- Be sure all office staff (especially persons involved in receiving vaccine shipments) understand the importance of properly storing vaccines immediately after they arrive.
- Know which vaccines should be refrigerated and which should be frozen. Storage information is found in the package insert. For quick reference, post Immunize.org's *Vaccine Handling Tips* (www.immunize.org/catg.d/p3048.pdf) on the refrigerator and freezer.
- Always store vaccines (and temperature monitoring devices) in the body of the refrigerator — not in the vegetable bins, on the floor, next to the walls, in the door, or near the cold air outlet from the freezer. The temperature in these areas may differ significantly from the temperature in the body of the unit.
- Don't overpack the unit. Place the vaccine packages in such a way that air can circulate around the compartment.
- Always store vaccines in their original packaging.

ERROR: Using the wrong type of equipment

STORAGE UNITS

- CDC recommends storing vaccines in separate, self-contained units that only refrigerate or only freeze, or in a combination unit purpose-built (sometimes referred to as "pharmaceutical-grade") for storing vaccines and other fragile pharmaceutical products. If a household-grade combination refrigerator/freezer must be used, only refrigerated vaccines should be stored in the unit, and a separate stand-alone freezer should be used for frozen vaccines.
- When choosing a new storage unit, consider units with NSF/ANSI 456 certification that have been tested and meet voluntary standards for reliable vaccine storage. NSF/ANSI 456 certification is helpful, but not required, for vaccine storage units.
- Never store vaccines in a "dormitory-style" unit (i.e., a small refrigerator-freezer unit with one exterior door and a freezer compartment inside the refrigerator). These units cannot maintain stable temperatures and pose a significant risk of freezing vaccines, even when used for temporary storage.

TEMPERATURE MONITORING DEVICES/DIGITAL DATA LOGGERS

- Use only temperature monitoring devices (digital data loggers [DDLs] preferred and required for VFC vaccine storage) for continuous temperature monitoring and recordings.* Set the DDL to measure and record temperatures no less than every 30 minutes. Be sure the DDL has a current and valid Certificate of Calibration Testing (aka Report of Calibration).
- Buffer* the DDL's temperature probe by immersing it in a vial filled with liquid (e.g., glycol, ethanol, glycerin), loose media (e.g., sand, glass beads), or a solid block of material (e.g., Teflon® or aluminum). Use of a buffer ensures you are not just measuring air temperature, which is subject to fluctuation when you open the door.

* Not all DDLs can measure ultra-cold temperatures required for some mRNA COVID-19 vaccines. For accurate ultra-cold temperature monitoring, it is essential to use an air-probe (non-buffered) or a probe designed specifically for ultra-cold temperatures.

For more detailed information, see the *Vaccine Storage and Temperature Monitoring Equipment* section of CDC's *Vaccine Storage and Handling Toolkit* (www.cdc.gov/vaccines/hcp/storage-handling).

ERROR: Inadvertently leaving the refrigerator or freezer door open or having inadequate seals

- Unfortunately, too much vaccine is lost every year because storage unit doors were left open. Remind staff to *completely* close the door every time they open the refrigerator or freezer.
- Check the seals on the doors on a regular schedule, such as when you're taking inventory. If there is any indication the door seal may be cracked or not sealing properly, have it replaced. (This is much less costly than replacing a box of, for example, pneumococcal conjugate or varicella vaccine!)

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ERROR: Storing food and drinks in the vaccine refrigerator

- Frequent opening of the refrigerator door to retrieve food items can adversely affect the internal temperature of the unit and damage vaccines. Store only vaccines in the designated units.

ERROR: Inadvertently cutting the power supply to the storage units

- Be sure everyone in your office, including the janitorial staff, understands that very expensive and fragile vaccines are being stored in the refrigerator and freezer.
- Post a *Do Not Unplug* sign (www.immunize.org/catg.d/p2090.pdf) next to electrical outlets for the refrigerator and freezer, and a *Do Not Stop Power* warning label (www.immunize.org/catg.d/p2091.pdf) by the circuit breaker for the electrical outlets.

ERROR: Recording temperatures inadequately

- Digital data loggers (DDLs) are preferred for vaccine temperature monitoring. DDLs are required for VFC vaccine storage, and should be programmed to record temperatures at least every 30 minutes.
- If using a temperature monitoring device (TMD) that records minimum/maximum (min/max) temperatures reached during a specific time period, document min/max and current temperatures *once* each workday, preferably in the morning. If using a TMD that does not record min/max, document current temperatures *twice*, at the beginning and end of each workday.
- Record the temperatures you observed on an appropriate log. Immunize.org has temperature logs (www.immunize.org/clinical/topic/storage-handling) available in both Fahrenheit and Celsius formats.
- Record temperatures for ALL units being used to store vaccine. Don't forget to check temperatures for both the refrigerator and freezer.

ERROR: Documenting out-of-range temperatures on vaccine temperature logs but not taking action

- If you find out-of-range temperatures…do something! The viability of your vaccine — and the protection of your patients — is at stake.
- Guidance on what to do may be found on Immunize.org's temperature logs (www.immunize.org/handouts/temperature-logs.asp) and Vaccine Storage Troubleshooting Record (www.immunize.org/catg.d/p3041.pdf).
- Have an Emergency Response Plan and trained staff in place before a problem occurs. For help in developing a plan, see the Checklist For Emergency Vaccine Storage, Handling, and Transport and the Worksheet: Vaccine Storage and Handling SOPs in the *Resources* section of CDC's *Vaccine Storage and Handling Toolkit* (www.cdc.gov/vaccines/hcp/downloads/storage-handling-toolkit-resources.pdf).

ERROR: Discarding temperature logs too soon

Keep your temperature logs for at least 3 years. Why?

- You can track recurring problems as the storage unit ages.
- If out-of-range temperatures have been documented, you can determine how long and how often this has been occurring.
- This can be a great way to demonstrate why you need a new refrigerator or freezer!

ERROR: Not using vaccine with the soonest expiration date first

When unloading a new shipment of vaccine:

- Move vaccine with the shortest expiration date to the front of the unit, making it easier for staff to access this vaccine first.
- Mark the "older" vaccine to be used first.

ERROR: Dealing inappropriately with expired vaccines

- Carefully monitor your usage to ensure viable vaccines don't expire! As discussed above, place vaccines with the shortest expiration dates at the front of the unit.
- If you discover expired vaccines, immediately remove them from the unit so that they are not inadvertently administered.

ERROR: Discarding multidose vials prematurely

- Almost all multidose vials (MDV) of vaccines contain a preservative and can be used until the expiration date on the vial, unless the vaccine is contaminated or compromised in some way or there is a beyond-use date (BUD) defined in the package insert. For some vaccines, the manufacturer may specify that once the MDV has been entered or the rubber stopper punctured, the vaccine must be used within a certain number of hours or days. For specific guidance, refer to the package insert (see www.immunize.org/official-guidance/fda/pkg-inserts).
- Only the number of doses indicated in the package insert should be withdrawn from a MDV. After the maximum number of doses has been withdrawn, the vial should be discarded, even if there is residual vaccine or the expiration date has not been reached.