Vaccine Storage & Thermometer Guide

Refrigerator and Freezer Requirements

Vaccines are expensive and sensitive to temperature and light. Appropriate vaccine storage management is essential to safeguard and optimize vaccine supply.

As required by the *Center of Disease Control and Prevention* (CDC) and the *New York City Department of Health and Mental Hygiene Bureau of Immunization's* (NYC DOHMH BOI) *Vaccines for Children* (VFC) program, any refrigerator or freezer unit storing VFC vaccine must have the following:

1. Enough room to store the year's largest inventory without crowding.
2. Enough room to store water bottles (in the refrigerator) and frozen coolant packs (in the freezer) to stabilize the temperature and minimize temperature excursions that can impact vaccine potency.
3. A certified, calibrated thermometer centrally located in each storage unit.
4. The ability to reliably maintain the appropriate vaccine storage temperatures year-round.
5. A unit dedicated to the storage of vaccines only. Food and beverages must NOT be stored in a vaccine storage unit. This practice results in frequent door opening and temperature destabilization.

Refrigerator and Freezer Storage Unit Options*

This is a sample list of vaccine storage unit options and features that meet or exceed CDC and NYC VFC requirements. Because there are many options outside this list, help is available to discuss storage options you may be considering by contacting nycimmunize@health.nyc.org.

1 Full-Size, Stand-Alone Refrigerators and Freezers

Biologic/Pharmaceutical-grade refrigerators and freezers are the most secure option for vaccine storage and are considered best practice. Most often, they are found in health departments, laboratories and hospitals. Many of the biologic-grade manufacturers offer refrigerators and freezers in an array of sizes and prices.

2 Full-Sized, Biologic/Pharmaceutical-Grade Combined Refrigerator and Freezer

Biologic/pharmaceutical-grade combination units offer essential features required for responsible vaccine storage:

- Separate temperature control systems for the refrigerator and freezer
- Improved cabinet insulation to avoid hot and cold spots
- Built-in, digital temperature display
- Built to industrial standards and warranted for industrial use
- Fan-forced air circulation delivers quick temperature recovery

Biologic/pharmaceutical-grade, combination units are ideal for clinics wanting a best-practice storage solution. Biologic/pharmaceutical-grade combination units are the only type of combination units recommended by the NYC VFC program

*Disclaimer: *The NYC VFC program cannot endorse any specific brand or product.*

Refrigerator and Freezer Storage Unit Options* (cont'd.)

3 Under-Counter Refrigerators and Freezers

- Small and easy to relocate
- Useful for adding to existing refrigerator or freezer capacity. A single under-counter refrigerator or freezer may be added to supplement an approved unit.

Refrigerator and Freezer Storage Unit Options to Avoid

Dorm-style & Bar-Style Storage Units - Not allowed

Small, single-door combined units should never be used for ANY type of vaccine storage. The freezer compartment is incapable of safely maintaining temperatures for varicella and zoster vaccine. Cold air from the freezer compartment vents down into the main compartment, causing unstable temperatures.

Combined Household Storage Units - Not recommended

If you are currently using a household combination refrigerator/freezer, we strongly recommend you upgrade to a stand-alone unit. If an upgrade isn't possible, we recommend purchasing a separate freezer and using only the main section of the refrigerator for vaccines. In addition, using the refrigerator section of a household combination unit is only acceptable if a Digital Data Logger (DDL) thermometer shows it can hold stable, in-range temperatures.

A Note on Household vs. Biologic/Pharmaceutical-Grade Storage Units

According to studies conducted by the *National Institute of Standards and Technology* (NIST), household-style units are ***not*** capable of maintaining proper storage temperatures in both the refrigerator and freezer compartments. This is because cold air from the freezer blows directly into the refrigerator compartment and onto the vaccine. By far, the best practice is to choose separate refrigerator and freezers purposely built for the precise storage of vaccines. **Biologic-grade** ("medical"; "purpose-built"; "vaccine"; "blood-bank"; "laboratory") **refrigerators** are considered the best, most secure option for vaccine storage. These "gold-standard" vaccine units have:

- **Electronic thermostat**
- **Wire shelving for improved circulation**
- **Small ports for the entry of a temperature probe wire**
- **Interior fans to equalize the temperature throughout**

Vaccines should not be stored in front of air vents. Avoid storage units where the location of air vents will interfere with and limit the amount of space for optimal storage conditions.

NYC Health

Refrigerator and Freezer Manufacturers with Units that Meet Specifications

Fisher Scientific www.fishersci.com
Follett www.follettice.com
Helmer www.helmerinc.com
Lab Research Products www.labresprod.com
Migali Scientific www.migaliscientific.com
Panasonic Biomedical www.panasonic-healthcare.com/us/biomedical
Thermo Scientific www.thermo.com

VFC Thermometer Requirements

VFC providers must have a working thermometer with a current and valid **Certificate of Calibration Testing** (also known as a **Report of Calibration**) in each unit storing VFC vaccine. To meet VFC program requirements, the device must also be equipped with:

1. A temperature probe (preferably a buffered probe)
2. An active temperature display that can be easily read from the outside of the unit
3. The capacity for continuous temperature monitoring and recording, where the data can be routinely downloaded

Additional features recommended for thermometers:

4. Alarm for out-of-range temperatures with remote notification
5. Current, minimum, and maximum temperature display
6. Low-battery indicator
7. Accuracy of +/- 1°F (0.5°C)
8. Memory storage of at least 4,000 readings
9. User-programmable logging interval (or reading rate) recommended at a maximum time interval of every 30 minutes
10. Recommended calibration testing every one to two years, or based on manufacturer recommendation

New Requirements starting January 1, 2018

- All VFC providers will be required to use **continuous temperature monitoring devices** (**digital data loggers**) to monitor VFC vaccines, including during routine onsite storage of vaccine, during transport of vaccine, and during mass vaccination clinics. Back-up thermometers will be required.
- VFC providers will have to upload **digital data logger** summary reports before placing VFC vaccine orders.
- Once daily min/max temperature checks (at the beginning of the day) will replace twice daily temperature checks.

Digital Data Loggers Piloted by the NYC VFC Program

DDL thermometers piloted by the NYC VFC program are listed below. Please note that while these DDLs were piloted, the NYC VFC program does not endorse any particular DDL brand. Each device has its own advantages and disadvantages, so choose devices that are appropriate for your facility. Make sure that the device's **Certificate of Calibration** is in accordance with the *National Institute of Standards and Technology* (NIST) or the *American Society for Testing and Materials* (ASTM) standards. For a certificate of calibration checklist, go to our website: http://www1.nyc.gov/assets/doh/downloads/pdf/imm/thermo-checklist.pdf

VFC 400 Vaccine Monitoring Data Logger Kit

Approximately $145+ $49 docking station required
Website: http://www.vfcdataloggers.com/
Training resources: http://www. vfcdataloggers.com/support/vfc-400-faq/

Berlinger FridgeTag2 & FreezerTag2

Approximately $272
Website: http://www.berlingerusa.com/fridgetag2/
Training resources: http://www.berlingerusa.com/support/
http://www.berlingerusa.com/fridgetag2/supportvideos/
https://www.youtube.com/watch?v=92S5i885F8E
https://www.youtube.com/watch?v=9h_YsyrWA2Q

Dickson DWE

Approximately $350+
Website: http://www.dicksondata.com/products/DWE
Training resources: http://support.dicksonone.com/

Dickson TWE

Approximately $524+
Website: http://www.dicksondata.com/products/TWE
Training resources: http://support.dicksonone.com/

E-mail the NYC VFC program if you have any additional questions
nycimmunize@health.nyc.gov