



# Maine Immunization Program Refrigerator & Freezer Guide

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## **The Requirements**

Often the most expensive part of Vaccines for Children (VFC) participation is selecting your vaccine storage units. This must be done with care. The U.S. Centers for Disease Control (CDC) and the Maine Immunization Program (MIP) highly recommend purchasing separate, pharmaceutical/purpose-built units rather than a household-style combination unit. Dorm-style or bar-style refrigerator/freezers are not allowed for ANY type of vaccine storage.

As required by the U.S. CDC and MIP, any unit carrying 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 water bottles (in the freezer) to stabilize the temperatures and minimize temperature excursions that can impact vaccine potency.
3. A calibrated data logger 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.

### **Dorm-style & Bar-style (not allowed)**

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Single door combined units should never be used for any vaccine storage. The freezer compartment is incapable of maintaining temperatures appropriate for varicella and zoster vaccine storage. Furthermore, cold air from the freezer compartment is often vented down into the main compartment causing unstable and inconsistent refrigerator temperatures.

## **Combined household (not recommended)**

If you are currently using a household combination refrigerator/freezer, we strongly recommend you upgrade to a pharmaceutical/purpose-built unit. If upgrading is not possible, purchase a separate countertop freezer and only use the main refrigerator section of the household refrigerator.

According to studies conducted by the National Institute of Standards and Technology (NIST), household style units are less 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 sensitive vaccine. By far, the best practice is to choose a separate refrigerator and freezer purpose-built for the precise storage of vaccines. If you choose to use a household-style unit, it is recommended that you use only the refrigerator section and purchase a small countertop freezer for your frozen vaccine.



## **Built-in digital data loggers**

Some refrigerator and freezer manufacturers include built-in digital loggers with their units. Unless these loggers meet VFC logger requirements, they should not be used for vaccine monitoring. All official temperature readings must only be taken from an approved calibrated digital data logger/backup logger.

### **The following are requirements for data loggers:**

- An active temperature display that can be easily read by all staff from outside of the unit without having to open the door. o If your unit does not have an outside temperature display it is also acceptable to retrieve these temperatures from a nearby computer only if ALL staff have easy access to the data logger temperatures.
- Alarm for out-of-range temperatures.
- A display that shows the current temperature, as well as minimum and maximum temperatures.
- Low battery indicator.
- Accuracy of  $\pm 1^{\circ}\text{F}$  ( $\pm 0.5^{\circ}\text{C}$ ).
- Detachable probe in buffered material.
- Memory storage of at least 4,000 readings (device must not rewrite over old data and must stop recording when the memory is full).
- User-programmable logging interval of at least every 30 minutes.

Probes must be in buffered material so that they measure temperatures that are more representative of the temperature of the vaccine in the vial rather than the air temperature of the storage unit. Examples of buffers include a vial filled with liquid (glycol, ethanol, glycerin), a vial filled with loose media (sand, glass beads), or a solid block of material (Teflon, aluminum).

For more please refer to [Maine Immunization Program Provider Policy and Procedure Manual](#).

## Choosing the right sized unit

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Below are a few handy steps for determining the ideal refrigerator size for your clinic.

- 1 Estimate the maximum number of doses of publicly-provided

Refrigerator:	
Add the number of doses <i>on hand (current inventory)</i> from your last order form.	
Public vaccine	_____
Private vaccine	+ _____
Total doses	= _____
Multiply (max inventory)	x 1.25
<b>Maximum doses</b>	= _____

- 2 Match your maximum doses with the minimum cubic feet

Max. Doses	Minimum Cubic Ft.
2,000+ doses	may need more than one refrigerator
1000 – 2000	40 cu. ft.
900 – 1000	36 cu. ft.
801 - 900	21 - 23 cu. ft.
701 - 800	17 - 19.5 cu. ft.
400 – 700	11 - 16.7 cu. ft.
100 - 399	4.9 - 6.1 cu. ft.

- 3 Search for the Product name and model numbers on the internet for prices, dimensions, and locations. Verify that the specifications meet all requirements.

Use this refrigerator and freezer guide as a reference while searching for a storage unit that is properly sized and meets all VFC requirements. Whenever possible, choose pharmaceutical/purpose-built over household style units.

### A Brief Disclaimer

As a state agency, we can't endorse any specific brand or product. The terms & conditions of your purchase are between you and your vendor.

## **Equipment Options**

With the previous guidelines in mind, we have compiled a short list of equipment options that meet or exceed the CDC and MIP requirements. The list covers a wide range of price points and configurations to fit any clinic's size or budget. This guide is far from exhaustive and is only meant as an overview (with examples) of the *types* of storage units to consider during your search.

As always, the MIP is here to help. Please do not hesitate to contact us with any questions you have about these requirements, or the storage options you are considering.

### **Used and refurbished equipment**

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There are several used and re-manufactured equipment vendors online. Prices are often 30-50% off retail. Also consider calling your manufacturer of choice and asking about less expensive used units. Helmer, for example, has a rotating inventory of scratch and dent units that come with a much lower price tag and full warranty.

As with any large purchase, only buy from reputable vendors and get all guarantees in writing.

<p><b>AceLaboratorySystems</b> <a href="http://www.acelabsystems.com">www.acelabsystems.com</a></p>
<p><b>Labequip</b> <a href="http://www.labequip.com/">www.labequip.com/</a></p>
<p><b>LabX</b> <a href="http://www.labx.com">www.labx.com</a></p>

## Under-counter refrigerators and freezers

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Under-counter refrigerators and freezers are an excellent choice for clinics with limited space. Benefits of under-counter units include:

- **Lower risk:** Separate compressors and condensers decrease the risk of a total vaccine loss that might occur in a single combined unit.
- **Flexibility:** Small and easy to relocate, under-counter units can be positioned in multiple ways depending on the need.
- **No cold air vent:** Traditional combined units use a cold air vent to blow frozen air into the refrigerator compartment. Separate units mean separate compressors and no need for cold air venting.
- **Cost effective:** If a clinic is looking to add to its existing refrigerator or freezer capacity, this option allows for the purchase of only what is needed. A single under-counter refrigerator or freezer might negate the need to buy a larger, more expensive replacement unit.



### Manufacturers to consider in this category:

- **[Migali Scientific](#) Evox-U1RG-ADA & EVOX-U1F-ADA:**
  - Vaccine Storage undercounter [Refrigerator](#)
  - Vaccine Storage undercounter [Freezer](#).
- **[Helmer Scientific](#) iLR105-GX & iLF105-GX:**
  - Undercounter Laboratory [Refrigerator](#)
  - Undercounter Laboratory [Freezer](#).
- **[Follett](#) REF5P & FZR5P:**
  - Under-counter Medical grade [Refrigerator](#)
  - Under-counter Medical grade [Freezer](#).

## Full-size, stand-alone refrigerators and freezers

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Pharmaceutical/purpose-built refrigerators and freezers are considered the best, most secure option for vaccine storage. As with most “gold-standard” products, they require a larger investment and are most often found in health departments, laboratories, and hospitals. However, many of the biologic-grade manufacturers also produce refrigerators and freezers in an array of sizes and price points.

### **Manufacturers to consider in this category:**

- **PHCBI** MPR-722R-PA & MDF-U731M-PA:
  - Large Capacity Laboratory [Refrigerator](#)
  - Large Capacity Laboratory [Freezer](#)
- **Magali Scientific** EVOX-1RG & EVOX-1F:
  - Large Capacity Vaccine [Refrigerator](#)
  - Large Capacity Vaccine [Freezer](#)
- **Helmer Scientific** iLR120-GX & iLF120-GX:
  - Laboratory [Refrigerator](#)
  - Laboratory [Freezer](#)
- **Follett** REF20i & FZRVAV20/25:
  - Medical grade [Refrigerator](#)
  - Medical grade [Freezer](#)
- **TempArmour** Refrigerators:
  - PCM chest-style [refrigerators](#)
  - PCM chest-style [freezers](#)



### **Full-size, combined refrigerator-freezers**

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While they look similar to household combination units, pharmaceutical and purpose-built combination units are far superior for vaccine storage in several important ways:

- Separate refrigeration 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

Pharmaceutical/purpose-built combination units are ideal for clinics wanting a best-practice storage solution in a compact package.

### **Manufacturers to consider in this category:**

- **PHCBI** MPR-N450FH-PA: [Pharmaceutical Refrigerator with Freezer](#)
- **American Biotech Supply**: [Pharmaceutical Refrigerator with Freezer](#)

## Extras

This section was created to showcase additional equipment, add-ons and services you might consider when assessing your vaccine storage and monitoring needs.

### Portable cold storage

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These are excellent options for emergency storage, long distance transport or use during day clinics in the field. Some units use electricity to run a cooling system, while others use advanced insulation combined with propriety cooling packs/phase change panels. Whichever type you choose, it's a smart investment that will add another layer of protection to your vaccine management practice.

**Vericor:** Portable “Cool Cube” transport system.  
[www.vericormed.com/cold-chain-management/](http://www.vericormed.com/cold-chain-management/)

**TempArmour:** Portable vaccine carrier.  
[https://www.temparmour.com/vaccine\\_carrier](https://www.temparmour.com/vaccine_carrier)

**FridgeFreeze:** Portable vaccine refrigerators and freezers.  
[www.fridgefreeze.com](http://www.fridgefreeze.com)

**Roemer Industries:** Portable medical refrigerator and freezers.  
[www.roemerindustries.com](http://www.roemerindustries.com)





## **Emergency battery backup**

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Other than a generator, one of the best ways to buy time during an emergency is through the use of a battery backup. Ideally, these would be used in combination with an alarm system as a way to add 2-4 hours to your response window.



### **Vaccine Refrigerator Battery Backup**

<http://www.mediproducts.net/products-refrigeration/>

### **Xantrex Powerhub 1800**

<http://www.xantrex.com/power-products/backup-power/xpower-powerhub-1800.aspx>

### **Goal Zero Yeti Power Stations**

<http://goalzero.com/pages/portable-power-stations>

### **EATON 9PX USP**

<https://eaton-upssystems.com/eaton-9px-ups/9px-ups/>