

New Hampshire Immunization Program

Refrigerator & Freezer Guide

Vaccine storage units must be selected carefully and used properly. Refrigerators without freezers, and stand-alone freezers, are recommended because they are usually better at maintaining the required temperatures. However, a combination refrigerator/freezer unit sold for home use is acceptable for vaccine storage if the refrigerator and freezer compartment each has a separate external door and separate temperature controls. The Centers for Disease Control (CDC) recommends that any refrigerator or freezer you choose for vaccine storage must:

- **be able to maintain required vaccine storage temperatures year round**
- **be large enough to hold the year's largest inventory (influenza season)**
- **have a certified calibrated thermometer inside each storage compartment**
- **be dedicated to the storage of vaccines. Food and beverages should not be stored in a vaccine storage unit because this practice results in frequent opening of the door and destabilization of the temperature.**

-2008 CDC Vaccine Storage & Handling Toolkit (CD edition)

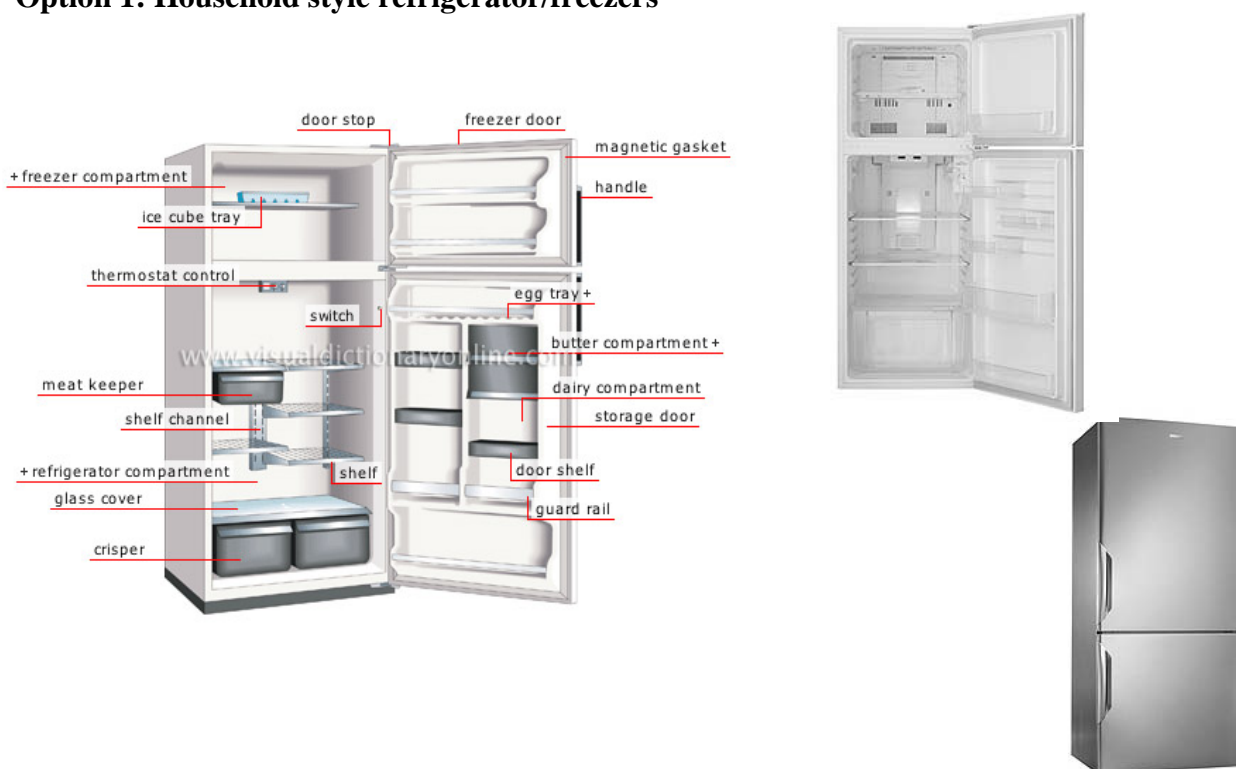
General Requirements

Vaccines that require storage temperatures between **35° and 46°F (2° and 8°C)** may be stored in the refrigerator compartment of a household- or commercial-style refrigerator-freezer unit. Vaccines that require storage temperatures at **5°F (-15°C)** or colder may be stored in the freezer compartment of such units. Vaccine Provider sites that store large volumes of vaccine might prefer separate refrigerator and freezer since stand-alone refrigerator and freezer units are better at maintaining the required temperatures.

Whatever type of storage unit is used, the refrigerator and freezer compartments must have separate external doors and separate temperature controls. The storage unit must have enough room to store the year's largest inventory **without crowding** and to store enough water bottles (in the refrigerator) and frozen packs (in the freezer) to stabilize the temperature. Additionally, the unit must function properly and reliably maintain the appropriate temperatures.



Option 1: Household style refrigerator/freezers



These units are most often found in home and appliance stores. Higher-end models are sometimes referred to as "commercial-grade" and are most often used in the food service industry. While not ideal for vaccine storage, many clinics use this type of unit due to its affordability and availability. If you choose a household model that incorporates the following guidelines you should get many years of reliable, stable vaccine storage.

Some **essential** features to look for if you are buying this type of unit for vaccine storage are:

- Refrigerator and freezer compartments must have separate external doors.
- Separate temperature controls for the refrigerator and freezer compartments
- Adjustable shelves
- Ample room to store vaccine on the middle 2-3 racks

Some **recommended** features include:

- Locks on the outside of the doors
- Separate compressors for the freezer and refrigerator compartments
- Automatic condensate removal; no drain lines
- Forced air circulation
- Alarm on door to detect door ajar
- Battery back-up (for power failure)
- Order a unit without vegetable bins

Warnings:

Freezing vaccine- Never store freeze-sensitive vaccines near the cold air vent in refrigerator section. Air from the freezer will often blow down on the vaccine and freeze it.

Single thermostat units- Household-style refrigerators with a single thermostat are **not** acceptable. This type of refrigerator/freezer is only accepted if storing vaccine in refrigerator *or* freezer, but not both. A single thermostat makes it difficult to maintain recommended temperatures in both sections.

Movement of vaccine to new unit- Temperatures must be taken 7 working days and the new unit must be inspected by NHIP before vaccine may be placed inside.

Thermometers- It is a requirement to use NHIP provided thermometers. It is not acceptable to replace NHIP thermometers with one purchased by the provider.

Option 2: Under-counter Refrigerators and Freezers



Under-counter refrigerators and freezers are excellent choices for those clinics that may be limited on space but would like a scientific-grade vaccine storage solution. Not to be confused with dorm-style refrigerators (see warning at end of this section), scientific-grade under-counter refrigerators and freezers are high quality stand-alone units that allow for the separation of frozen and refrigerated vaccines.

Benefits of under-counter refrigerators and freezers include:

- Lower risk of catastrophic loss. Separate compressors and condensers decrease the risk of a total vaccine loss that might occur in a single refrigerator/freezer unit.
- • Stability of temperatures. Because these units are only required to hold a single set temperature they are not constantly re-adjusting and “sharing” cold air between the refrigerator and freezer.
- No risk of accidental freezing of refrigerated vaccine. Combined units often use a cold air vent (from the freezer) to regulate temperatures in the refrigerator compartment. This

freezing air blows down on the top shelf of the refrigerator and can quickly freeze any vaccines in its path.

- **Cost benefit.** If a clinic is looking to add to their existing refrigerator or freezer capacity, this option allows for the purchase of only what is needed. A single under-counter refrigerator might negate the need to buy a new larger, more expensive combination unit.

Warnings:



Dormitory-Style Units- Small single-door (dormitory-style or bar-style) combined refrigerator-freezer units should not be used for permanent vaccine storage. The freezer compartment in this type of unit is incapable of maintaining temperatures cold enough to store MMR-V, varicella, and zoster vaccines. If attempts are made to cool the freezer compartment to the appropriate temperature, the temperature in the refrigerator compartment will fall below the recommended range, potentially freezing the refrigerated vaccines.

Option 3: Laboratory-grade refrigerators and freezers



Laboratory-grade refrigerators and freezers are considered the best, most secure option for vaccine storage. As with most “gold-standard” products, they carry a bigger price tag and are usually reserved for health departments, laboratories and hospitals. However, many of the lab-grade manufacturers also produce an array of refrigerators and freezers that may meet your clinic's needs. For example, Sanyo produces very large, vaccine/blood lab-grade refrigerators

(see first picture above) but they also produce more moderately priced under counter models ideally suited for small clinics.

Manufactures to consider:

Kelvinator (targeted towards the food industry)

<http://www.kelvinator.com/products.asp>

True (targeted towards the food industry)

<http://www.truemfg.com/tfs/ushome.asp>

Summit

<http://www.summitappliance.com/category/2>

Sanyo

<http://www.sanyobiomedical.com/productList.php?cat1=19>

SO-LOW

<http://www.so-low.com/>

Sun Frost

http://www.sunfrost.com/vaccine_refrigerators.html

Helmer

http://www.helmerinc.com/category.aspx?__taxonomyid=20&path=%5CProducts%5CUSA

Marvel Scientific

<http://www.hospitalrefrigerators.com/index.htm>

Lab Research Products

<http://www.labresprod.com>

REVCO

<http://www.thermo.com>

GEM

<http://www.gemrefrigeratorcompany.com>

Informational resources

Shepler Refrigeration

1 800-999-7255

<http://www.sheplerproducts.com>

or visit their scientific refrigeration site at: www.PMCScientific.com

Globalspec- The Engineering Search Engine

<http://www.globalspec.com>

This search engine can be used to search over 14,000 online catalogs for vendors of laboratory and pharmacy products.