NORTH DAKOTA
DEPARTMENT *of* HEALTH

Refrigerator/Freezer Purchasing Guide

When you plan to purchase a refrigerator or freezer unit,
Please take these factors in to consideration:

1. The ability to maintain temperature	• Vaccine storage refrigerator or freezer units should be able to maintain the required temperatures throughout the year. CDC recommends the use of stand-alone units (units that only refrigerate or freeze), as they maintain the required temperature effectively. CDC does not recommend the use of the freezer portion of combination units as they are not capable of maintaining the required temperatures. Most pharmacy-grade units are excellent at maintaining temperatures. • **Dormitory style refrigerators must not be used for vaccine storage.**
2. Size of the unit	• Vaccine storage units should be large enough to hold the year's largest inventory (such as the inventory during influenza season) without crowding vaccines. • Vaccine storage units should have enough space to hold water bottles for refrigerators and frozen packs for freezers. Water bottles and coolant packs help to stabilize temperatures in emergency situations like a power outage.

3. Estimate the size based on doses administered

Doses administered per year (Use NDIIS to obtain the data)	**Recommended equipment (See the next pages)**
Very high volume providers (10,000 doses/year)	Pharmacy-grade or biologic-grade refrigerator-only units and stand-alone freezer units.
High volume providers (2,000-10,000 doses/year)	Refrigerator-only (16.7 cubic feet minimum) and stand-alone freezer units.
Medium volume providers (500-2,000 doses/year)	Refrigerator-only (16.7 cubic feet minimum) and stand-alone freezer units or Pharmacy-grade or biologic-grade under the counter units.
Low volume providers (less than 500 doses/year)	

4. Refrigerators or freezers with built-in	• Some refrigerator/freezer units have built-in thermometers. Some manufacturers place the built-in thermometer close to the wall of the unit, which contradicts the current recommendation that says thermometers should be placed at the center, close to the vaccines. If providers wish to buy a unit with a built-in thermometer, they should check for the placement of the glycol vial and whether the thermometer is calibrated or not. Providers should check the cost of recalibration with the manufacturers and they should recalibrate the built-in thermometers regularly according to the manufacturer's recommendation. Providers must keep the certificates of calibration.
5. Defrost cycle of the unit	• CDC recommends the use of refrigerators/freezers with an automatic defrost cycle or that are frost-free for vaccine storage. Units with manual defrost cycle may need a backup refrigerator/ freezer when they are defrosted and accumulation of ice in a unit with manual defrost cycle may affect the performance of the unit. Therefore, units with manual defrost cycle are not preferred for vaccine storage.
6. The door of the unit	• There is no specific recommendation on the type of refrigerator/freezer door. However, there are some qualities to look for. Some units have doors that close automatically with an alarm to detect if the door is ajar. Some units have locks and backup generator. A National Institute of Standards and Technology's (NIST) study showed that refrigerators with a glass door have an increased risk of temperature excursion during power failure.

After buying a new refrigerator or freezer unit, allow one week of twice daily temperature recordings, including minimum and maximum temperatures, to make sure the unit maintains the required temperature before storing vaccines in the unit .

Please contact the North Dakota Immunization Program at 701.328.3386 or 800.472.2180 with any questions. www.ndhealth.gov/Immunize/

Easy Steps to Purchase a Refrigerator or Freezer

Step 1. Estimate the maximum number of doses that will be stored in the unit
Step 2. Match the maximum doses with the minimum cubic feet needed
Step 3. Search for product name and model number for prices or use the provided table.

Refrigerators

Add the number of doses on hand

VFC vaccine _____
VFC flu vaccine +_____
Private vaccine +_____
Private flu vaccine +_____
Total doses _____
Multiply by x1.25
Maximum doses = _____

Freezers

Add the number of doses on hand

VFC MMR, MMRV and Varicella _____
Private MMR, MMRV and Varicella +_____
Total doses _____
Multiply by x1.25
Maximum doses = _____

Refrigerators

Maximum Doses	Minimum Cubic Ft.	Examples of Refrigerator–only units
2,000+ doses	May need more than one refrigerator	See below
1000 – 2000	40 cu. ft.	Revco REL-4504A; REL-4504D* Nor-Lake NSPR482* Sanyo SPR-49GD-MED*
900 – 1000	36 cu. ft.	Sanyo MPR-1013; MPR-1013R* Turbo Air GST-40DR*
801 - 900	21 - 23 cu. ft.	Aegis Scientific 1-R-22* Sanyo SRR-23FD; SRR-23GD; SRR-23FD*
701 - 800	17 - 20 cu. ft.	Aegis Scientific 3-CR-17*; Frigidaire FCGM201RF; FCRS201RFB Marvel Scientific 17CAR
400 – 700	16.7 cu. ft.	Avanti BCAD680; Nor-Lake LR161WWW/0*; Kenmore 6072; Frigidaire FRU17B2J; FRU17B2JW*
100 - 399	4.9 - 6.1 cu. ft. (must be pharmacy grade)	Sanyo SR-L4110W; SF-L6111W; MPR-214F* Nor-Lake LRO61WWW/0; NSLR051WMW/0*grade) Revco REL-404A*

Freezers

Maximum Doses	Minimum Cubic ft.	Examples of freezer-only units
501 – 6,000	7 - 14.8 cu. ft.	Whirlpool EH150FXR; EH151FXRQ Frigidaire AFFC1466DW; Arctic Air CF07
201 - 500	5 - 5.6 cu. ft.	Revco ULT-430A* Frigidaire FFC0522DW
0 - 200	3.5 - 4.9 cu. ft	Nor-Lake LF041WWW/OM*; Revco ULT-430A* Barnstead International Model3752

Source: California Department of Public Health, VFC program

* Indicates pharmacy grade

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Some Refrigerator/ Freezers and their Specifications

Refrigerator or freezer	Manufacturer	Temperature range	Size in Cubic feet	Price	Defrost cycle	Door	website
SR-L6111W	SANYO	1^0C to 14^0C	6.1	$1322	Automatic	Solid door	www.us.sanyo.com/Biomedical-Preservation-Undercounter-Refrigerators-Freezers/SR-L6111W-Laboratory-Appliance-Series
FRGL404A	Thermo scientific	1^0C to 8^0C	4.9	$4873	Automatic	Solid and self-closing	www.thermoscientific.com/ecomm/servlet/productsdetail?productId=12769394&groupType=PRODUCT&searchType=0&storeId=11152&from=search
LR161WWW/0	Nor-Lake scientific	4^0C	16.7	$1,802	Automatic	Solid/ Self closing	www.norlake.com/docs/default-source/specfication-sheets/general-purpose-laboratory-refrigerator-upright-auto-defrost-specification-
DH4-23SD	SO-LOW	2^0C to 8^0C	23	$3,510	Automatic	Solid door	www.so-low.com/lab-pharmacy-refrigerators/Soid_Door_Laboratory_and_Pharmacy_Refrigerators
LS27SD/CT	Powers Scientific Inc.	2^0C to 8^0C	6.5	$4,950	Automatic	Solid door optional	www.powersscientific.com/2-8c-constant-temperature-refrigerators-vaccine-storage/
iPR125	Helmer Scientific	2^0C to 10^0C	25	$5,333	Automatic	Solid door/ optional	www.helmerinc.com/ipr125-pharmacy-refrigerator-us-canada.aspx
iPR111	Helmer Scientific	2^0C to 10^0C	11.5	$4,053	Automatic	Solid door/ optional	www.helmerinc.com/ipr111-pharmacy-refrigerator-us-canada.aspx
iLF104 Freezer	Helmer Scientific	-15^0C to -30^0C	4	$3,651	Automatic	Self closing	www.helmerinc.com/ilf104-ada-laboratory-freezer-us-canada.aspx

You store expensive vaccines worth thousands of dollars in the refrigerator or freezer unit you buy. Therefore, you have to be strict when you choose your storage unit. For instance, 10 doses of MMRV and 10 doses of HPV vaccines cost $2,790 more than the price of some refrigerator units.

Notice: This table provides a list of refrigerators/freezers which can be considered as options when providers plan to purchase a refrigerator and/or freezer for vaccine storage. The information in this document may change over time and does not include all products or manufacturers. Therefore, providers should conduct a detailed search when they plan to purchase a refrigerator/freezer. The North Dakota Department of Health does not recommend or endorse products or manufacturers. This list is a courtesy. Providers may purchase refrigerators and freezers not manufactured by companies on this list. This guide does not differentiate between pharmaceutical and commercial grades.