

A Quick Reference Guide to

Vaccine Storage & Handling



PublicHealth
WELLINGTON-DUFFERIN-GUELPH
Stay Well.



A Quick Reference Guide to Vaccine Storage and Handling

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1

What is the cold chain?

Cold chain refers to the process used to maintain vaccine temperature between $+2^{\circ}\text{C}$ and $+8^{\circ}\text{C}$ at all times during transport, storage and handling.

The cold chain begins at the manufacturer and ends when the vaccine has been administered to the client.



————— Keep temperature between $+2^{\circ}\text{C}$ and $+8^{\circ}\text{C}$ —————

Why is it important to maintain the chain?

2

You play an important role in making sure your clients get the safest and most effective vaccines.

Vaccines can be damaged if exposed to temperatures below +2°C or above +8°C.

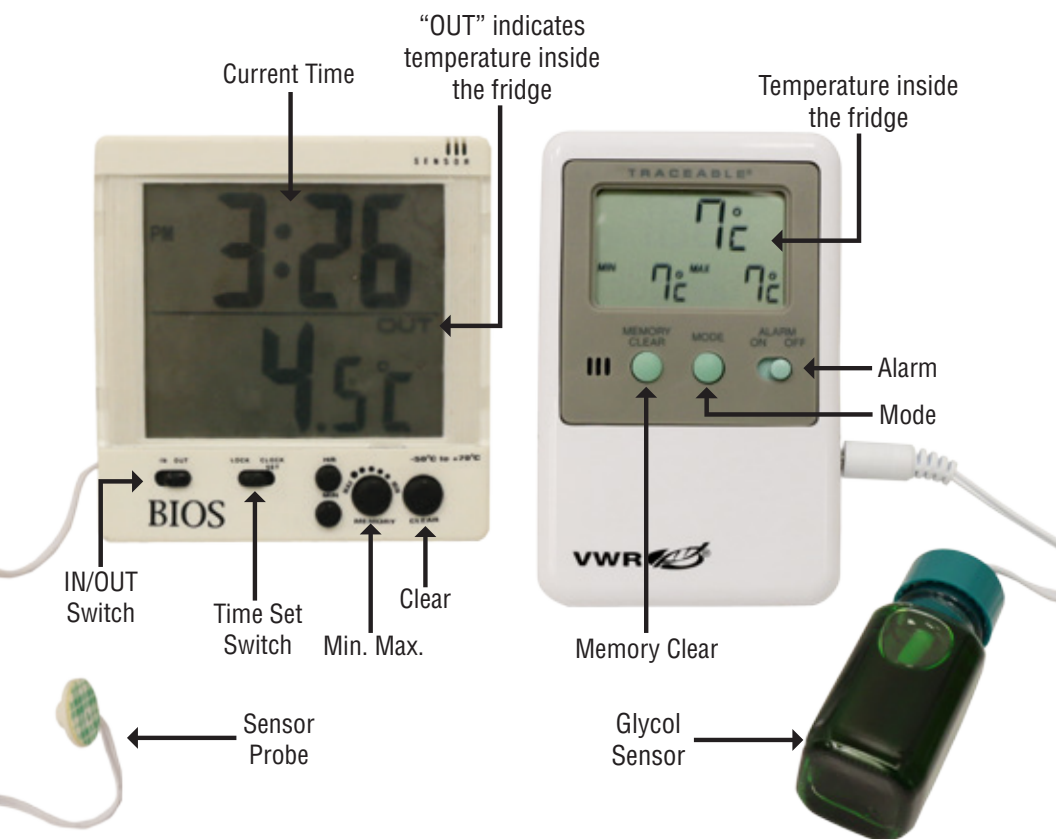
Maintaining the chain is important because exposed vaccine can affect the following:

- 1 VACCINE POTENCY**
The vaccine may not be effective resulting in lack of protection against vaccine-preventable diseases.
- 2 VACCINE CONFIDENCE**
Clients vaccinated with a potentially ineffective vaccine may need to be revaccinated.
- 3 VACCINE WASTAGE**
Vaccines are expensive to replace and may not be readily available due to intermittent vaccine shortages.

3 How do you monitor the refrigerator temperature?

Use a **digital minimum-maximum thermometer** like the ones shown below. These thermometers provide three readings:

- 1 **current temperature**
- 2 **minimum temperature reached since reset**
- 3 **maximum temperature reached since reset**



NOTE: If reading HI and LO instead of MIN and MAX on a glycol thermometer (right image), it is in alarm mode. Press the mode button to return to correct mode.

Daily Temperature Checks

Temperature checks must be performed twice daily — at the beginning and end of the day — and documented in the temperature logbook. To perform a temperature check:



Read

Read the thermometer



Record

Record the current, minimum and maximum temperatures (remember to include date, time and your initials)



Reset

ALWAYS clear minimum and maximum temperatures after recording



Report

Report any temperature below +2°C or above +8°C immediately to Public Health

Maintain the Chain Reminders:

- Always reset (clear) the minimum and maximum temperatures after recording the temperature readings.
- Place the thermometer sensor on the middle shelf in an empty vaccine box (labelled 'Empty') to help stabilize the temperature readings by protecting the sensor from exposure to sudden drafts of cold or warm air.
- Write “closed” on days you are not in the office in the temperature logbook.
- Change the thermometer battery every six months and record the date in the temperature logbook.
- Keep temperature logbooks on site for three years.



4 How do you organize the vaccine refrigerator?

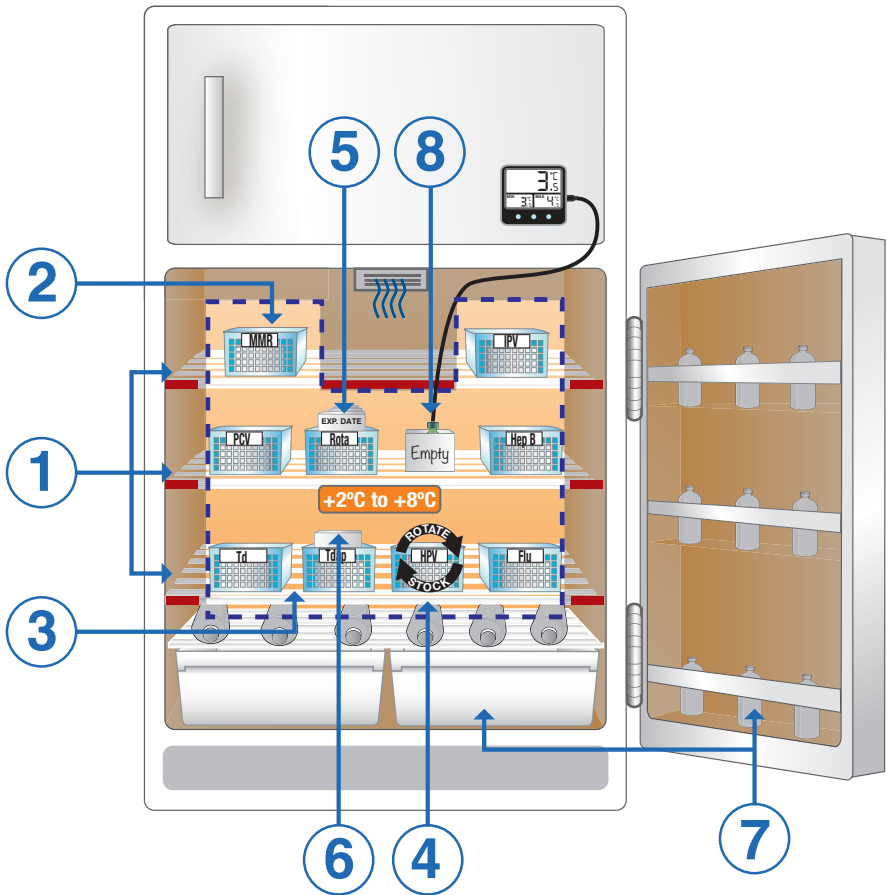


Image adapted with permission from the California Department of Public Health, Immunization Branch.

Maintain the Chain Reminders:

- Only use the refrigerator to store vaccine; do not store laboratory specimens, food or drinks.
- Make sure the refrigerator is clean and in good working order. Ensure the door seals tightly.
- Keep the refrigerator in an area that is well ventilated, and away from direct sunlight and external walls.

- 1 STORE VACCINES ON THE MIDDLE SHELVES**
not in the door, bottom drawers or under the vent.
- 2 USE PERFORATED PLASTIC BASKETS**
to organize vaccines by type.
- 3 LEAVE SPACE BETWEEN VACCINE PACKAGES**
to allow for air circulation.
- 4 ROTATE STOCK**
so vaccines with the shortest expiry date are at the front of the basket to be used first.
- 5 CHECK EXPIRY DATES REGULARLY**
and remove expired vaccine for return to Public Health.
- 6 PROTECT VACCINES FROM LIGHT**
by keeping them in the original box.
- 7 PUT FILLED WATER BOTTLES IN DOOR, BOTTOM DRAWERS AND EMPTY SHELVES**
to help maintain a stable temperature.
- 8 PLACE THE THERMOMETER SENSOR ON THE MIDDLE SHELF** in an empty vaccine box.



- Put a “DO NOT UNPLUG” sticker by the electrical outlet so the refrigerator is not unplugged accidentally.
- Minimize the number of times the refrigerator door is opened and make sure it is closed tightly.
- Defrost domestic or bar refrigerators when there is more than 1 cm of ice in the freezer compartment.

5 How do you respond to a cold chain incident?

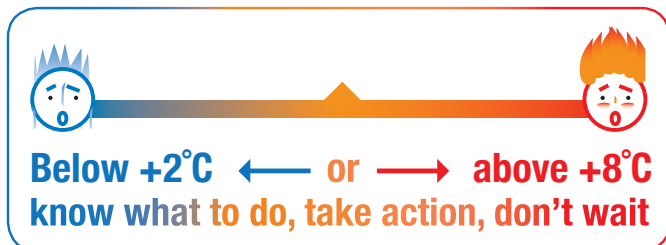


Image adapted with permission from the California Department of Public Health, Immunization Branch.

When vaccines have been exposed to a temperature below +2°C or above +8°C, a cold chain incident has occurred. Follow these steps:

STEP

1 DO NOT USE VACCINES.

Put magnet on refrigerator door.



Do not use or discard vaccine until directed by Public Health.

STEP

2 CHECK TO SEE IF THE REFRIGERATOR AND THERMOMETER ARE WORKING PROPERLY.

1. Is the refrigerator plugged in and is the door closed?
2. Are the thermometer readings clear and do they show current, minimum and maximum temperatures?
3. Does the thermometer battery need to be replaced?
4. Is the sensor placed correctly in the refrigerator?
5. Refer to your contingency plan for power outage or refrigerator malfunction.

STEP

3 REPORT THE COLD CHAIN INCIDENT TO PUBLIC HEALTH:

Cold Chain Line: 1-800-265-7293 ext. 4500

STEP

4 DOCUMENT THE DETAILS OF THE COLD CHAIN INCIDENT

on the Cold Chain Incident Description Form.

STEP

5 FAX THE FOLLOWING TO PUBLIC HEALTH AT 519-823-4903

1. **Temperature Log:** including previous 2 weeks of recorded temperatures
2. **Vaccine Inventory Form:** list name of vaccine, lot number, expiry date, number of doses, if the vaccine already has a red dot indicating a previous exposure and if any multi-dose vials are open
3. **Cold Chain Incident Description Form**

STEP

6 WAIT FOR FURTHER INSTRUCTION FROM PUBLIC HEALTH.

Public Health will advise which vaccines can be used and which ones cannot be used.

Vaccines that can be used:

With a red permanent marker, put a red dot ● on the vaccine package.

Vaccines that cannot be used:

1. Remove from the refrigerator and put in a paper bag.
2. Complete the **Vaccine Return Form** and attach to the paper bag.
3. Return to Public Health with your next vaccine order.

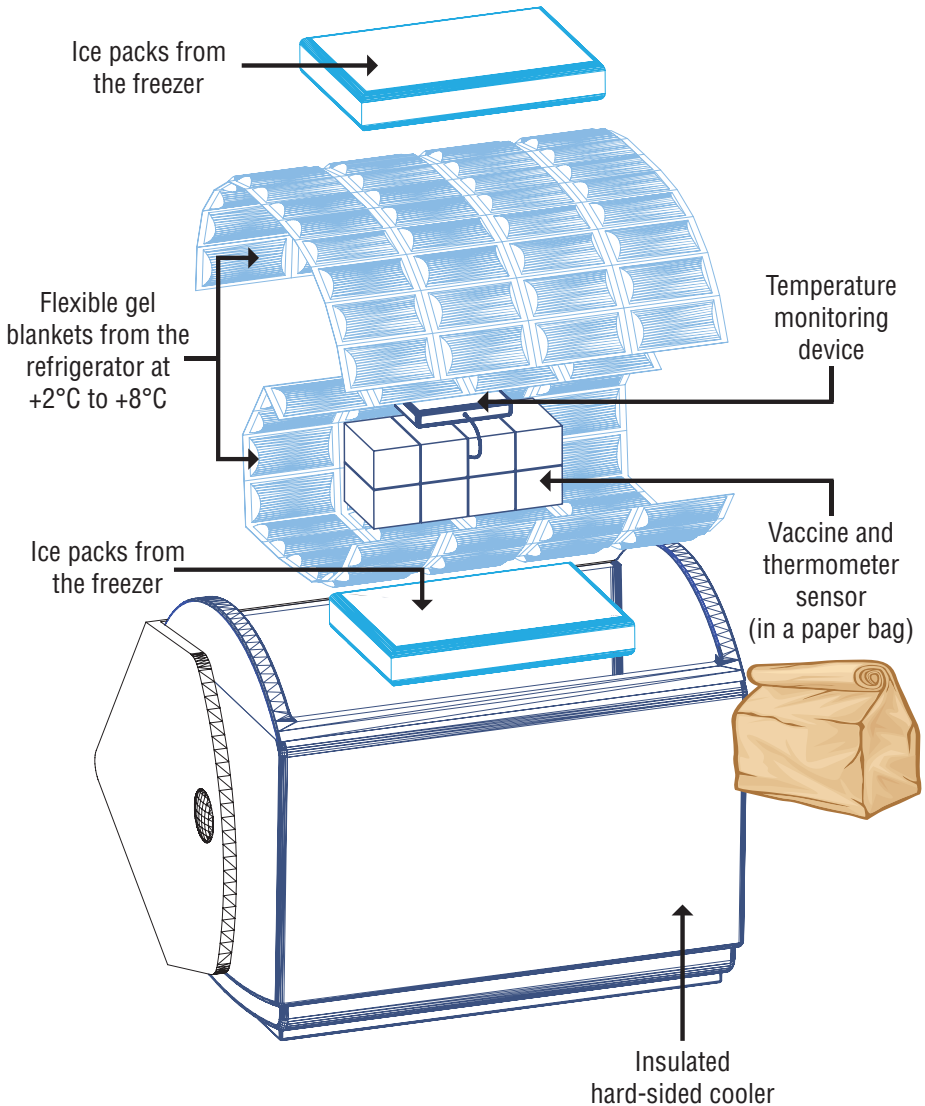
STEP

7 CONTINUE TO MONITOR YOUR REFRIGERATOR TEMPERATURES.

To receive more vaccines from Public Health, your refrigerator needs to be within +2°C and +8°C for **7 days**.

6 How do you pack an insulated vaccine cooler?

Make sure you have easy access to the following equipment to pack your insulated cooler for vaccine transport:



Adapted from Vaccine Storage and Handling Guidelines © Queen's Printer for Ontario

Follow these steps to pack your vaccine cooler (refer to diagram):

- 1 ICE PACKS**
Place 1 or 2 ice packs on the bottom of the insulated cooler.
- 2 FLEXIBLE GEL BLANKET**
Lay a flexible gel blanket on top of the ice pack(s).
- 3 THERMOMETER AND VACCINE**
Put thermometer sensor and vaccine in a paper bag and on top of the flexible gel blanket.
- 4 FLEXIBLE GEL BLANKET**
Wrap the flexible gel blanket around the vaccine.
- 5 ICE PACKS**
Put 1 or 2 ice packs on top of the flexible gel blanket.

Maintain the Chain Reminders:

- There is risk of the vaccines freezing if you do not correctly pack the insulated cooler. You may need to experiment to find the right number of gel blankets and ice packs required to maintain the temperature in the +2°C to +8°C range.
- To pick up vaccines from Public Health, your cooler temperature must be between +2°C and +8°C.



7 What is your contingency plan?

It is important to plan ahead to protect your vaccines in case of:

**Power
Outage**

or

**Refrigerator
Malfunction**



Have a written plan and keep it near your refrigerator for easy reference. Your plan should include:

- 1 ARRANGEMENTS FOR ALTERNATE STORAGE**
of your vaccines at a facility with a back-up emergency power supply (e.g. hospital, long-term care home, Wellington-Dufferin-Guelph Public Health)



Personal safety is paramount to vaccine safety. Your contingency plan should only be implemented when SAFE to do so.

- 2 REFRIGERATOR OPERATION**
If you have a generator, check to see that your refrigerator will be operational in a power outage. Also, have a plan in case of a refrigerator malfunction.

3

TEMPORARY VACCINE STORAGE

You may temporarily and safely store vaccine in an insulated cooler with packing materials and a minimum maximum thermometer.

Monitor the current, minimum and maximum temperatures while the vaccines are in the cooler, prior to transport, during transport and before unpacking vaccines into the alternate functioning refrigerator.



Make sure you have enough coolers to accommodate your entire vaccine inventory.

Maintain the Chain Reminders:

- Make sure all staff know what to do in the event of a power outage or refrigerator malfunction.
- Public Health can provide support and templates for creating your contingency plans.
- Do not let vaccines remain in a malfunctioning refrigerator for an extended period of time.
- Review and update the contingency plan at least once a year or when there is a change to any information outlined in the plan.



8

How do you order vaccine from Public Health?

To order vaccines you will need to submit the Vaccine Order Form which is available on Public Health's website at wdgpublichealth.ca or by contacting the vaccine coordinator.

- 1 COMPLETE THE VACCINE ORDER FORM.**
Order only enough vaccine to maintain a two-week supply. Be sure to include your current inventory (number of doses in stock).
- 2 ATTACH THE REFRIGERATOR TEMPERATURE LOGS**
from the time period since your last vaccine order.
- 3 FAX YOUR VACCINE ORDER TO PUBLIC HEALTH**
Public Health Fax for Vaccine Orders: 519-823-4903
- 4 PICK UP YOUR VACCINE FROM PUBLIC HEALTH**
with your insulated cooler, thermometer and packing material. Vaccine can also be delivered by making arrangements with the medical courier.
- 5 REFRIGERATE VACCINES IMMEDIATELY UPON RECEIPT.**
Read the temperature monitoring device in your insulated cooler and contact Public Health if the vaccines are below +2°C or above +8°C.



Return expired vaccine and vaccine wasted due to a cold chain incident to Public Health with your next vaccine order. Put the vaccine in a paper bag. Complete and attach a Vaccine Return Form.

If you have any questions about ordering or returning vaccine, please call the vaccine coordinator.

Ordering Information:

VACCINE ORDER FORM

www.wdgpulichealth.ca

VACCINE RETURN FORM

www.wdgpulichealth.ca

VACCINE COORDINATOR

1-800-265-7293 ext. 4170

PUBLIC HEALTH FAX NUMBER FOR ORDERS

519-823-4903

Maintain the Chain Reminders:

- Ensure your refrigerator can accommodate your vaccine order and allow for air circulation.
- To reduce wastage, do not order excess vaccine as it cannot be returned for redistribution to another healthcare provider.
- Rotate your vaccine stock in your refrigerator so vaccines with the shortest expiry date are used first.
- When using vaccines, take them out of the refrigerator only when ready to administer.
- Return open vials of multi-dose vaccines immediately to the refrigerator after use. Mark the date on the vial when the first dose was withdrawn. Use the vaccine within the time indicated on the product monograph.



Maintain the Chain Notes:

[illegible]



VACCINE FORMS
(ORDER, RETURN, INVENTORY, INCIDENT)
www.wdgpulichealth.ca

VACCINE COORDINATOR
1-800-265-7293 ext. 4170

PUBLIC HEALTH FAX FOR ORDERS
519-823-4903

COLD CHAIN LINE TO REPORT AN INCIDENT
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COLD CHAIN INCIDENT FAX
519-823-4903