

## Refrigerators, Thermometers and Vaccine Handling

A “**purpose built**” (**lab**) **fridge** is the best choice for large volumes of vaccine. It monitors the internal temperature, and the air is circulated to ensure regulation. There is little fluctuation in temperatures, even when the door is opened and closed many times in a day. These fridges typically have glass doors, which allows for the fridge’s contents to be observed before opening the door, but can also lead to quick rises in temperatures during a power failure.

A **traditional (domestic fridge)** is also acceptable. The freezer portion must have its own door, and not have more than 1cm of frost buildup inside at any time. There is fluctuation in temperatures in these types of fridges, so vaccine must not be placed too close to vents and fans, and not in doors or drawers. The centre shelf is the best position for vaccine, and for the thermometer probe as well. Opening and closing the door many times can elevate the temperature quickly.

**Bar fridges** are smaller and much more unpredictable. The freezer is often in close range to the top shelf of the fridge, causing unstable temperatures. The Public Health Agency of Canada (2007) reports that bar fridges are the number one cause for cold chain incidents. The freezer portion can develop ice build-up quickly, and does not become cold enough to allow for storage of frozen vaccines (-15C).

- The fridge should be placed in a well-ventilated area, away from direct sunlight and heat sources. It should be in a secure area, away from patients.
- A back-up generator can help to ensure an ongoing fridge power source
- One person should be responsible for temperature monitoring, and for trouble shooting if the temperature is fluctuating. It can take up to an hour for a fridge to respond to a change in the internal setting to get warmer or cooler.
- The Public Health Agency of Canada (2007) states to aim for a current temperature of +5C.
- Take any drawers out of the fridge so that staff do not place vaccines in them. This leaves an excellent open area to place water bottles which help maintain the fridge temperature
- Water bottles can also be placed in the door and other areas of the fridge for insulation
- The fridge should be for vaccines only – no food, drink or specimens
- Keep vaccines in their original boxes, some are light sensitive
- Place vaccines together according to type, and in order by expiry date
- Leave space between each row of vaccines to allow for proper air circulation
- Label a multi-dose vaccine vial and its box with the date and time of first puncture
- Cover electrical outlet where the fridge is plugged in to the wall, and place a “do not unplug” sticker nearby
- Put a latch on the handle to ensure the door stays closed
- Have the phone number for the health unit written on the fridge for a quick reference 519-663-5317 ext.2330

#### Vaccine Thermometers:

- Every vaccine refrigerator requires a thermometer that can measure minimum, maximum and current temperatures. It must have the ability to be cleared after each reading.
- The thermometer should be digital and include decimal points. It should be calibrated to be +/- 1C.
- Data loggers and wireless thermometers can record temperatures continuously which is an advantage. A paper copy of the max/min and current temperatures still needs to be recorded twice a day.
- The probe should be inside of an empty vaccine box, placed on the middle shelf of the fridge
- Check vaccine refrigerator temperatures twice daily and document in a temperature log book. Data loggers and wireless temperature monitoring system must be checked visually twice daily and documented to ensure that the devices are recording temperature between +2°C and +8°C at all times.
- Change the battery of digital min-max thermometers often
- Have second thermometer as a back-up and double check for correct temperature taking
- A fridge or thermometer alarm is good to alert someone to a temperature fluctuation

#### Vaccine Handling:

- Each health care provider that will be giving vaccines should take a course on administering vaccines
- Vaccine handling and storage guidelines need to be followed to encourage potency of vaccines and to avoid cold chain breaks
- Have the fridge organized so that vaccines are grouped together, use the one with the closest expiry date first
- If the expiry date states a month and year only, it is safe to use the vaccine until the end of that month
- Maintain infection control practices when drawing up and administering vaccines, do not draw up vaccines ahead of time
- Keep vaccines that were previously exposed and/or expired labeled and separated from other vaccine so that they are not used
- When transporting the vaccine to clinics outside the office, an insulated cooler must be used, and a travel max/min thermometer should be in place to maintain temperatures between +2 and +8C

#### References:

Public Health Agency of Canada vaccine handling guidelines (<http://www.phac-aspc.gc.ca/publicat/2007/nvshgjp-ldemv/index-eng.php>)

Ontario Ministry of Health and Long Term Care vaccine handling guidelines  
[http://www.health.gov.on.ca/en/pro/programs/publichealth/oph\\_standards/docs/guidance/guide\\_vaccine\\_storage.pdf](http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/guidance/guide_vaccine_storage.pdf)