

Immunization Competencies for Nurses

*MODULE 2: STORAGE AND HANDLING OF THE
COVID-19 VACCINE*

Module Outline

General Guidelines

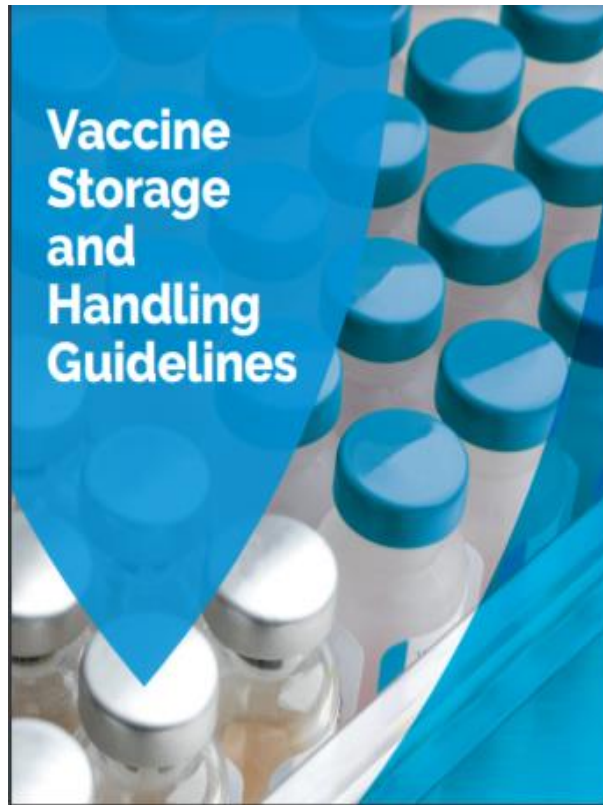
Transportation

Moderna

Pfizer-BioNTech

Resources

Vaccine Storage & Handling Guidelines



Prior to storing vaccine, health care providers are required to understand and meet the vaccine storage and handling requirements indicated in this document:

[Vaccine Storage and Handling Guidelines.](#)

Why is storage and handling important?

- ✓ Ensure that an effective product is being used.
- ✓ Administration of compromised vaccines may result in the re-emergence or occurrence of a vaccine preventable disease.
- ✓ Careful resource management. Vaccines are expensive and can be in short supply. Loss of vaccines may result in the cancellation of immunization clinics resulting in lost opportunities to immunize.
- ✓ Revaccination of people who have received an ineffective vaccine is unprofessional and may cause a loss of public confidence in vaccines and/or the health care system.



Cold Chain



Vaccines should be maintained within **+2 °C to + 8°C** inside properly packaged insulated containers during transport.

Insulated containers can maintain the required temperature for **3-4 hours**; however this is subject to environmental and physical conditions.

Do not place insulated containers with vaccines in the trunk of a car.

Cold Chain Failure

- ✓ All agencies that have publicly funded vaccine call their local public health agency for advice if they suspect that vaccine has been exposed to temperatures below +2 °C or above +8 °C
- ✓ They are asked to segregate the exposed vaccines in the refrigerator by placing these vaccines in a labelled container (or bag), marked with the date and time and “DO NOT USE”.
- ✓ Any exposed vaccine is never to be used or discarded until public health has assessed the situation.

Light Sensitivity

- ✓ In addition to being temperature-sensitive, several vaccines are also highly sensitive to strong light.
- ✓ Vaccines must never be exposed to sunlight.
- ✓ Any loss of potency due to light is permanent and irreversible.
- ✓ Some vaccines are protected by vials of dark brown glass to reduce the penetration of light. This alone will not prevent light damage and great care must be taken to protect them during use.

COVID-19: Vaccine Storage and Handling Guidance

- ✓ Refer to Ministry of Health [guidance document](#) and vaccine product monographs for in-depth storage, handling and transportation guidance of COVID-19 Vaccines.

(Spikevax)Moderna – Drawing Up for Administration

1. Use alcohol-based hand rub to clean hands.
2. Swirl gently (**do not shake**).
3. Check for particulates or discoloration (expect a translucent to white color).
4. Swab the vial stopper with the alcohol wipe and let dry.
5. Using aseptic technique and a new needle and syringe to draw up 0.5 mL. 0.25ml for booster doses.
6. Repeat all steps for each withdrawal. Vaccine remains viable in a syringe for 24hrs after first puncture of the vial.
7. Will get 10 doses per vial. (If using Moderna vaccine from US- each vial contains 14 (max 15) doses).

(Comirnaty)Pfizer-BioNTech – Dilution (30mcg)

1. Allow to come to room temperature before mixing with diluent
 - Can stay at room temperature for 2 hours before mixing with diluent
2. Gently invert 10 times (do not shake)
3. Use alcohol-based hand rub to clean hands
4. Wipe the vial stoppers for the vaccine and diluent with alcohol swabs and allow to dry
5. Using aseptic technique and a 21 gauge or thinner needle, take 1.8 ml of 0.9% sodium chloride provided by the manufacturer (diluent) and inject it into the vaccine vial
6. With the needle still in the vial, withdraw 1.8 ml of air from the vaccine vial
7. Discard the needle and syringe in the sharps container
8. Discard the remaining diluent in the sharps container (use only once)
9. Gently invert 10 times (do not shake)
10. Check for particulates or discolouration (expect an off-white colour)

(Comirnaty)Pfizer-BioNTech – Dilution_(30mcg) (Cont'd)

11. Mark the vial with the date and time of dilution

12. Use within 6 hour after dilution

- ✓ Can be stored at room temperature during this time; avoid direct sunlight
- ✓ Discard in sharps container if not used by 6 hours after dilution (try not to waste any). Remove/ mark label on vials before disposal and any packaging associated with the vaccines to prevent fraudulent re-use.

(Comirnaty)Pfizer-BioNTech_(30mcg) – Drawing Up for Administration

1. Use alcohol-based hand rub
 2. Swab the vial stopper with the alcohol wipe and let dry
 3. Using aseptic technique and a new needle and syringe, draw up 0.3 ml into a low dead-volume (LDV) syringe and/or needle preferentially
 4. Keep the needle in the vial if need to remove any air from the syringe
 5. Repeat steps 2, 3, and 4 to get 6 doses per vial.
- ✓ Low dead-volume syringes and/or needles can be used to extract 6 doses from a single vial. In order to ensure consistent withdrawal of 6 doses of 0.3 mL, it is important to adhere to minimizing volume loss during dose extraction.
 - ✓ Video on pre-loading 6 doses of [Pfizer Vaccine](#).
 - ✓ For instruction on dilution and administration of Pediatric Pfizer-BioNTech (10mcg) refer to product monograph.

Practice Standards

- ✓ The [College of Nurses of Ontario](#) provides practice standards for medication administration.
- ✓ The practice standard discusses the nurse's accountabilities and expectations with regards to medication practices.
- ✓ Adhering to this standard reduces errors.
- ✓ Nurses prepare and administer medication(s) to clients in a safe, effective and ethical manner.
- ✓ Review: Medical Directive



[College of Nurse of Ontario, Medication Standard, Revised 2015](#)

Resources



Renfrew County and District Health Unit
"Optimal Health for All in Renfrew County and District"

VACCINE DELIVERY TRANSPORTATION

Date:
Delivery/Clinic Location:
Cooler/CC/PF:

Vaccine/Diluent	Lot #(s)	Doses Dispensed	Total # of Vials	Initials

Vaccine Delivery Temperature Log			
	Time	Current Temp (°C)	Initials
Vaccine Departure			
Arrival to Vaccine Storage Location			
Total Transportation Time			

Name (Printed)	Initials	Designation

Resources



Renfrew County and District Health Unit
"Optimal Health for All in Renfrew County and District"

Date:
Clinic Location:
Cooler/Credo Cube#:

TEMPERATURE MONITORING LOG

Vaccine	Lot #(s)	Total # of Vials	Initials

Time	Current Temp. (°C)	Cooler/Credo Cube Opened	Hourly Check	Other/Notes	Initials

Resources



Renfrew County and District Health Unit
 "Optimal Health for All in Renfrew County and District"

Date:
Clinic Location:
Clinic Contact:

MODERNA DOSE TRACKER LOG

Vial #:	Lot #:	Time Removed:	Time Punctured:	Initials:
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Dose #	Dose Amount Drawn		Initials	Dose #	Dose Amount Drawn		Initials
	0.25mL	0.5mL			0.25mL	0.5mL	
1				11			
2				12			
3				13			
4				14			
5				15			
6				16			
7				17			
8				18			
9				19			
10				20			
Total Doses:				Total Doses:			

Name (Printed)	Initials	Designation

Resources

- ✓ Vaccine Storage and Handling Guidelines
- ✓ COVID-19 Vaccine Storage and Handling Guidance Document
- ✓ Video on How to prepare six full doses from a vial of Pfizer-BioNTech COVID-19 Vaccine: found on Eastern Ontario Health Unit website.
- ✓ Moderna vial and dose tracker template
- ✓ Temperature monitoring log template
- ✓ Sticker templates for pre-drawn syringes

References

1. Ministry of Health and Long-Term Care. *Vaccine Storage and Handling Guidelines*, 2012.
2. Spikevax (Moderna) Product Monograph
3. Comirnaty (Pfizer-BioNTech) Product Monograph
4. AstraZeneca and Covi-shield Product Monograph
5. Ministry of Health. *COVID-19: Vaccine Storage and Handling Guidance*, January 5th, 2022.

Quiz

1. Why is storage and handling of vaccine important?

- ✓ A. Ensures that an effective product is being used.
- ✓ B. Administration of compromised vaccines may result in the re-emergence or occurrence of a vaccine preventable disease.
- ✓ C. Careful resource management.
- ✓ D. Revaccination of people who have received an ineffective vaccine is unprofessional and may cause a loss of public confidence in vaccines and/or the health care system.
- ✓ E. All of the above.

Quiz

2. Vaccines should be maintained within **+2 °C to +8°C** inside properly packaged insulated containers during transport.

- A. True
- B. False

Quiz

3.The Pfizer-BioNTech vaccine is diluted with?

A: Dextrose 5% in Water (D5W)

B: 0.9% NaCl (Normal Saline)

C: Ringer's Solution

D: 0.45% NaCl

Quiz

4. Moderna vaccine is stable in a syringe after first puncture for

A: 6hrs

B: 12 hrs

C: 18hrs

D: 24 hrs