COVID-19 Vaccines Information Sheet:
Bivalent Booster

Key Information

Health Canada has approved the use of Moderna Spikevax Bivalent COVID-19 vaccine as a booster dose. The bivalent vaccine will target both the original COVID-19 virus and the Omicron variant BA.1.

As of September 12, bivalent COVID-19 boosters are being provided to the most vulnerable populations, including:

- individuals aged 70 and over;
- residents of long-term care homes, retirement homes, Elder Care Lodges, and individuals living in other congregate settings that provide assisted-living and health services;
- First Nation, Inuit and Métis individuals aged 18 and over and their non-Indigenous household members also aged 18 and over;
- moderately to severely immunocompromised individuals aged 12 and over;
- pregnant individuals aged 18 and over; and
- health care workers aged 18 and over.

As of Monday, September 26, individuals aged 18 and older are eligible to receive the bivalent booster vaccine, regardless of the number of booster doses previously received.

Individuals can receive the bivalent booster at the recommended interval of at least six months, or a minimum of three months, from their previous dose, regardless of how many boosters they have already received. There is good evidence that longer intervals between doses of COVID-19 vaccines result in more robust and durable immune response and higher vaccine effectiveness. However, in anticipation of an early fall respiratory season, **high-risk populations are recommended to receive their bivalent booster as soon as they are eligible after the minimum three-month interval since their last dose** to protect themselves this fall as people spend more time indoors.

Considerations for vaccination

The following factors may be taken into consideration when discussing vaccination with patients:

- ❑ Personal circumstances, such as high-risk exposure or upcoming travel
- ❑ Any known health conditions/syndromes that may put one at greater risk for severe disease or outcomes from COVID-19 including:
  - ➢ being moderately to severely immunocompromised

- ➢ having a high-risk medical condition: e.g., those with cardiac or pulmonary disorders, diabetes mellitus and other metabolic diseases, cancer, immune compromising conditions (due to underlying disease, therapy, or both, such as solid organ transplant or hematopoietic stem cell transplant recipients), renal disease, anemia or hemoglobinopathy, neurologic or neurodevelopmental conditions, Class 3 obesity (BMI of 40 and over)

- ❑ living with someone who is at higher risk of severe disease or outcomes from COVID-19

How to book an appointment:

Appointments can be booked through all vaccine channels, including:

- at participating pharmacies
- through the provincial COVID-19 vaccination portal (Ontario.ca/bookvaccine)
- by calling the Provincial Vaccine Contact Centre at 1-833-943-3900 (TTY for people who are deaf, hearing-impaired or speech-impaired: 1-866-797-0007)
- directly through public health units
- through Indigenous-led vaccination clinics
- at select primary care settings
- at hospital clinics (visit your local hospital or public health unit for booking details, if available in your region)
- through mobile or pop-up clinics (visit your local public health unit website for details, if available in your region)

Long-term care, retirement home and Elder Care Lodge residents may receive their bivalent booster dose directly through the congregate home where they live.

For individuals whose public health unit uses the provincial booking system and who wish to book an appointment at an interval of three months to less than six months, they must call the PVCC at **1-833-943-3900.**

General Questions

1. What is the Moderna Spikevax Bivalent COVID-19 vaccine?

Health Canada has approved the use of Moderna Spikevax Bivalent COVID-19 vaccine as a booster dose for individuals aged 18 and older. The bivalent booster targets both the original COVID-19 virus and the original Omicron variant.

Additional information for healthcare providers:

The National Advisory Committee on Immunization (NACI) has advised that the bivalent COVID-19 vaccine may be offered off-label to youth aged 12 to 17 who are moderately to severely immunocompromised.

The 50mcg formulation contains equal parts (25mcg each) of mRNA encoding for the original SARS-CoV-2 virus and the Omicron BA.1 variant.

Bivalent vaccines are vaccines that target two different viruses. The bivalent COVID-19 vaccine is an updated version of the COVID-19 vaccine that targets the original COVID-19 virus and the Omicron variant, which is currently the dominant variant in circulation in Ontario. Bivalent vaccines are now being administered as booster doses to eligible individuals.

Bivalent vaccines are formulated to better protect against the currently circulating COVID-19 variants. They can also help restore protection that has decreased since previous vaccination.

2. Do I need to complete a full primary series to receive the bivalent COVID-19 vaccine?

Currently, the bivalent COVID-19 vaccine is only authorized for use as a booster dose. Eligible Ontarians need to have completed a full primary series with the original vaccine before being eligible to receive the bivalent vaccine as a booster.

Additional information for healthcare providers:

A primary series is the initial number of doses of a COVID-19 vaccine that a person needs to develop a strong initial immune response. Most people need two doses of an mRNA vaccine (Pfizer, Moderna) or Novavax (for those over 18 years of age) to complete their primary series. If you are immunocompromised, you may need a three-dose primary series.

Each dose in a primary series should be given at an interval of eight weeks between doses.

3. Which COVID-19 vaccine will I be given when I attend my booster dose appointment?

All adult COVID-19 vaccine booster dose appointments are for the bivalent vaccine.

As of Monday, September 12, bivalent COVID-19 boosters are being provided to the most vulnerable populations, including:

- individuals aged 70 and over;

- residents of long-term care homes, retirement homes, Elder Care Lodges, and individuals living in other congregate settings that provide assisted-living and health services;
- First Nation, Inuit and Métis individuals 18 years and older and their non-Indigenous household members aged 18 and over;
- moderately to severely immunocompromised individuals aged 12 and over;
- pregnant individuals aged 18 and over; and
- health care workers aged 18 and over.

As of Monday, September 26, individuals aged 18 and older are eligible to receive the bivalent COVID-19 booster vaccine.

Additional information for healthcare providers:

NACI recommends that the authorized dose of Moderna bivalent COVID-19 vaccine be offered as a booster dose to all recommended age groups. However, if the bivalent vaccine is not readily available, an original COVID-19 vaccine should be offered to ensure timely protection. All Health Canada approved vaccines provide lasting protection against severe outcomes from COVID-19.

5. What if I don't want the bivalent booster, can I request the original vaccine?

All adult COVID-19 vaccine booster dose appointments will be for the bivalent vaccine, which is the recommended booster. The bivalent COVID-19 vaccine better protects against the most recently circulating COVID-19 variant in Ontario compared with the original vaccines that were developed to solely target the original COVID-19 virus.

Health Canada has one of the most rigorous scientific review systems in the world and only approves a vaccine if it is safe, works and meets the highest manufacturing and quality standards. After a thorough and independent scientific review of the evidence, Health Canada determined that the authorized Moderna bivalent COVID-19 vaccine is safe and effective at providing a strong immune response against COVID-19.

However, individuals who wish to receive the original COVID-19 vaccine can request to do so at the vaccine site.

Dosages and Intervals

6. How long should I wait after receiving my last dose before I get the bivalent?

Individuals may get the bivalent COVID-19 vaccine at a recommended interval of six months, or at a minimum interval of three months, after receiving their last dose. A longer interval between doses may provide better immune responses, however vulnerable populations are recommended to receive their booster as soon as they are

eligible after the minimum three-month interval, to ensure they are adequately protected in advance of the next wave of COVID-19.

7. I've already had COVID-19. Should I still get a booster dose? How long should I wait to get the vaccine?

Individuals who have had COVID-19 should wait a minimum of three months after symptom onset or positive test to receive their booster dose; however, a six-month interval may provide a better immune response.

While a previous COVID-19 infection provides some immunity, it is unclear how long that immunity lasts, and individuals may be reinfected. Evidence shows that vaccination combined with infection provides stronger and longer-lasting protection from COVID-19 than infection alone.

With the spread of new and transmissible variants, it is important that everyone gets vaccinated to protect themselves and those around them from serious illness, hospitalization and death.

Additional information for healthcare providers:

High-risk populations are recommended to receive their bivalent booster as soon as they are eligible after the minimum three-month interval since their last dose. This includes:

- individuals aged 65 and over;
- residents of long-term care homes, retirement homes, Elder Care Lodges, and individuals living in other congregate settings that provide assisted-living and health services;
- First Nation, Inuit and Métis individuals 18 years and older and their non-Indigenous household members aged 18 and over;
- individuals aged 12 and over with an underlying medical condition that places them at high risk of severe COVID-19;
    - For adolescents 12-17 years of age with moderately to severely immunocompromising conditions and/or who have biological or social risk factors that place them at high risk of severe outcomes from COVID-19, a booster dose of the bivalent Moderna COVID-19 vaccine may be offered off-label based on clinical discretion.
- pregnant individuals aged 18 and over; and
- health care workers aged 18 and over.

8. Is the dose of the bivalent the same as the other COVID-19 vaccines?

Individuals who are eligible to receive the bivalent COVID-19 vaccine will receive a 50mcg booster dose, as authorized by Health Canada.

The COVID-19 vaccines all have varying dosages that are not simply comparable. Each COVID-19 vaccine has undergone rigorous scientific testing and approvals to ensure a strong protection and good safety profile. The 50 mcg Moderna bivalent vaccine uses the same dosage as the 50 mcg Moderna monovalent vaccine that was previously used for booster doses.

Additional information for healthcare providers:

The 50mcg formulation contains equal parts (25mcg each) of mRNA encoding for the original SARS-CoV-2 virus and the Omicron BA.1 variant.

Vaccine Effectiveness and Recommendations

9. Is vaccination with the bivalent COVID-19 booster being strongly recommended?

The bivalent COVID-19 booster is a safe and effective way for people to better protect themselves against the most recently circulating COVID-19 variants in Ontario.

Eligible individuals may receive a bivalent booster after completion of their primary series and at a recommended interval of six months (168 days) or a minimum of three months (84 days) since their last dose, regardless of how many booster doses they have already received.

All Ontarians aged 18 and over are strongly recommended to stay up to date with their vaccinations and receive a bivalent booster at the recommended interval of six months since their last dose.

High-risk individuals belonging to the following groups are recommended to get their bivalent booster as soon as they are eligible (i.e. at an interval of three months):

- individuals aged 65 and over;
- residents of long-term care homes, retirement homes, Elder Care Lodges, and individuals living in other congregate settings that provide assisted-living and health services;
- First Nations, Inuit and Métis individuals and their non-Indigenous household members aged 18 and over;
- individuals aged 12 and over with an underlying medical condition that places them at high risk of severe COVID-19;
    - For adolescents 12-17 years of age with moderately to severely immunocompromising conditions and/or who have biological or social risk factors that place them at high risk of severe outcomes from COVID-19, a booster dose of the bivalent Moderna COVID-19 vaccine may be offered off-label based on clinical discretion;
- pregnant individuals aged 18 and over; and
- health care workers aged 18 and over.

10. How effective is the Moderna Spikevax Bivalent vaccine compared to the monovalent vaccines?

All Health Canada approved vaccines provide lasting protection against severe outcomes from COVID-19.

The bivalent COVID-19 vaccine better protects against the most recently circulating COVID-19 variants in Ontario. That is why the province first offers bivalent COVID-19 boosters to the most vulnerable populations, who face a higher risk of severe illness from the virus.

As evidence shows that vaccine protection decreases over time, all eligible Ontarians are encouraged to stay up to date with their vaccinations and to receive a bivalent booster after at least six months have passed since their last dose.

Additional information for healthcare providers:

When administered as a second booster dose, Moderna Spikevax Bivalent (50 mcg) elicited higher neutralizing antibody responses against the original strain, Omicron BA.1 and Omicron BA.4 and BA.5 among individuals with and without prior infection when compared to a second booster dose of Moderna Spikevax original (50 mcg). This effect was consistent across age groups studied, in individuals 18-65 years of age and individuals >65 years of age.

Clinical trial data showed that Moderna Spikevax Bivalent (50 mcg) administered as a second booster dose to individuals ≥18 years of age had a similar reactogenicity profile to that of Moderna Spikevax original (50 mcg) given as a second booster dose. Also, the frequency of adverse events following Moderna Spikevax Bivalent (50 mcg) given as a second booster dose was similar or lower compared to that of a first booster dose of Moderna Spikevax original (50 mcg), and of the second dose of the Moderna Spikevax original primary series (100 mcg). There were no vaccine-related cases of myocarditis, pericarditis or deaths reported during the study period.

11. Should I wait for the Pfizer bivalent vaccine?

People should get the first bivalent COVID-19 booster vaccine that is available and authorized by Health Canada.

Health Canada has one of the most rigorous scientific review systems in the world and only approves a vaccine if it is safe, works and meets the highest manufacturing and quality standards. After a thorough and independent scientific review of the evidence, Health Canada determined that the authorized Moderna bivalent COVID-19 vaccine is safe and effective at providing a strong immune response against COVID-19.

12. How effective is the bivalent vaccine at protecting against Omicron and its variants?

The updated bivalent vaccine better protects against the most recently circulating COVID-19 variants in Ontario compared with the original vaccines that were developed to solely target the original COVID-19 virus.

Additional information for healthcare providers:

When administered as a second booster dose, Moderna Spikevax Bivalent (50 mcg) elicited higher neutralizing antibody responses against the original strain, Omicron BA.1 and Omicron BA.4 and BA.5 among individuals with and without prior infection when compared to a second booster dose of Moderna Spikevax original (50 mcg). This effect was consistent across age groups studied, in individuals 18-65 years of age and individuals >65 years of age.

Clinical trial data showed that Moderna Spikevax Bivalent (50 mcg) administered as a second booster dose to individuals ≥18 years of age had a similar reactogenicity profile to that of Moderna Spikevax original (50 mcg) given as a second booster dose.

13. Is the bivalent vaccine being strongly recommended for individuals who are immunocompromised or have medical conditions?

Individuals aged 12 and older who are moderately to severely immunocompromised are strongly recommended to stay up to date on their vaccinations and receive their bivalent booster dose as soon as they are eligible after the minimum three-month interval since their last dose, regardless of how many boosters they have already received, to protect themselves this fall as people spend more time indoors.

14. The U.S. is providing its population with boosters targeting the BA.5 and BA.4 Omicron subvariants. Why isn't this booster available in Canada? Should people drive to the U.S. to get the better version of the booster? Or should people wait until this better version is approved in Canada to get a booster?

The pharmaceutical companies that produce COVID-19 vaccines submit their applications to the U.S. and Canadian governments separately.

Moderna submitted an application to Health Canada for a bivalent COVID-19 vaccine that targets the original strain and the BA.1 Omicron subvariant, which Health Canada, approved on September 1, 2022, and was made available in Ontario starting September 12, 2022. Moderna submitted an application for a bivalent vaccine that targets the BA.4/BA.5 subvariants on September 12, 2022.

Pfizer submitted an application to Health Canada for a bivalent COVID-19 vaccine that targets the original strain and Omicron BA.4/BA.5 subvariants on July 25, 2022, and September 2, 2022, respectively. Health Canada is reviewing the submissions and will approve them if it is safe, works and meets the highest manufacturing and quality standards. Please continue to visit the Ontario COVID-19 website or the Health Canada website for updates.

The bivalent COVID-19 vaccine better protects against the most recently circulating COVID-19 variants in Ontario. Regardless of which Omicron subvariant is targeted by the bivalent vaccine, people should get the first bivalent booster vaccine that is offered.

Vaccine Safety

15. Will I experience side effects or reactions?

The bivalent COVID-19 vaccine has a similar safety profile to the original vaccine, with the same mild adverse reactions that resolve quickly.

Like any medication or vaccinations, the COVID-19 vaccine may cause side effects. However, these side effects are typically mild to moderate and on average do not last longer than three days. The most frequently reported short-term side effects following the COVID-19 vaccine include soreness, swelling or colour changes (for example red or purple) at the injection site, fatigue, headache, chills, muscle aches and loss of appetite. These side effects are part of the body's efforts to build immunity to COVID-19 following vaccination. Mild side effects and reactions will typically subside anywhere from a few hours to a few days after vaccination.

16. Have the long-term side effects of the bivalent COVID-19 vaccine been determined?

The bivalent vaccine has a similar safety profile to the original vaccine, with the same mild adverse reactions that resolve quickly.

The benefits of getting vaccinated and being protected against COVID-19 far outweigh the risks of any side effects from the vaccine. COVID-19 infection may cause longer-lasting symptoms and health problems for some people, which is why it is important that individuals stay up to date with their vaccinations.

Ontario constantly reviews new evidence regarding the COVID-19 vaccines and continues to ensure that we offer COVID-19 vaccines that are effective, safe and will protect you and your family.

Additional information for healthcare providers:

Like any medication or vaccinations, the COVID-19 vaccine may cause side effects. However, these side effects are typically mild to moderate and on average do not last longer than three days. The most frequently reported short-term side effects following the COVID-19 vaccine include soreness, swelling or colour changes (for example red or purple) at the injection site, fatigue, headache, chills, muscle aches and loss of appetite. These side effects are part of the body's efforts to build immunity to COVID-19 following vaccination. Mild side effects and reactions will typically subside anywhere from a few hours to a few days after vaccination.

The frequency of adverse events following immunization with Moderna Spikevax Bivalent was similar or lower relative to that of a first booster dose of Moderna Spikevax original (50 mcg), and of the second dose of the Moderna Spikevax original primary series (100 mcg). No new safety signals were identified. Although the trial size was limited, there were no vaccine related cases of death, myocarditis and/or pericarditis reported during the study period. We will monitor post-market safety surveillance data as it emerges and update the recommendations as needed.

17. Health Canada approved the bivalent for individuals aged 18 years and older. Why has Ontario also made immunocompromised youth age 12-17 eligible?

The National Advisory Committee on Immunizations (NACI) has recommended that the bivalent COVID-19 vaccine may be offered off-label to youth aged 12 to 17 who are moderately to severely immunocompromised, as they are at higher risk of severe outcomes from COVID-19.

18. Has the bivalent COVID-19 vaccine been thoroughly tested? How do I know it is safe?

Health Canada has one of the most rigorous scientific review systems in the world and only approves a vaccine if it is safe, works and meets the highest manufacturing and quality standards. After a thorough and independent scientific review of the evidence, Health Canada determined that the authorized Moderna bivalent COVID-19 vaccine is safe and effective at providing a strong immune response against COVID-19.

Additional information for healthcare providers:

The safety and reactogenicity of Moderna Spikevax Bivalent (50 mcg) administered as a second booster dose was similar to Moderna Spikevax original (50 mcg), when given as a second booster dose. Also, the frequency of adverse events following immunization with Moderna Spikevax Bivalent was similar or lower relative to that of a first booster dose of Moderna Spikevax original (50

mcg), and of the second dose of the Moderna Spikevax original primary series (100 mcg). No new safety signals were identified.

Although the trial size was limited, there were no vaccine related cases of death, myocarditis and/or pericarditis reported during the study period. We will monitor post-market safety surveillance data as it emerges and update the recommendations as needed.

19. What is the risk of myocarditis and/or pericarditis with the bivalent?

Myocarditis/pericarditis following COVID-19 mRNA vaccines remains a rare adverse event following immunization (AEFI), which is defined by the Canadian Immunization Guide as occurring at frequency of 0.01 per cent to less than 0.1 per cent. Myocarditis and pericarditis are more likely to occur after a COVID-19 infection than after receiving a COVID-19 vaccine.

Additional information for healthcare providers:

Although the trial size was limited, there were no vaccine-related cases of myocarditis, pericarditis or deaths reported during the study period. No new safety signals were identified in the trials for Moderna Spikevax Bivalent (50 mcg). We continue to monitor post-market safety surveillance data as it emerges and update its recommendations as needed.

Post-market safety surveillance data to date indicate that the risk of myocarditis following a booster dose is lower compared to that following the second dose in the primary series, and current data do not show a product-specific difference in the risks of myocarditis and/or pericarditis after a booster dose of an mRNA COVID-19 vaccine. Adults 18 to 29 years of age can receive a booster dose with any available mRNA COVID19 vaccine for which they are currently eligible.

We continue to monitor post-market safety surveillance data as it emerges and update its recommendations as needed.

Additional Resources

20. I'm seeing a lot of vaccine hesitancy in my patient population. Where can I go for resources to support these conversations?

The Centre for Effective Practice website provides information on COVID-19 vaccines, including eligibility and administration.

21. My patient's vaccine hesitancy is persistent. Where can I refer them for additional support?

Visit the Ontario COVID-19 website, which continues to be updated to reflect any changes to vaccine recommendations and eligibility.

You can refer your patients to the Provincial Vaccine Contact Centre to speak to an experienced agent or health specialist at 1-833-943-3900 (TTY for people who are deaf, hearing-impaired or speech-impaired: 1-866-797-0007), available in more than 300 languages, seven days a week from 8:00 a.m. to 8:00 p.m.

In addition, for children and youth, patients, parents or caregivers can book a confidential phone appointment with the SickKids COVID-19 Vaccine Consult Service. No referral is necessary, and the service is available to all residents of Ontario. The consult service provides expert guidance for children, youth and those who are pregnant, breastfeeding, or planning to conceive. Patients can book an appointment with a SickKids Registered Nurse online at sickkids.ca/vaccineconsult, or by calling toll-free 1-888-304-6558. This service is available in multiple languages using over-the-phone language interpretation.

Scarborough Health Network (SHN) is offering a service open to individuals across Ontario: the VaxFacts Clinic. The clinic provides individuals with a one-to-one phone consultation with qualified SHN doctors who understand you may have questions or concerns, or just want to learn more. VaxFacts has also partnered with the Black Physicians' Association of Ontario to provide a dedicated service for members Black communities who have questions about COVID-19 vaccines and would like to discuss them with a trusted healthcare provide also from the Black community.

To book an appointment, please visit www.shn.ca/vaxfacts or call 416-438-2911 ext. 5738. Appointments are available seven days a week, from 9 a.m. to 8 p.m. and is capable of providing assistance in over 200 languages.

For vaccine information related to accessibility:
If you need information about COVID-19 vaccines, please visit Supporting Individuals, Families and Caregivers During COVID-19 and Beyond – ConnectABILITY. Here you will also find information on resources and support for caregivers, vaccine confidence support, watch videos from trusted sources, etc. I can also transfer you to our Provincial Testing Isolation and Information Line which connects those with questions related to the vaccine to health specialists.

For transportation related supports:
A number of public health units are offering options to provide transportation to clinics for those that do not have it, to inquire about these options, please visit their website.

The government has also partnered with the Ontario Community Support Association to provide accessible transportation for people with disabilities or chronic medical conditions, and seniors with mobility issues, to help them get to and from clinics so they can receive their COVID-19 vaccine.

For homebound residents needing a home visit:
In-home vaccinations may be arranged with the primary/home care provider or the PHU where available. Alternative options may be found on the PHU's website.

Please visit your local public health unit's website to explore further options and/or contact the PHU directly.

COVID-19 vaccination and your practice

Billing

22. How do I bill for a bivalent COVID-19 vaccine given in my office?

Physicians administering COVID-19 vaccines in settings that are **not** designated by the ministry as COVID-19 Assessment Centres are eligible to claim G593A as described in OHIP INFOBulletin 211201.

G593A is eligible for payment to the billing physician if they have personally rendered the COVID-19 immunization service, OR, if they have delegated the service in accordance with the payment rules and conditions described at pages GP62 and GP63 of the Schedule of Benefits for Physician Services.

In scenarios where the patient's sole reason for the visit is to obtain the COVID-19 vaccine, G700 (or Q593 in blended models) is also eligible for payment.

In scenarios where the patient has attended the visit to obtain an insured service in addition to the vaccine, G593 is payable for the vaccination service in addition to the other applicable fee codes (assuming all Schedule of Benefits requirements have been met).

23. Can I bill for counselling patients about the bivalent COVID-19 vaccine?

The provision of routine information about the COVID-19 vaccine does not constitute a separately payable counselling service and is included in the vaccination service.

Other than routine education about the vaccination service, when a medically necessary counselling service is rendered that meets the payment requirements described within Schedule of Benefits, the applicable fee code may be claimed (e.g. K013).

Supply and Wastage

24. How do I order vaccine supply?

Each local public health unit has supply of the bivalent vaccine for their region's eligible population. If you are interested in receiving and administering the vaccine, please reach out to your local public health unit.

25. How many doses of the bivalent COVID-19 vaccine is Ontario expecting to receive from the federal government and when?

Ontario has received 2.1M doses of the bivalent COVID-19 vaccine from the federal government. An additional 961K doses have been confirmed by the federal government to arrive in Ontario by the week of September 26.

Additional doses and timelines will continue to be confirmed, but Ontario is expecting to receive enough doses of the bivalent vaccine for all Ontarians who want to receive a booster.

26. How does the vaccine need to be stored?

For more information please see the General COVID-19: Vaccine Storage and Handling Guidance document.

27. What should I do if I must waste doses of the vaccine?

It remains important to limit expiry of closed vials through proper inventory management and storage and handling, including fridge monitoring (e.g., temperature logs), stock rotation based on expiry and "must use by" dating, and recommended packing and transport per product specifications.

However, opening a vial to vaccinate one or a small number of individuals may be necessary to support vaccination efforts and reach provincial targets. This is especially important where a vial is reaching its "must use by" date.