

# ISMP Canada Safety Bulletin

Volume 18 • Issue 7 • September 24, 2018

## Injecting Standardization into Vaccine Clinics

- Provide host facilities with a preclinic checklist to identify needs related to setup and layout, technology, patient flow, and documentation.
- Optimize the design of forms for documentation, including patient consent and vaccine administration records.
- For clinics administering more than 1 type of vaccine, standardize the approach to patient flow using 1 of the models described.

Vaccinations provided at community-based clinics (e.g., in schools, offices, and community centres) support high immunization rates, thereby helping to prevent the spread of vaccine-preventable disease. ISMP Canada conducted a multi-incident analysis of vaccine errors as well as a recent failure modes and effects analysis after observing several community vaccine clinics. The systemic vulnerabilities identified through these analyses have the potential to lead to errors and highlight opportunities for system improvements. This bulletin shares learnings to help inform safe medication practices in vaccine clinics.

### BACKGROUND

Analyses identifying types of errors with vaccines have previously been published.<sup>1,2</sup> Vaccine-related medication errors can result in vulnerability to disease, adverse effects, a need to readminister the

vaccine, or a loss of trust in the healthcare provider or in the healthcare system.<sup>3</sup>

Some vaccine clinics are well established, with a permanent setup (e.g., travel clinics). Others are ad hoc clinics set up in non-healthcare settings, commonly referred to as host facilities. These latter clinics operate on a seasonal basis (e.g., influenza vaccine clinics in shopping malls) or in response to an urgent public health need (e.g., temporary vaccine clinics during an epidemic) or episodically (e.g., school-based vaccine clinics). Operational differences among such clinics can result in safety vulnerabilities (see Box 1).

### Box 1. Safety vulnerabilities identified in vaccine clinics

#### Clinic setup and organization factors:

- Clinic layout
- Access to technology
- Patient flow
- Documentation processes

#### Vaccine-associated considerations:

- Procurement
- Storage and cold chain requirements
- Administration

## CLINIC SETUP AND ORGANIZATION FACTORS

### Clinic Layout

A preclinic checklist should be developed by the vaccine clinic providers to provide the host facility with organizational guidelines and to ensure that clinic staff will be working in an environment with standardized physical conditions, regardless of the specific location.

#### *Recommendations:*

- Provide the host facility with a checklist of clinic needs related to setup and layout, technology, patient flow, and documentation. The checklist should include the following layout information, at a minimum:
  - Space requirements to accommodate the preferred, standard layout, including furniture and lighting needs, as well as clear signage to help patients navigate the clinic.
  - Clearly defined and separate triage/assessment areas, waiting areas, immunization stations, post-immunization observation areas, and a designated space for emergency care if an adverse reaction occurs.
  - Privacy considerations for patients and providers in the care delivery areas.
  - Reasonable proximity to a washroom and/or hand-washing station.
  - Vaccine storage requirements to maintain the cold chain.
- Visit the proposed site beforehand to confirm that it can safely accommodate the clinic.

#### **Provide host facilities with a checklist of clinic needs related to:**

- setup and layout
- technology
- patient flow
- documentation

### Access to Technology

To support clinic staff, suitable technology must be available to assist in registering patients, identifying potential problems (e.g., vaccine contraindications), and updating health records.

#### *Recommendations:*

- Confirm access to uninterrupted internet service for online documentation systems (where applicable). If documentation of vaccination is to be completed online, clinic staff will need uninterrupted access to the internet and suitable electronic equipment, with back-up provisions for unanticipated downtimes.
- If possible, use secure mobile applications for documentation. Staff use of secure internet-enabled mobile devices reduce the clinic's reliance on the host facility's internet access.
- If only paper documentation is used, notify the patient's primary care provider, if available, about which vaccine was administered, to ensure that the patient's health record is up to date.
- Encourage patients to notify their primary care providers of each vaccination, regardless of the documentation method used.

### Patient Flow

It is important to have good patient flow, as well as procedures for crowd control, to minimize the chances of errors related to distraction of staff by a potentially noisy, chaotic, or disorganized environment. In a busy clinic, long wait times contribute to patient anxiety and to a perception of time pressure and increased cognitive load for clinic staff.

Some clinics administer only 1 type of vaccine (e.g., influenza), whereas travel or school clinics typically offer multiple vaccines. Clinics that administer multiple vaccines can use 1 of 2 models of patient flow:

1. Configure the clinic to provide a separate area for each vaccine to be administered, such that patients needing more than 1 vaccine move from station to station. This approach decreases the likelihood of administering an incorrect vaccine; however, it requires a repetitive patient identification process at each station, which may result in omission of a needed vaccine or increased anxiety for some patients.
2. The alternative model is to administer multiple vaccines at the same station. Each vaccine needs to be checked against the patient's list prior to administration. This approach eliminates the need

for multiple patient identifications and reduces the likelihood that a vaccine will be omitted, but it can increase the possibility that an incorrect vaccine will be selected and administered.

*Recommendations:*

- To eliminate confusion among patients as they arrive at the clinic, post information about patient intake and consent procedures.
- Designate a patient waiting area outside the official clinic area.
- Assign time blocks outlining when patients should arrive for their vaccinations, or schedule individual appointments.
- If the clinic is based in a school or office building, control flow by calling patients to the clinic according to floor or room number. If possible, identify anxious patients so that they can be vaccinated first.
- For clinics offering more than 1 type of vaccine, standardize the approach, using the model selected to streamline workflow and decrease the potential for errors.

**Standardize the approach to patient flow in clinics offering more than 1 type of vaccine.**

**Documentation Processes**

Documentation is an integral part of the vaccination process; however, the required forms (e.g., consent forms, vaccine administration records) often differ between organizations and may not provide the information in the sequence required by the person administering the vaccine.

*Recommendations:*

- If possible, format the content of each form to fit on 1 side of a single page, to avoid the need for double-sided printing and the requirement for clinicians to flip back and forth to find needed information.
- On all documentation, use both the brand and the generic names of the vaccine to be administered, given that the brand may change from 1 clinic to

the next, depending on availability. Using the generic name also reduces the risk of confusion among products, especially when a brand name is associated with more than 1 vaccine.

- When both paper and electronic forms are used, employ the same terminology and present the information in the same order and in a similar format, to the extent possible.
- Provide patients (or their parents/guardians for children) with a record of the vaccine and date administered. Digital tools, such as [CANImmunize](#),<sup>4</sup> are available for secure storage of personal vaccine records.
- Whenever possible, pack only 1 lot number of each vaccine per clinic, to assist with correct documentation of the lot number and expiry date, and to reduce staff workload. If only 1 lot number is used, documentation of the lot number and expiry date prior to administration would allow a double check at the time of administration.
- Encourage the use of a duplicate label supplied by vaccine manufacturers, containing both the lot number and expiry date of the product, for documentation purposes (i.e., to be applied to the vaccine administration record).

**VACCINE-ASSOCIATED CONSIDERATIONS**

**Procurement**

Vaccines may be procured from a central supply (e.g., the public health department for publicly funded vaccines in some provinces) or from a drug wholesaler or the manufacturer. Each brand of the same generic vaccine may need to be handled differently (e.g., varying expiry dates for opened multi-dose influenza vaccines) and vaccines with similar names (e.g., Priorix-Tetra and Priorix, Varivax and Vaxigrip, Pediacel and Adacel) can be mixed-up.

*Recommendations:*

- For each clinic, procure only 1 brand of each generic vaccine, where possible. If there is insufficient supply of a single brand, segregate the brands and clearly indicate which product is to be used first.
- Ensure emergency medical supplies are available to manage anaphylaxis and other post-immunization reactions on-site.

## Storage and Cold Chain Requirements

Vaccines have specific cold storage requirements and require temperature monitoring. To maintain the cold chain during transportation and in ad hoc clinics, insulated coolers are often used if a monitored refrigerator is not available.

### Recommendations:

- Store vaccines under monitored cold storage conditions in a cooler or a refrigerator, by verifying the container temperature at regular intervals.
- Store each vaccine product separately using labelled compartments (with a picture, where possible), when more than 1 vaccine is stored in the same location.
- Consider using bar code identification to verify product selection and to reduce incorrect vaccine errors due to inadvertent misplacement during storage. Mobile bar code readers are available and can be incorporated into vaccine administration processes for the clinic.

## Administration

Wrong patient and wrong vaccine are common vaccine administration errors.

### Recommendations:

- Before administration of each vaccine, obtain 2 unique identifiers (e.g., first and last [and/or preferred] names, birthdate) to identify the patient.
- To limit confirmation bias, ask patients open-ended questions, for example, “What vaccine are you expecting to receive today?”
- In clinics offering multiple vaccines, select and administer the required vaccine for each patient

individually. This method creates a more engaging environment and makes the task less prone to error.

## CONCLUSION

Organizations operating vaccine clinics have an opportunity to improve vaccine safety by standardizing all aspects of the clinic, including setup and layout, vaccine procurement and storage, patient flow, and design of forms. Standardization is especially critical for organizations (e.g., school boards, public health departments) that operate or host numerous vaccine clinics over multiple sites and employ a large staff.

## Acknowledgements

*ISMP Canada gratefully acknowledges expert review of this bulletin by the following individuals (in alphabetical order):* Trudy Arbo PharmD BScPharm ACPR CTH CDE APA, Clinical Pharmacist, Academic Family Medicine - South Health Campus, Alberta Health Services, Calgary AB; Karen Beckermann RN BScN M.Sc.(A) Nursing, Associate Director, Vaccine Preventable Diseases, Toronto Public Health, Toronto, ON; Rita Chiu RN, Supervisor, Vaccine Preventable Diseases, Toronto Public Health, Toronto, ON; Margaret McIntyre RN BScN MN, Nurse Consultant, Public Health Ontario, Toronto, ON; Kathryn Slayter Bsc(Pharm) PharmD FCSHP, Clinical Pharmacy Specialist, Antimicrobial Stewardship/Infectious Diseases, IWK Health Centre, Canadian Center for Vaccinology, Halifax, NS; Leah Welsh RN BScN MPH, Quality Improvement Specialist, Vaccine Preventable Diseases, Toronto Public Health, Toronto, ON

---

## References

1. ISMP National Vaccine Errors Reporting Program: One in three vaccine errors associated with age-related factors. Horsham (PA): Institute for Safe Medication Practices; 2016 Jul 26 [cited 2018 Jun 14]. Available from : <https://www.ismp.org/resources/ismp-national-vaccine-errors-reporting-program-one-three-vaccine-errors-associated-age>
2. Lang S, Ford KJ, John T, Pollard AJ, McCarthy ND. Immunisation errors reported to a vaccine advice service: intelligence to improve practice. *Qual Prim Care*. 2014 [cited 2018 Jul 12];22(3):139-146. Available from: <http://primarycare.imedpub.com/immunisation-errors-reported-to-a-vaccine-advice-service-intelligence-to-improve-practice.pdf>
3. Anderson TA. Types of vaccine administration errors communicated to IAC January 2015-July 2016 [slide show]. St Paul (MN): Immunization Action Coalition; 2016 Oct 6 [cited 2018 Jun 11]. Available from: <https://www.immunizationcoalitions.org/content/uploads/2016/10/IAC-vaccine-errors-10-6-16-webinar.pdf>
4. CANImmunize [digital vaccination record]. Ottawa (ON): Ottawa Hospital, mHealth Lab; 2018 [cited 2018 Jul 16]. Available from: <https://www.canimmunize.ca/en/home>

## Help Improve Medication Safety Across Canada

Canadian Patient Safety Week: October 29 to November 2, 2018

ISMP Canada is collaborating with the Canadian Patient Safety Institute on this year's Canadian Patient Safety Week (CPSW) with the goal of reducing medication errors across Canada. The theme of this year's CPSW is *Not All Meds Get Along* – a prompt for patients and pharmacists to

seek medication reviews for at-risk populations. For more information on the upcoming CPSW and to register for updates visit: <http://www.patientsafetyinstitute.ca/en/events/cpsw/pages/default.aspx>



*This segment of the bulletin describes a recent SafeMedicationUse.ca publication from ISMP Canada's Consumer Program.*

May 2018 - Newsletter:

### Keep Your Medications Organized

SafeMedicationUse.ca

Patients need to keep their medications organized, especially individuals who take several medications and those who often forget to follow their prescribed medication regimen. Healthcare providers also have a responsibility to identify anyone who might need help with their medications and to offer solutions such as simplifying regimens and using a medication organizer or blister pack. This [newsletter](#) shared tips to help patients keep their medications organized, including specific recommendations for those who fill their own medication organizers at home.

#### **The following tips for practitioners will help you to support your patients in keeping their medications well organized:**

- Regardless of your healthcare role, ask your patients if they are encountering any difficulty managing their medications. Refer to them to a pharmacist, if necessary.
- For any patients who report difficulty in this regard, ask how they are managing and organizing their medications. Assess patients for their physical ability and cognitive capacity to correctly select and open the cells of a blister pack or to prepare and use their own medication organizers. Offer appropriate alternatives.
- If you have concerns about adherence, ask the patient to bring the medication organizer and all medication containers to the next pharmacy visit. Take this opportunity to review the patient's adherence with and understanding of the prescribed medication therapy.
- For patients who are filling their own medication organizers at home, each time there is a change in the medication regimen, share with them (or their caregivers) any associated changes in the organizer that will be required to reflect these changes.

For more information, read the full newsletter: <https://safemedicationuse.ca/newsletter/organizemeds.html>





## Med Safety Exchange – Webinar Series

- Perpetuation of Confirmation Bias with LASA Drug Names
- What Can Canada Learn about Electronic Prescribing from Other Jurisdictions?
- Medication Safety Update - CNA Update, CPSI Update

**Wednesday, September 26, 2018**

Join your colleagues across Canada for complimentary monthly 50 minute webinars to share, learn and discuss incident reports, trends and emerging issues in medication safety!

For more information, visit  
[www.ismp-canada.org/MedSafetyExchange/](http://www.ismp-canada.org/MedSafetyExchange/)



The Canadian Medication Incident Reporting and Prevention System (CMIRPS) is a collaborative pan-Canadian program of Health Canada, the Canadian Institute for Health Information (CIHI), the Institute for Safe Medication Practices Canada (ISMP Canada) and the Canadian Patient Safety Institute (CPSI). The goal of CMIRPS is to reduce and prevent harmful medication incidents in Canada.



The Healthcare Insurance Reciprocal of Canada (HIROC) provides support for the bulletin and is a member owned expert provider of professional and general liability coverage and risk management support.



The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national not-for-profit organization committed to the advancement of medication safety in all healthcare settings. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

## Report Medication Incidents

(Including near misses)

**Online:** [www.ismp-canada.org/err\\_index.htm](http://www.ismp-canada.org/err_index.htm)

**Phone:** 1-866-544-7672

ISMP Canada strives to ensure confidentiality and security of information received, and respects the wishes of the reporter as to the level of detail to be included in publications. Medication Safety bulletins contribute to Global Patient Safety Alerts.

## Stay Informed

To receive ISMP Canada Safety Bulletins and Newsletters visit:

[www.ismp-canada.org/stayinformed/](http://www.ismp-canada.org/stayinformed/)

This bulletin shares information about safe medication practices, is noncommercial, and is therefore exempt from Canadian anti-spam legislation.

## Contact Us

**Email:** [cmirps@ismpcanada.ca](mailto:cmirps@ismpcanada.ca)

**Phone:** 1-866-544-7672

©2018 Institute for Safe Medication Practices Canada.