

Vaccine Wastage for 2019

To: Chair and Members of the Board of Health

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Recommendations

It is recommended that the Board of Health:

1. Receive this report for information.

Key Points

- January to December 2019, Wellington-Dufferin-Guelph Public Health (WDGPH) distributed \$7,092,525 in vaccine to community partners in Wellington, Dufferin and Guelph (WDG).
- January to December 2019, WDGPH had a combined internal/external wastage rate of 3% of vaccine, by dose, which was improved from 4.7% in the previous year.
- Wastage occurring internally at WDGPH is calculated at 3.4%.
- WDGPH continues to maintain a comprehensive inventory and monitoring system to mitigate internal vaccine wastage.
- WDGPH will continue to implement strategies to reduce preventable vaccine wastage.

Vaccine Distribution

WDGPH receives weekly shipments of publicly-funded vaccine from the Ontario Government Pharmacy (OGP). Vaccine is distributed regularly to physician's offices, long-term care homes, hospitals and community clinics. WDGPH packs and distributes vaccine to all community healthcare providers, except pharmacists, who receive their vaccine directly from a Ministry of Health (Ministry) designated distributor. The only publicly-funded vaccine pharmacists currently carry, is influenza vaccine. WDGPH is accountable for reporting vaccine wastage incurred by all health care providers, including pharmacists. WDGPH is also responsible for providing annual vaccine education, cold chain education, routine vaccine fridge inspections and responding to cold chain incidents.

Cold Chain

Vaccines require storage within a consistent temperature range of 2° and 8°C, known as maintaining "cold chain." Cold chain begins with manufacturing and ends when the vaccine is administered.

Vaccine Wastage

A vaccine is wasted if it is exposed to temperatures outside the appropriate range or expires before it is used. Vaccine wastage in Ontario is a significant and preventable liability, affecting vaccine safety and efficacy. The Ministry provides the Vaccine Storage and Handling Protocol (2018) in order to standardize the management of provincial vaccine inventories. The protocol outlines proper storage and handling of vaccines, quality assurance activities and strategies to reduce publicly-funded vaccine wastage.¹ The protocol requires that WDGPH has no more than 5% wastage for any individual vaccine product annually. If wastage exceeds 5%, the Ministry specifies that additional inventory control measures shall be taken to reduce it.

Public Health is mandated to report any publicly-funded vaccine deemed as wastage to the Ministry via the Provincial Panorama Inventory Module. The Panorama system allows WDGPH to monitor and track vaccine distributed to community partners with greater accuracy. The overall wastage, in 2019, for all vaccines distributed by WDGPH was 3% and valued at. \$251,645.18.

Figure 1. Annual comparisons of overall wastage

	2017	2018	2019
\$ Value Wasted	\$193,584.57	\$297,760.64	\$251,645.18
Percentage of distributed vaccine that was wasted	4.2%	4.7%	3%

Part of the overall wastage rate includes vaccine that is wasted internally. WDGPH had an internal wastage rate of 3.4% in 2019. The internal rate reflects short-dated product received from the Ministry that WDGPH is unable to use internally or distribute to community healthcare providers before the product expires. When WDGPH receives short-dated product from the Ministry, it is quickly distributed to community partners to ensure that some of the product is used. Even with the most efficient turnaround times for distribution, providers are often left with more quantity than can be used in a short timeframe. Sometimes WDGPH does not have orders for product that is short-dated and this product subsequently contributes to our internal wastage.

The greatest risk for vaccine wastage is short-dated vaccine as well healthcare providers ordering excess quantities or stockpiling vaccine. An unpredictable factor in calculating wastage is that expired vaccines are not always returned to WDGPH in the calendar year that they are distributed. Due to the limited control over when wasted inventory is returned to be counted, wastage rates for some individual vaccines may be higher than the number of vaccines distributed during that specific year. Influenza products are the most frequently wasted as demand for these seasonal vaccines comes from all providers, occurs over a relatively short period of time and has a short period for use.

Figure 2. Reasons for overall vaccine wastage

Cold Chain Incident - Human Error	1.9%
Cold Chain Incident-Malfunction: Refrigerator or other equipment	0.9%
Excessive quantity ordered/expired before use	17.3%
Product expired before use	70.4%

For Disposal	0.9%
Disposal of Dose(s) Remaining in a Vial (External HP)	6.5%
Insufficient Dose(s) From a Single/Multi-Dose Vial	0.1%
Unused Pre-drawn Syringe	1.6%
Vaccine Administration Issue	0.2%

Community Cold Chain Excursions

WDGPH's Cold Chain team completed 100% of 218 vaccine refrigerator inspections in 2019 and responded to 26 cold chain excursions. The annual inspections involved more rigorous and targeted education in an effort to decrease vaccine wastage. The number of cold chain excursion dropped by almost 50% from the previous year. Follow-up to reported excursions involves collaborative resolution of the immediate cold chain issue and consultation with the vaccine manufacturer(s) with time and duration of exposure. An assessment is made whether the vaccine can be used or must be wasted. Education on cold chain storage and handling is provided, where required. Re-inspections and unscheduled audits are conducted in cases where re-occurring issues are attributed to human error. Expired vaccine is still the most common cause for vaccine wastage in the community, rather than cold chain excursions.

Figure 3. Cold Chain excursions

Reason for Excursion	Number of Excursions
Human Error	4
Human Error - Refrigerator/Freezer Door Left Ajar	9
Human Error - Unmonitored Refrigerator/Freezer	1
Malfunction - Equipment	5
Power Outage	1
Unknown	6

Challenges and Strategies

Vaccine distributed to health care providers cannot be returned for redistribution and any vaccine that cannot be used is considered to be wasted. Excess product ordering by community partners is difficult to control without adversely affecting client service and immunization coverage rates. WDGPH depends on community partners diligently monitoring their own vaccine supply and demand and ordering accordingly so as not to exceed a two-week supply of vaccine in their vaccine refrigerators. Inventory is difficult to control as supply and demand fluctuates weekly.

WDGPH manually monitors vaccine orders that come in from facilities by requesting an accurate count of office inventory on the order form. Distribution is adjusted accordingly. Sometimes the inventory on hand is not accurately recorded, resulting in providers ordering more stock from WDGPH than they can use before it expires. WDGPH reminds health care providers to order a maximum two-week supply of any vaccine product in order to minimize the potential for wastage.

- In 2019, each community healthcare provider received an individual report, including the value of the vaccines wasted in their facility.
- Annual cold chain inspections were completed for all facilities (218 fridges).
- Spot inspections were completed following cold chain incidents.
- Healthcare providers are encouraged to invest in vaccine specific fridges that hold temperatures more consistently.
- Vaccine orders are adjusted to control oversupply.
- Stickers with reminders to return expired vaccine are sent with each new order.
- Expired vaccine, on hand, is collected at the time of inspection.
- WDGPH collaborates with the Provincial Panorama group to develop guidelines for monitoring vaccine in the community, addressing issues such as vaccine expiry and vaccine quantity stored.
- An online ordering portal is being build which allows for increased controls and improved communication with partners.

In 2020, monitoring oversupply is a renewed effort. At the request of our community partners, WDGPH is building an online ordering portal for vaccines. Stakeholders were involved in the design and function of an intuitive system that allows for healthcare providers to see previous orders and have instant access to vaccine alerts such as short-dated supply or inventory restrictions. Healthcare providers will be able to continue to use the manual ordering system by fax or choose to submit orders online and receive confirmations via email. The online ordering system is integrated with the

panorama inventory module which decreases the need for manual adjustments. Due to the COVID-19 pandemic response, the online ordering portal launch date has been delayed.

WDGPH maintains an effective internal process for vaccine and cold chain management. Portable cooling systems that guarantee to keep vaccine within the recommended temperature range for up to 65 hours are utilized for community clinics and mass immunization events. These cooling systems are available to aid in power outages, emergency responses and fridge failures. WDGPH has additional monitoring requirements for on-site vaccine fridges, including a comprehensive temperature monitoring system that allows text alerts and external monitoring. There is a contingency plan in place 24 hours per day to manage internally housed vaccine that might be at risk.

Conclusion

WDGPH follows Ministry recommended processes to eliminate vaccine wastage. WDGPH continues to implement innovative measures aimed at decreasing vaccine wastage. Short-dated supply that comes from the OGP is an outstanding issue that remains a challenge internally and for our community partners.

WDGPH Strategic Direction(s)

- Health Equity:** We will provide programs and services that integrate health equity principles to reduce or eliminate health differences between population groups.
- Organizational Capacity:** We will improve our capacity to effectively deliver public health programs and services.
- Service Centred Approach:** We are committed to providing excellent service to anyone interacting with WDG Public Health.
- Building Healthy Communities:** We will work with communities to support the health and well-being of everyone.

Health Equity

Publicly-funded vaccines are available to all community members who have a primary health care provider. For community members without a primary healthcare provider, vaccines can be readily accessed through any of our public health offices.

References

1. Population and Public Health Division, Ministry of Health and Long-Term Care. Vaccine Storage and Handling Protocol 2018.

Appendices

N/A.