Program/Service Information Report

Significant Cold Chain Incident

(January 2018)

TO:	Board of Health
MEETING DATE:	March 7, 2018
REPORT NO.:	**BH.01.MAR0718.C03**
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Key Points

- An internal cold chain incident occurred on January 8, 2018 resulting in a significant loss of vaccine.
- The cold chain incident occurred as the result of a vaccine fridge malfunction.
- Both publicly-funded and non-publicly-funded vaccines were impacted.
- The wastage of publicly-funded vaccine will negatively impact vaccine wastage reports to the Ministry of Health and Long-Term Care (MOHLTC).

Operational Plan Objectives

Wellington-Dufferin-Guelph Public Health (WDGPH) will ensure that the storage and distribution of provincially-funded vaccines is in accordance with the Vaccine Storage and Handling Protocol, 2018 (or as current).

Summary of OPHS Program Requirements

OPHS Program: Vaccine Preventable Diseases

Goals:

- To reduce or eliminate the burden of vaccine preventable diseases.

Strategy:

- Disease Prevention

Requirements:

Requirement 8. The board of health shall promote appropriate vaccine inventory management in accordance with the *Vaccine Storage and Handling Protocol, 2018* (or as current) in all premises where provincially funded vaccines are stored. This shall include:

a) Prevention, management, and reporting of cold chain incidences; and
b) Prevention, management, and reporting of vaccine wastage.

Requirement 9. The board of health shall ensure that the storage and distribution of provincially funded vaccines, including to health care providers practicing within the health unit, is in accordance with the *Vaccine Storage and Handling Protocol, 2018* (or as current).

Accountability Indicators/Reports to the Ministry:

- % of HPV vaccine wasted that is stored/administered by the public health unit
- < 5% wastage for any individual vaccine product annually
- overall vaccine wastage will be < 3% of total vaccine distributed

Performance variance or discrepancy identified:

- Yes

Highlights

Public Health Units (PHUs) are required to follow the Vaccine Storage and Handling Protocol 2018 from the MOHLTC. This protocol requires that PHUs have no more than 5% wastage for any individual vaccine product annually, and that overall vaccine wastage will be within the MOHLTC prescribed 3% of total vaccine distributed, measured quarterly.

PHUs are mandated to report any publicly-funded vaccine deemed as wastage and return it to the MOHLTC.

Description of Incident:

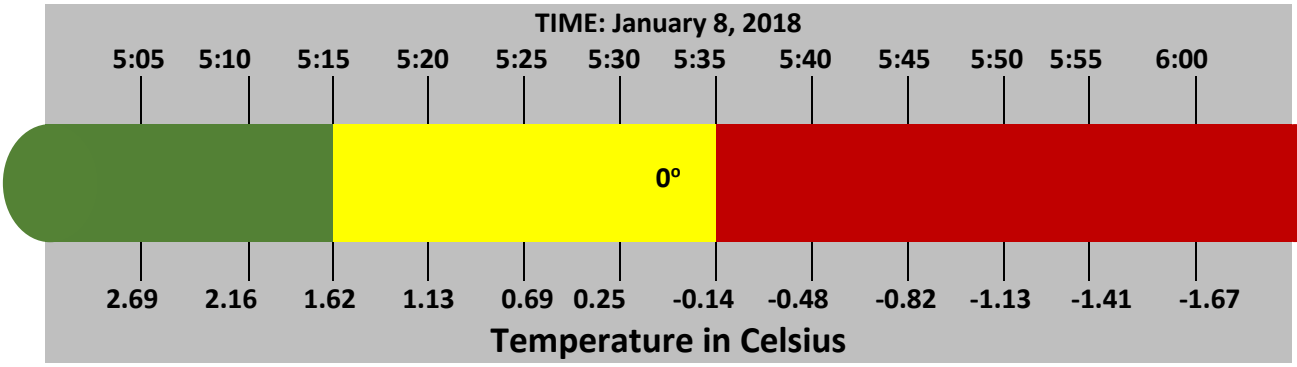
In order to prevent internal vaccine wastage, WDGPH implemented a monitoring system in 2015. This system provides connection information in 10 minute intervals and records data every 5 minutes. Each fridge has 2 sensors. One monitors the fridge temperature and the other sensor monitors the voltage.

Vaccines must be stored within the temperature range of +2°C to +8°C. When temperatures go outside the range of 2°C - 7°C, an audible alarm is initiated and messages are sent to pre-determined WDGPH staff. This alarm range provides adequate time to transfer vaccine, if needed, to another fridge and/or trouble shoot as to why the temperature is too high or too low. The lower limit alarms were set at 2°C and upper limit alarms at 6°C. Vaccine is typically viable unless it falls below 0°C and historically fridge malfunctions result in the fridge losing cooling power. For example, of the 72 alarms occurring in 2016, not a single alarm occurred for a decrease in temperature.

Three years ago, WDGPH purchased a purpose built vaccine fridge, for the Chancellor's Way location, from Thermo Fisher Scientific. On January 8, 2018 the central processing board for

this fridge seized, and the compressor kept running. This caused the fridge to freeze vaccine very rapidly. The chart below describes how quickly the temperatures dropped.

The manager on call received the appropriate notification at 05:15 am and was able to immediately respond to this fridge alarm. The vaccine was transferred to another fridge by 06:00 am. Unfortunately, most of the vaccine was deemed as wastage because the temperatures dropped below 0°C for a short period of time.



Warranties:

The fridge was received on January 5, 2015 and is under warranty until March 1, 2018.

Non-publicly funded (NPF) vaccine wasted due to Vaccine Fridge Failure – 01.08.2018

Vaccine Name	*Unit cost*	*#Doses*	*Total $ wasted*
Bexero	$102.11	8	$816.88
Havrix 1440	$21.98	30	$659.4
Havrix 720	$14.00	49	$686.00
Twinrix	$45.78	43	$1,968.54
Twinrix Jr	$23.27	50	$1,163.50
RabVert	$170.76	24	$4098.24
Energix B	$21.18	9	$190.62
Energix B ped	$10.47	15	$157.05
Gardasil 9	$155.25	11	$1,707.75
Menactra	$75.79	17	$1,288.43
Tubersol	$160.00	12	$1,920.00
Fluzone HD	$60.00	5	$300.00
Dukoral	$71.98	4	$287.92
Iiaro	$193.25	7	$1,352.75
Total cost of vaccine loss			**$16,597.08**

Publicly-funded (PF) vaccine wasted due to Vaccine Fridge Failure – 01.08.2018

Vaccine Name	*Unit cost*	*#Doses*	*Total $ wasted*
Engerix B	$22.57	9	$203.13
Recombivax HB	$22.54	158	$3,561.32
Gardasil 9	$157.89	80	$12,631.20
Menactra	$110.00	115	$12,650.00
Adacel	$29.00	3	$87.00
Total cost of vaccine loss			**$29,132.65**

Accountability Indicators:

The publicly-funded vaccine wastage reports, for this quarter, as well as the annual accountability indicators, will reflect the wastage from this incident.

Moving Forward:

A thorough review of the incident resulted in the following outcomes:

- The Hoboware alarm system functioned as intended. However, the lower threshold alarm was set too low to provide adequate response time. The Hoboware alarm system has been adjusted to notify staff if the temperature moves below 3 C. This change will result in an increased number of alarms and increased staffing time to investigate the alarms.
- The transfer of the vaccine from Fridge#4 to an alternate fridge could have been moved faster had the vaccine been stored on moveable trays, allowing for mass quantities to be transferred in less time. Moveable trays have been purchased for all vaccine fridges.
- A claim has been submitted for insurance to cover the cost of the non-publicly funded vaccine, but has not been processed to date.
- Vaccine wastage was, in fact, minimized because vaccines of all brand names and varying dollar value were distributed evenly among all fridges rather than using the same fridge to house each brand of vaccine separately. When vaccines are grouped in the same fridge by brand, it increases the risk of wasting a large volume of more expensive vaccine as well as increasing the risk of losing all vaccine of one brand and therefore limiting the short-term availability of this vaccine to clients and healthcare providers. Vaccines will continue to be distributed, as evenly as possible, throughout all of the WDGPH vaccine fridges in order to maintain inventory of all vaccine in the event of a cold chain incident.