INFLUENZA SURVEILLANCE PROTOCOL FOR ONTARIO HOSPITALS

Developed by the Ontario Hospital Association and
the Ontario Medical Association
Joint Communicable Diseases Surveillance Protocols Committee
In collaboration with the Ministry of Health and Long-Term Care

Approved by
The OHA and The OMA Board of Directors
The Ministry of Health and Long-Term Care –
The Minister of Health and Long-Term Care

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This protocol was developed jointly by the Ontario Hospital Association and the Ontario Medical Association to meet the requirements of the Public Hospitals Act 1990, Revised Statutes of Ontario, Regulation 965. This regulation requires each hospital to have bylaws that establish and provide for the operation of a health surveillance program including a communicable disease surveillance program in respect of all persons carrying on activities in the hospital. The communicable disease program is to include the tests and examinations set out in any applicable communicable disease surveillance protocol. The regulation states that the communicable disease surveillance protocols that hospitals must adopt are those "published jointly by the Ontario Hospital Association (OHA) and the Ontario Medical Association (OMA) and approved by the Minister (of Health and Long-Term Care)."

This Protocol has been reviewed since the previous version; changes have been highlighted in yellow for easy identification. Protocols are reviewed on a regular basis, every two years or as required.

The protocol reflects clinical knowledge, current data and experience, and a desire to ensure maximum cost effectiveness of programs, while protecting health care workers and patients. It is intended as a minimum standard that is practical to apply in most Ontario hospital settings. It does not preclude hospitals from adopting additional strategies that may be indicated by local conditions.

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Rationale for Influenza Surveillance Protocol

This protocol was developed because health care workers (HCWs) have the potential for acquiring and transmitting influenza to those under their care during seasonal community activity of influenza virus.

Hospitals should have policies and implementation strategies for annual influenza vaccination of HCWs. Hospitals should also have an influenza outbreak control plan outlining how outbreaks of influenza will be managed.

Influenza

Influenza is an acute respiratory infection caused by influenza A and B viruses and typically characterized by the sudden onset of fever, cough, and myalgia.[1] Other common symptoms include headache, chills, loss of appetite, fatigue and sore throat.[1] Influenza derives its importance from the rapidity with which seasonal epidemics evolve, the widespread morbidity, and the seriousness of complications, notably viral and bacterial pneumonias. During seasonal epidemics, hospitalization and deaths occur. Mortality is highest among people 65 years of age and older; children younger than two years of age and the elderly have the highest hospitalization rates.[2] Clinical attack rates during seasonal epidemics range from 5% to 10% in adults, 20% to 30% in children[1] and to >50% when introduced into closed populations, such as long-term care homes.[3] During some influenza seasons there may be two waves of influenza activity, one due to influenza A and the other due to influenza B.

Current Recommendations

The most effective measures for reducing the impact of influenza are to:

- **Vaccinate persons at high risk for influenza-related complications**
- **Vaccinate people who are potentially capable of transmitting influenza to those at high risk, including HCWs**

Studies have shown a reduction in nosocomial influenza-like infections and decrease in total mortality rates among nursing home patients after large-scale vaccination of HCWs.[4-7] A 1999 study of HCWs concluded that influenza vaccination is effective in preventing infection by influenza A and B and may also reduce reported days of absence and febrile respiratory illness.[8] A more recent study suggests that HCW absenteeism decreases as rates of HCW influenza immunization increase.[9] Despite this, immunization levels in HCWs remain well below levels needed to provide protection for patients. In Ontario, the median HCW influenza immunization rate for hospitals peaked at 60.5% for the 2014-2015 influenza season and was 53 – 54% for the 2016-2017 and 2017-2018 influenza seasons.[10,11]

Protection from influenza A and B is dependent on the match between the strains included in the vaccine and the strain(s) of influenza circulating in the community.

Vaccine effectiveness varies by year depending on the degree of vaccine match/mismatch with circulating strains, and the vaccine preparation used. Overall, the influenza vaccine is reported to be ~ 50% to 60% effective in healthy adults.[1] A 2016 systematic review and meta-analysis of vaccine effectiveness studies using the test negative design reported pooled vaccine effectiveness as follows: 33% for influenza A(H3N2), 54% for influenza B, 61% for influenza A(H1N1pdm09), and 67% for influenza A(H1N1).[12] In Canada in 2016-17, the estimated interim adjusted vaccine effectiveness of influenza A(H3N2), the dominant circulating strain, was 42% overall;[13] in 2017-18, this dropped to 17% for influenza A(H3N2), while estimated vaccine effectiveness for influenza B(Yamagata) was 55%.[14] **However, influenza vaccine remains the most effective prevention measure available**.[1]

Annual immunization is required because the vaccine is updated each year in response to changes in the influenza virus. Protection from the vaccine generally begins about two weeks after immunization and usually lasts less than one year in healthy individuals.[1] – There is no conclusive evidence that receiving repeated influenza immunizations reduces vaccine-induced protection, although the results of individual studies are heterogeneous.[15,16]

Influenza vaccine should be offered as soon as it becomes available in the fall.[1] Vaccinating after the first week of December potentially misses the opportunity to prevent 10% of cases.[17] However, decisions regarding the exact time of vaccination could be modified by local epidemiology.[1]

Influenza vaccine is safe and well-tolerated. Influenza vaccine cannot cause influenza illness because the inactivated influenza vaccines do not contain live virus, and the viruses in live attenuated influenza vaccines are weakened so that they cannot cause influenza.[1]

There are several vaccine preparations available in Canada. ***Trivalent inactivated influenza vaccines (TIV)*** contain three viruses: two influenza A viruses and one influenza B virus. TIVs used for HCWs are administered intramuscularly. Quadrivalent influenza vaccines contain four viruses: two influenza A viruses and two influenza B viruses. The inactivated (injectable) ***quadrivalent influenza vaccines (QIV)*** are administered intramuscularly, and a ***live attenuated influenza vaccine (LAIV)*** *is* administered by intranasal spray. At present in Ontario, quadrivalent vaccines are publically funded only for children (6 months to 17 years of age).

NACI recommends that HCWs be immunized with TIV or QIV, instead of LAIV:[1] "…most comparative studies in persons 18 to 59 years of age have found that TIV was more efficacious than LAIV. Secondly….LAIV recipients should avoid close association with persons with severe immune compromising conditions (e.g., bone marrow transplant recipients requiring isolation) for at least two weeks following vaccination, because of the theoretical risk for transmitting a vaccine virus and causing infection." NACI recommends that high-dose TIV rather than standard-dose TIV be offered to individuals over age 65.[1]

According to the National Advisory Committee on Immunization (NACI),[1] **"influenza vaccination provides benefits to HCWs and to the patients for whom they care. NACI**

considers the provision of influenza vaccination to be an essential component of the standard of care for all HCWs for the protection of their patients…..HCWs should consider annual influenza vaccination included in their responsibility to provide the highest standard of care. In the absence of contraindications, refusal of HCWs to be immunized against influenza implies failure in their duty of care to patients."

This protocol is only one component of an infection prevention and control program; HCWs must consistently adhere to Routine Practices (e.g., prompt institution of Droplet/Contact Precautions for patients with acute respiratory infection) and remain off work if they have symptoms of acute respiratory infection.

Influenza Surveillance Protocol for Ontario Hospitals

Developed by
The Ontario Hospital Association and the Ontario Medical Association
Reviewed & Revised June 2018

I. Purpose

The purposes of this protocol are to:

i) provide direction to hospitals for preventing and managing influenza virus infections among health care workers (HCWs), and

ii) prevent the transmission of influenza virus among HCWs.

II. Applicability

This protocol applies to **all persons carrying on activities in the hospital**, including but not limited to employees, physicians, nurses, contract workers, students, post-graduate medical trainees, researchers and volunteers. The term HCW is used in this protocol to describe these individuals. This protocol does not apply to patients or residents of the facility or to visitors.

When training students or hiring contract workers, the hospital must inform the school/supplying agency that the school/agency is responsible for ensuring that their students/contractors are managed according to this protocol.

This protocol is for the use of the Occupational Health Service (OHS) in hospitals. It is expected that OHS collaborate with Infection Prevention and Control and other departments, as appropriate.

III. Pre-placement

At the time of pre-placement health review, information must be provided to all HCWs about the need for annual influenza vaccination, and possible work restrictions of unimmunized HCWs in the event of an institutional outbreak.

Additionally, if the pre-placement health review falls during the influenza season (from November to April), the OHS should obtain documented evidence of immunization with the current year's influenza vaccine.

If documentation is not available, the OHS must offer influenza immunization to the HCW.

NACI considers pregnant women as a high priority group and recommends immunization. There is further benefit in protection of infants born to immunized mothers during influenza season through passive transfer of antibody across the placenta and through breast milk. In a Canadian study, receipt of seasonal influenza vaccine was associated with lower rates of preterm birth and low birth weight.[18] **Pregnancy and breast-feeding are not considered contraindications to influenza vaccination given by injection.**[1] Pregnant women, both healthy pregnant women and those with chronic health conditions, are at increased risk of influenza related complications and hospitalization. Influenza vaccine by injection is considered safe for use in pregnant women at all stages of pregnancy and for breastfeeding women.

IV. Continuing Surveillance

The hospital should have an annual influenza program including measures and procedures for surveillance, immunization and outbreak control.

The influenza vaccination program established by the hospital should recommend vaccine annually early in the fall to all HCWs. The OHS must ensure that vaccination clinics are accessible to HCWs. On-site vaccination clinics are recommended, including mobile programs, covering all shifts and all sites. Vaccine coverage rates should be reported to the hospital Infection Prevention and Control Committee and Joint Health and Safety Committee, and to the Medical Officer of Health in December, annually.

The program should also annually remind all HCWs of the hospital's policy on antiviral use and possible work restrictions for those who are not immunized in the event of an outbreak.

During every influenza season, documentation of each HCW's status must be kept current and available in the OHS file. Refusal of vaccination should also be documented by the OHS.

The influenza vaccine consent form should include consent to release of immunization status in the event of an outbreak.

V. Valid Medical Exemption to Influenza Vaccination

Medical contraindication to influenza vaccine should be documented in the HCW's OHS file.

Influenza vaccine should not be given to persons who have developed:

- Guillain-Barré syndrome (GBS) within six weeks of a previous influenza vaccination.
- An anaphylactic reaction to a previous dose of influenza vaccine or any component of the vaccine, excluding eggs.

Egg-allergic individuals may be immunized against influenza (with any product) without a prior influenza vaccine skin test and with the full dose, irrespective of a past severe reaction to egg.[1] However, TIV and QIV, instead of LAIV are recommended for HCWs.[1]

HCWs administering vaccine should be prepared for and have the necessary equipment to respond to a vaccine emergency at all times.[1]

Pregnancy and breast-feeding are not considered contraindications to influenza vaccination by injection.[1]

VI. Management of Health Care Workers during an Influenza Outbreak (see Algorithm)

Immunized HCWs (with documented vaccination at least two weeks prior) may continue to work.

Unimmunized HCWs have the potential to acquire or transmit influenza within the hospital setting. Therefore, during an outbreak caused by influenza A or B virus, antiviral prophylaxis must be offered to unimmunized HCWs working in the area or unit affected by the outbreak. **The HCW may resume work as soon as antiviral prophylaxis is started**. Unless vaccination is medically contraindicated, vaccine should be provided and chemoprophylaxis continued for 2 weeks after immunization, i.e., until immunity develops, or until the outbreak is declared over, whichever is shorter.[14]

Recommended duration of chemoprophylaxis for unimmunized HCWs in an outbreak situation is until the outbreak is declared over.[19,20] In years where there is a mismatch between the vaccine strain and the outbreak strain of influenza, antiviral prophylaxis must be offered to all HCWs working in the outbreak area or unit, regardless of their vaccination status.

Work Restrictions

Unimmunized HCWs who accept immunization but refuse chemoprophylaxis during an outbreak should not work in the outbreak area / unit until 14 days following receipt of the vaccine or until the outbreak is declared over, whichever is shorter.

Unimmunized HCWs who refuse both immunization and chemoprophylaxis during an outbreak should not work in the outbreak area / unit until the outbreak is declared

over.

VII. Acute Disease

Work Restrictions

If **influenza** is suspected (see Glossary) or diagnosed, the HCW must remain off work until the period of peak symptoms and the period of communicability (five days from onset) has passed. HCWs should report to OHS prior to return to work.

VIII. Reporting

Suspect and confirmed outbreaks must be reported to the local Medical Officer of Health.[21]

Suspect or confirmed reportable diseases (as per the Ontario Regs 559/91 and amendments under the Health Protection and Promotion Act), such as influenza, must be reported to the local Medical Officer of Health.

In accordance with the Occupational Health and Safety Act and its regulations, an employer must provide written notice within 4 days of being advised that a worker has an occupational illness, including an occupationally-acquired infection, and/or a Workplace Safety and Insurance Board (WSIB) claim has been filed by or on behalf of the worker with respect to an occupational illness, including an occupational infection, to the:

- Ministry of Labour,
- Joint Health and Safety Committee (or health and safety representative), and
- trade union, if any.

Occupationally-acquired infections and illnesses are reportable to the WSIB.

IX. Evaluation

Protecting patients from influenza is a patient safety issue. Therefore,

- HCW influenza immunization rates should be reported to the Infection Prevention and Control Committee and the Joint Health and Safety Committee, and to the local Medical Officer of Health in December, annually.
- Hospitals should consider making the HCW influenza immunization rate a corporate patient safety indicator.

X. Glossary

Adults at High Risk of Influenza-related Complications or Hospitalization[1]

- All pregnant women*.
- Adults with the following chronic health conditions: cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma); diabetes mellitus and other metabolic diseases; cancer, immune compromising conditions (due to underlying disease, therapy or both); renal disease; anemia or hemoglobinopathy; neurologic or neurodevelopment conditions**; morbid obesity (BMI ≥ 40).
- People of any age who are residents of nursing homes and other chronic care facilities.
- People ≥65 years of age.
- Indigenous peoples.

From the Canadian Immunization Guide on Influenza and Statement on Seasonal Influenza Vaccine for 2018-2019.[1]
*The risk of influenza-related hospitalization increases with length of gestation, i.e., it is higher in the third than in the second trimester.
** These include neuromuscular, neurovascular, neurodegenerative, neurodevelopmental conditions and seizure disorders, but exclude migraines and psychiatric conditions without neurological conditions.

Ontario MOHLTC Surveillance Case Definition for Influenza[22]

Confirmed Case

Clinically compatible signs and symptoms with:
- Laboratory confirmation by detection or isolation of influenza virus from appropriate clinical specimen(s) (e.g., nasopharyngeal/throat swabs) **OR**
- Demonstration of a significant (i.e., fourfold or greater) rise in antibody titres to influenza between acute and convalescent sera **OR**
- An epidemiologic link to a laboratory-confirmed case **OR**
- Detection of influenza-specific ribonucleic acid (RNA)

Clinical Evidence

Clinically compatible signs and symptoms are defined as influenza-like illness and are characterized as having a temperature > 38 degrees Celsius and cough and one or more of the following: sore throat, arthralgia, myalgia or prostration. In patients >65 years fever may not be prominent.

Respiratory Outbreak Definition[21]

Confirmed Outbreak

- Two cases of acute respiratory infections (ARI) within 48 hours with any common epidemiological link (e.g. unit, floor), at least one of which must be laboratory confirmed; **OR**
- Three cases of ARI (laboratory confirmation not necessary) occurring within 48 hours with any common epidemiological link (e.g. unit, floor)

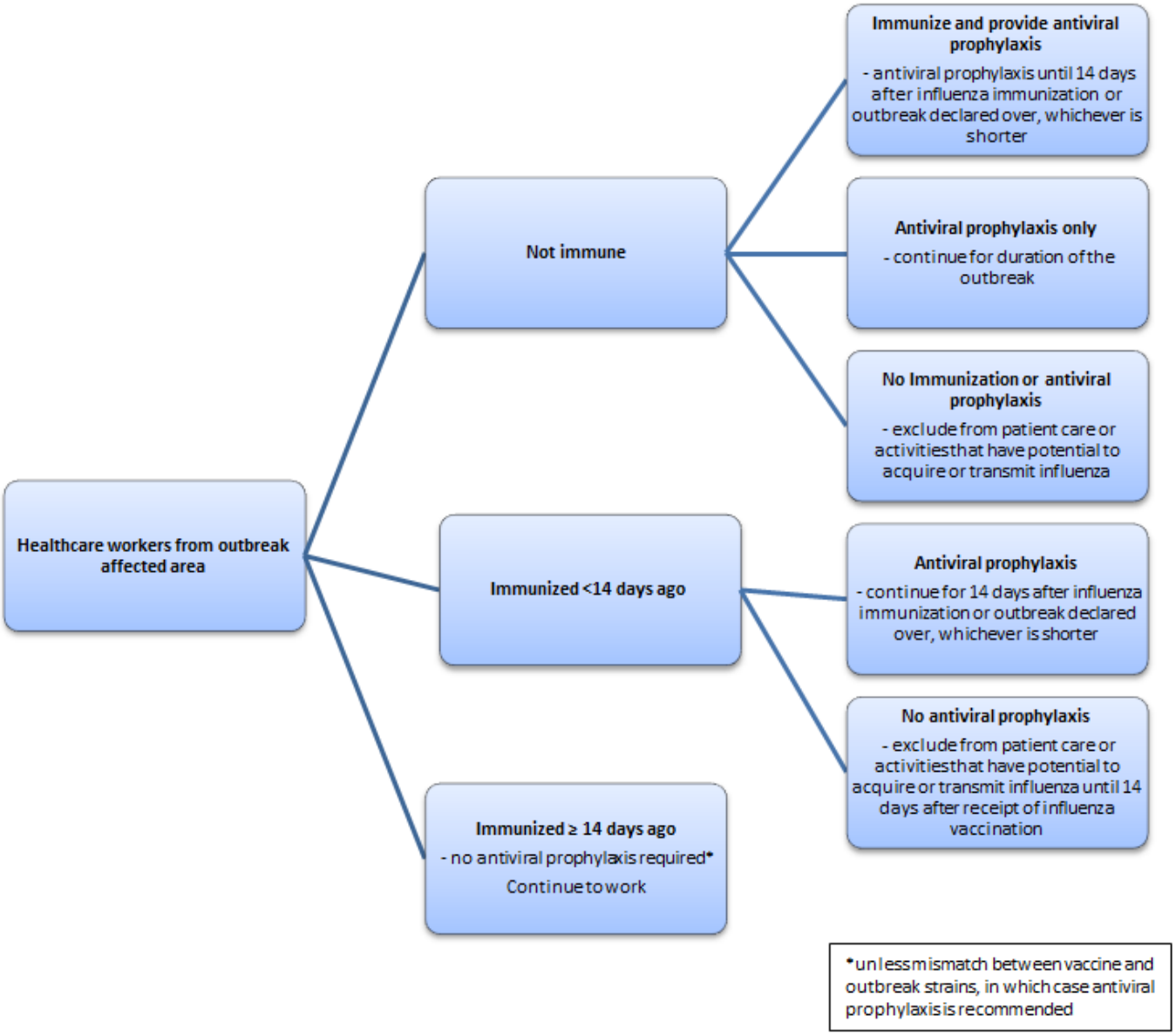
Suspected Outbreak

- Two cases of ARI within 48 hours with any common epidemiological link (e.g. unit, floor); **OR**
- One laboratory-confirmed case of influenza.

Caveats (for public hospitals):

- Cases refer to health care-associated cases
- If rapid testing is conducted on all cases, the confirmed outbreak definition would apply if two cases have the same respiratory pathogen

Algorithm: Management of HCWs during an Influenza Outbreak



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