Influenza and Outbreak Management in the LTC facility setting

Dr Pamela Kibsey MD FRCPC
Medical Director Microbiology IH
Medical Director Infection Prevention & Control IH

Faculty/Presenter Disclosure

- **Faculty: Island Health Medical Director**

- **Relationships with commercial interests:**

  Advisory Board Merck Pharmaceuticals

Disclosure of Commercial Support

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- **<u>Potential for conflict(s) of interest</u>: none**

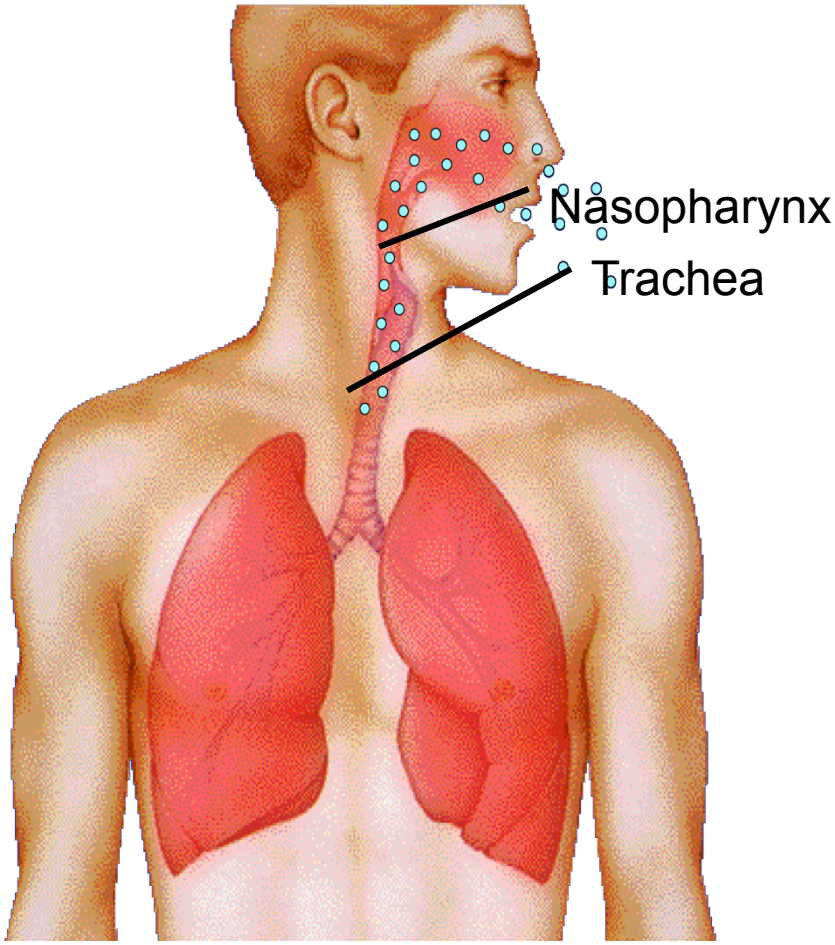
Mitigating Potential Bias

- Not applicable

A Case

- Betty Smith 92 yr female Glengarry
- Stayed in bed, refused breakfast
- Fever 38 °, sore throat, myalgia, dry cough
- Ward called physician to assess
- Co-morbidities CHF, RA, limited mobilization
- Vaccines up to date

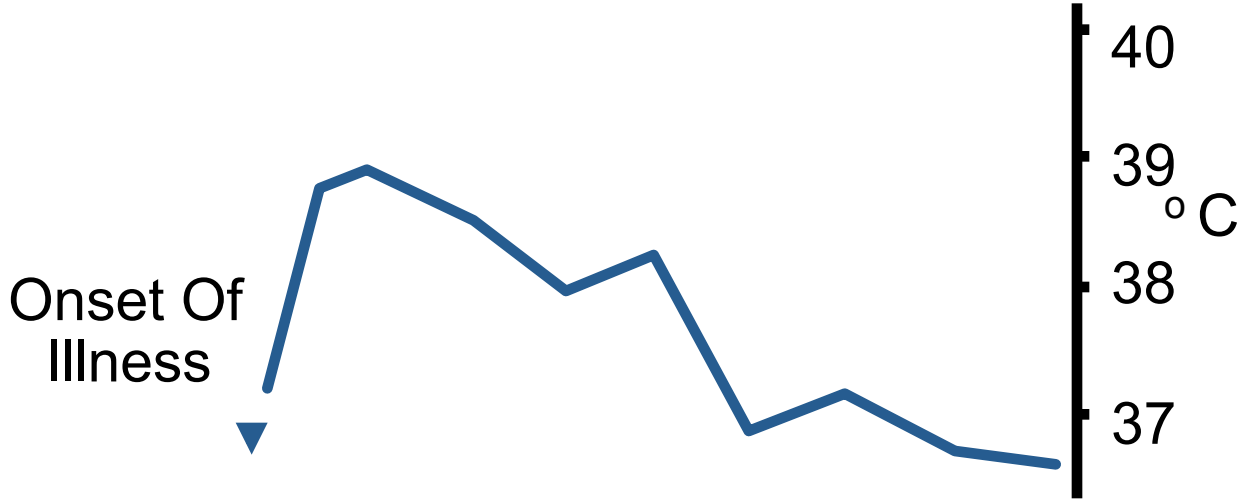
Influenza: Clinical features

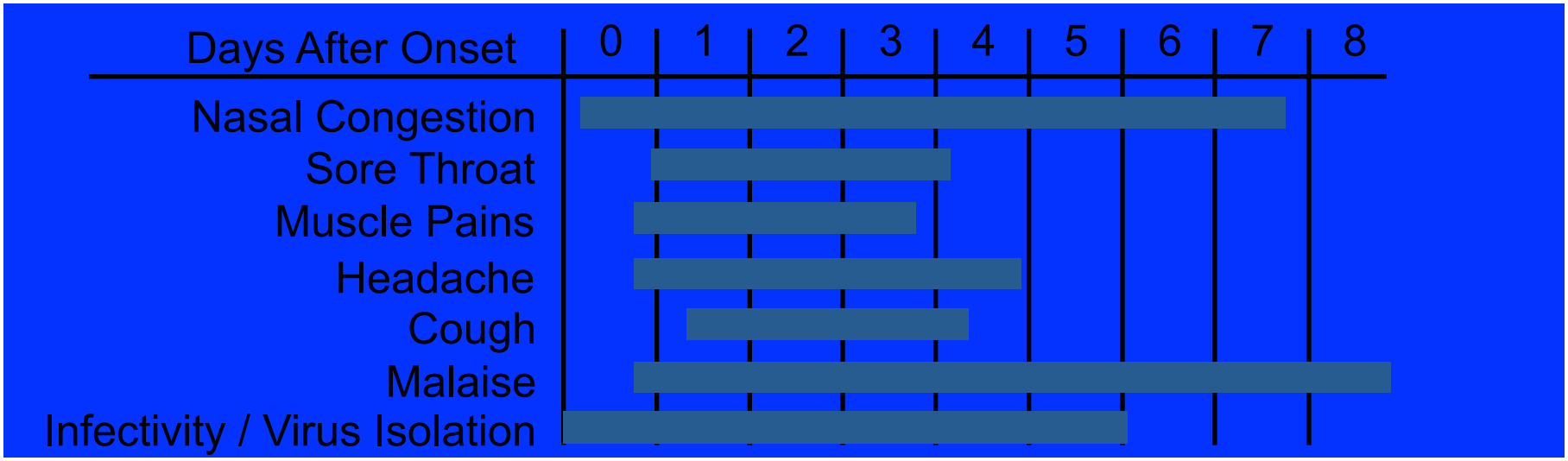


- Abrupt onset of symptoms
- Fever (usually >38°C)
- Nonproductive cough
- Chills and/or sweats
- Headache
- Myalgia
- Sore throat
- Potentially severe, persistent malaise
- Substernal soreness
- Photophobia
- Ocular problems

Cox NJ, Fukuda K. *Infect Dis Clin North Am* 1998

Clinical Characteristics of Infection





Complications of influenza

- febrile convulsions, otitis media, croup, bronchiolitis, Reye's syndrome
- bronchitis, pneumonia, bacterial pneumonia
- exacerbations of asthma, COPD
- MI, CHF, sudden death
- myocarditis, encephalitis

Preparing your patient for the influenza season

- Write orders for annual influenza vaccine and Tamiflu
- Ensure renal function evaluation in past year
- If patient misses vaccine in LTC, arrange for followup vaccine where-ever
- Assess patient early when S&S of influenza, obtain NP swab and initiate Rx

Influenza epidemiology

Every year

5 million Canadians (1 in 6) will be infected

50,000 will be hospitalized (1:100 >65 yrs)

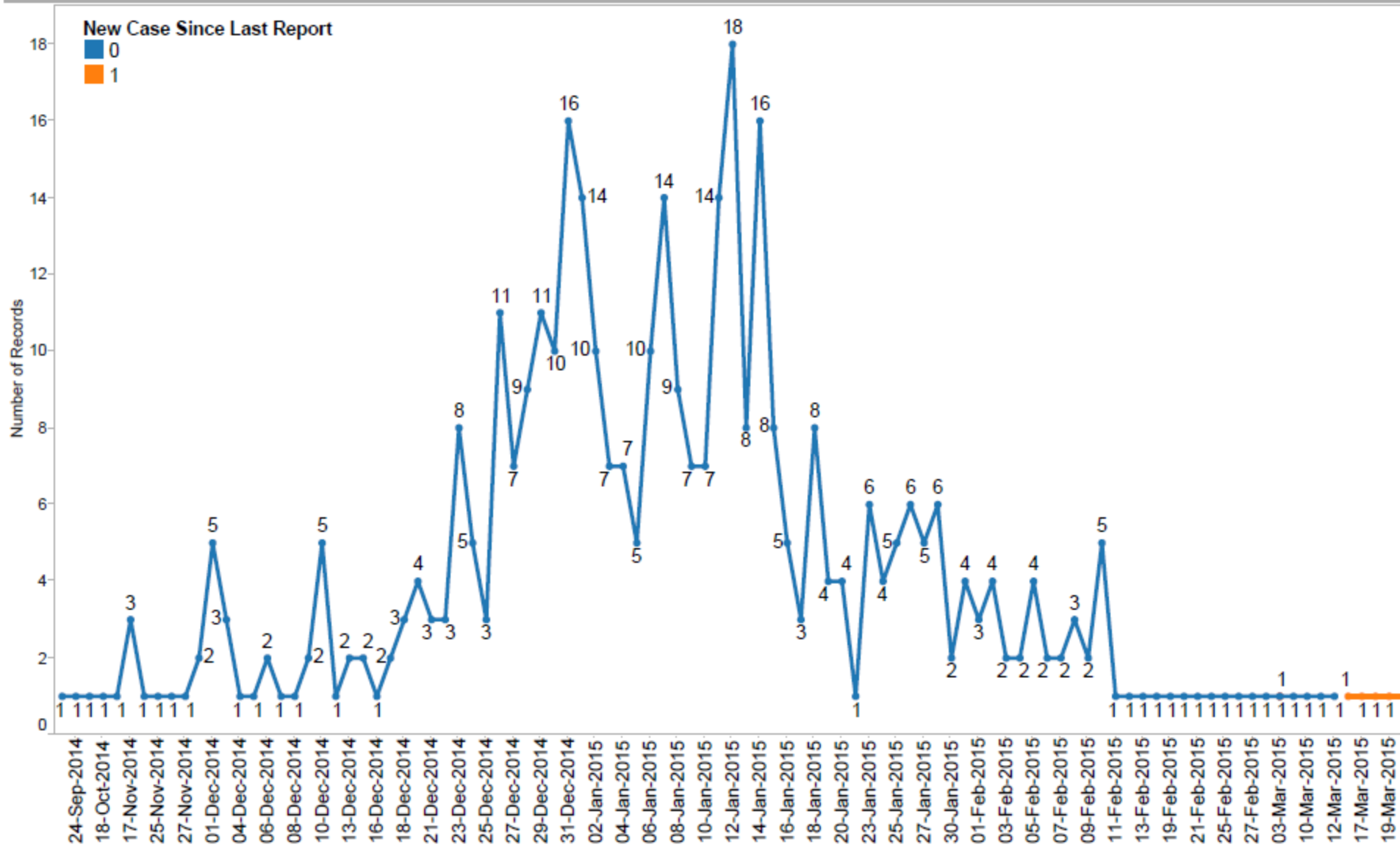
4,500 people will die

7% of 2-6 yr olds with acute otitis media

1.5 million work-days will be lost

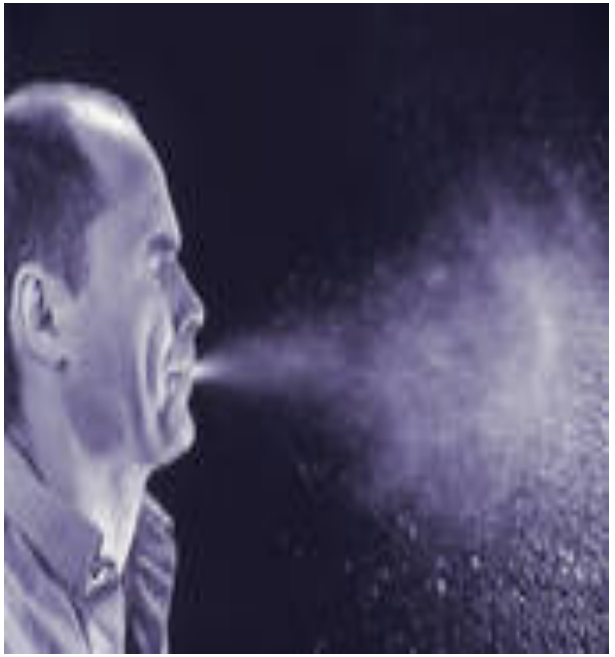
Influenza Report: # of Case by Culture Date

Inpatients Only
Lab Positive Results between September 01, 2014 and March 22, 2015
Report Update:23-Mar-2015 11:12:53 AM



Modes of Influenza Transmission

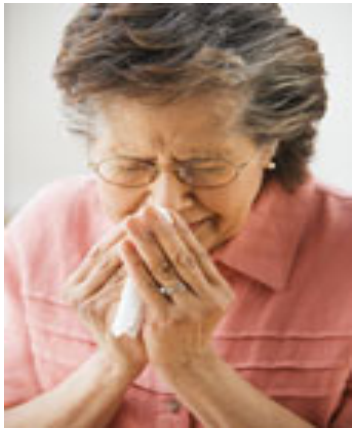
- **Inhalation of large particles**
  (cough – sneezing)
- **Direct or indirect contact**
- **Inhalation of small particles**
  (aerosol – generating procedures)



Shedding of influenza virus

- In adults with underlying diseases

  and young children for > 1 week



- In immunocompromised patients:

  for weeks to several months

  ➡ risk for emergence of resistance strains

  ➡ risk for nosocomial spread

Englund et al. Oseltamivir-resistant novel influenza A (H1N1) virus infection in two immunosuppressed patients – Seattle, Washington, 2009 *MMWR Morb Mortal Wkly Rep* 2009;58: 893-6

Duration of shedding

- Healthy adults: 3-4 days
- Hospitalized immunocompetent adults: 4-5 days
- Elderly adults: up to 7 days
- Outpatient children: 7 days
- Nosocomially infected infants: up to 21 days
- Severely immunocompromised (advanced HIV, BMT, leukemia): median 7 days, up to 63 days
- Pandemic strains H1N1 > 30 days

Sources for spread of nosocomial influenza

Patients with undiagnosed influenza

Visitors

Unvaccinated health-care workers

Maltezou HC. Nosocomial influenza: new concepts and practice. *Current Opinion in Infectious Diseases* 2008;21:337-343

Health-care workers

continue to work often

despite the presence of

influenza-like symptoms.

Influenza: Vaccination

Which of the following statements about the influenza vaccine is true?

a. The vaccine is dangerous during pregnancy

b. The vaccine can affect immunity

c. Influenza vaccination is ineffective against the current strain

d. Vaccination can precipitate influenza

e. None is true

Vaccine: Lessons learned

- Immunization is the most effective means to reduce the impact of influenza
- Vaccine composition updated annually***
- Influenza vaccination is safe and effective and should be promoted annually, particularly to high risk patients
- Antiviral prophylaxis should not replace annual influenza vaccination

CCDR
http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/ospdf/acs-dcc3106.pdf
MMWR. 2004;53:1-40

HCWs vaccination against influenza …

The Main preventive

measure against

transmission of influenza

within health-care facilities

Why should HCWs get vaccinated against influenza ?

in order to protect

- **themselves – occupational infection**
- **their vulnerable patients**
- **the essential health-care services**

Influenza vaccination of HCWs in long-term care facilities

↓↓ total mortality

↓↓ total mortality from influenza-like illness

↓↓ admissions in hospitals

- Potter et al. Influenza vaccination of healthcare workers in long-term-care hospitals reduces the mortality of elderly patients. *J Infect Dis* 1997;175:1-6
- Lemaitre et al. Effect of influenza vaccination of nursing home staff on mortality of residents: a cluster-randomized trial. *J Am Geriatr Soc* 2009;57:1580-6
- Hayward et al. Effectiveness of an influenza vaccine programme for care home staff to prevent death, morbidity, and health care use among residents: cluster randomized controlled trial. *Br Med J* 2006;333:1241
- Carman et al. Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomized controlled trial. *Lancet* 2000;355:93-7

Reduce transmission

- Handwashing
  - alcohol handrub at POC
  - handwashing inservices
  - feedback on amount of alcohol handwash/soap used
  - reminders at beginning of influenza season
  - Posting rates of HH compliance***

Infection control for the HCW

- Droplet precautions when within 1 meter (fluid resistant mask, gloves, gown)
- Eye protection (visor, not eyeglasses)
- Airborne precautions when performing aerosol generating procedures
- Be familiar with VIHA “guide to masks” chart
- Be familiar with how to donn and remove PPE (see IH website)
- HCW cannot reuse the mask

Removal of precautions

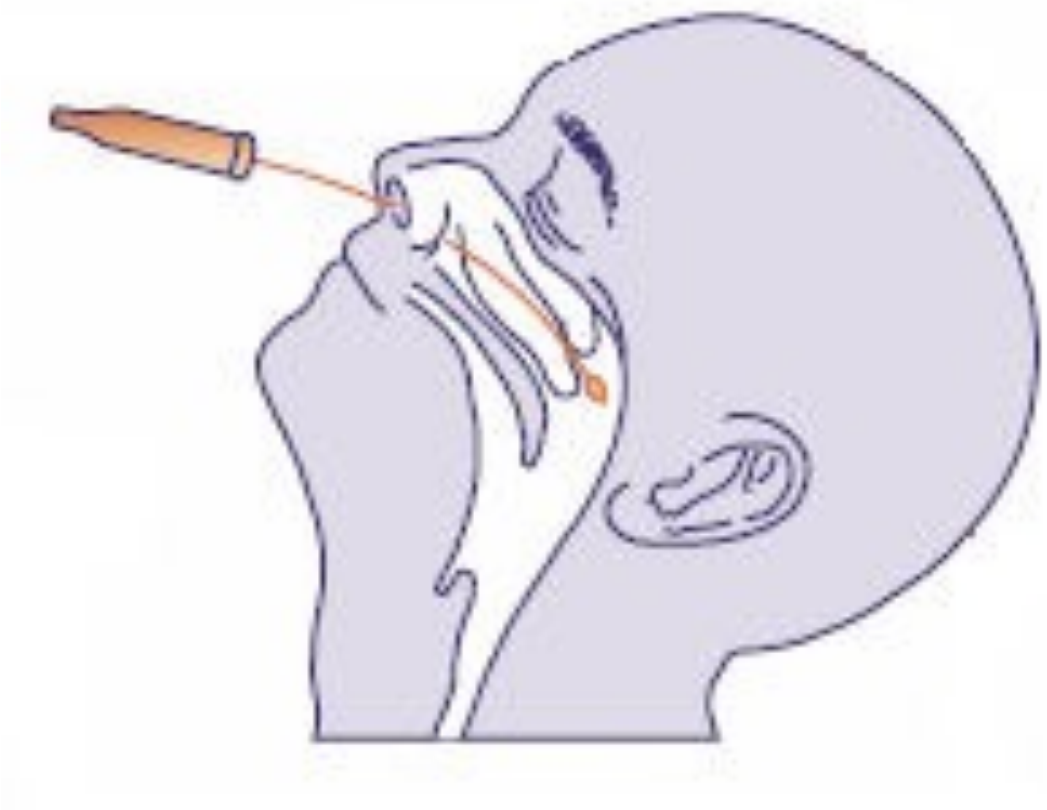
- In a competent host when Tamiflu is finished (5 d)
- Virus likely viable for 3 to 5 days
- Four fold log reduction from 10_6 to 10_2
- PCR positive up to 7-10 days
- Patient to adhere to hand hygiene & respiratory etiquette *OR* maintain precautions
- Public health recommend self isolation for 7 days or until fever is resolved, whichever is longer

Removal of precautions

- In an immunocompromised host, virus excretion prolonged; delayed viral clearance
- Can be detected in respiratory secretions, urine and stool for up to 3 weeks
- Maintain precautions until PCR negative
- Recommend nasal swab PCR 1-2X weekly

Reduce transmission

- Identifying potentially infected patients during influenza season
  - Infection Screener tool in triage/ER
  - notification from LTCF of outbreaks
- Initiate Precautions for symptomatic patients (Syndromic approach)
  - Droplet
  - NP swab for Influenza NAT
- Duration of precautions



STOP Droplet Precautions STOP

Hand Hygiene before barrier equipment.

STAFF:

Mask with shield and gown when working within three feet of patient.

Gloves at all times.

Remove in reverse order.

Hand Hygiene after removing barrier equipment.

VISITORS: On first visit consult Nurse before entering.

DO NOT REMOVE THIS SIGN FROM THE BRACKET

0040508

VANCOUVER ISLAND health authority

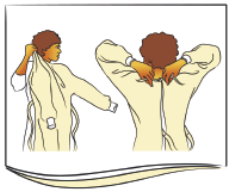
Sequence for putting on personal protective equipment (PPE)

1. Clean hands

- Before procedure perform hand hygiene using soap and water or alcohol hand rub

2. Gown

- Long sleeves down to wrist
- Length of gown down to knees
- Ties at back of neck and waist



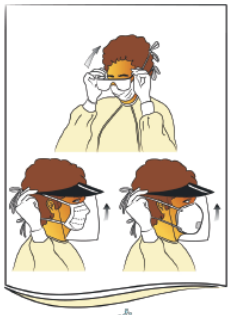
When droplet or airborne precautions are posted

3. Mask or respirator

- Place mask over nose and mouth and below chin
- Pull elastic bands over head - upper band above ear line, lower band below ear line
- Fit-check respirator by moulding nose strip over bridge of nose to get a snug fit

4. Goggles or eyeshield

- Put on goggles or eyeshield
- Some masks are supplied with eyeshield attached



5. Clean hands

6. Gloves

- Put gloves on
- Pull over wrist of isolation gown

Safety Precautions

- Avoid adjusting PPE once you enter isolation area
- Avoid touching your face
- Minimize contact with environmental surfaces

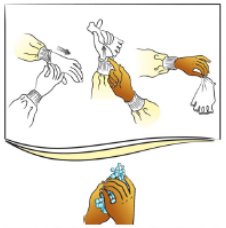
SPC Secretariat of the Pacific Community

Sequence for removing personal protective equipment (PPE)

Remove PPE at doorway or in anteroom

1. Gloves

- Grasp outside of first glove with opposite gloved hand and peel off
- Hold removed glove in gloved hand
- With ungloved hand slide finger just under wrist of gloved hand
- Roll off over first glove
- Discard in waste bin



2. Clean hands

- Using soap and water or alcohol hand rub

3. Gown

(front of gown is contaminated)

- Do not touch outside of gown
- Undo ties at neck and waist
- Roll off from neck and shoulders, turning gown inside out
- Discard in waste bin

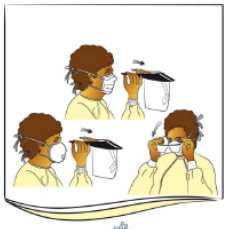
4. Clean hands

- Using soap and water or alcohol hand rub

5. Goggles or eyeshield

(front of goggles/eyeshield is contaminated)

- Do not touch front of goggles or eyeshield
- Hold earpieces of goggles or headband of eyeshield and remove
- Place in container for cleaning and disinfection



6. Clean hands

- Using soap and water or alcohol hand rub

When leaving room on airborne precautions, remove respirator mask after leaving isolation room and closing door

7. Mask or respirator

(front of mask/respirator is contaminated)

- Do not touch front of mask or respirator
- For respirator mask: grasp top tape and then bottom tape with your hands
- Lift carefully over head and remove
- For surgical mask: untie straps and lift away from face
- Discard in waste bin

8. Clean hands

- Using soap and water or alcohol hand rub

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Calling an ILI Outbreak

- 3 or more patients/staff in 7 days
- Epidemiologic linkage
- Call IPAC, obtain six pack from lab
- Perform NP swab (IH multiplex flu A/B/RSV)
- Implement droplet precautions
- Inform/implement OMS
- Cancel daily activities, patients stay in rooms, tray service
- Cancel PT, OT, volunteers, students, restrict visitors
- Post signage
- Inform unit physician
- Restrict staff who are not vaccinated and refuse Tamiflu
- No transfers or admissions

Tamiflu

- Commercial supply currently available through community pharmacies
- Provincial stockpile released to community pharmacies Oct 1.
- Available with physician prescription
  - Consider providing high risk patients a prescription in advance that could be filled during fall if they develop influenza

Tamiflu effectiveness

- Reduced duration of illness (symptoms, viral shedding)
  - By 1.2 days if started at 48 hours
  - By 3.1 days if started at 12 hours
- Reduced lower respiratory tract complications:
  - Bronchitis – 52%
  - Pneumonia – 61%
  - Does NOT reduce hospital admissions or mortality

Infection control in your office

- Droplet precautions within 1 meter
- Segregate symptomatic patients; surgical mask optional but recommended
- Remove magazines
- Provide hand hygiene
- Post a sign with patient instructions
- Virus is inactivated quickly when airborne; remains viable on inanimate surfaces
- Usual cleaning agents are okay

IMPORTANT NOTICE TO ALL PATIENTS

Please tell staff immediately if you have flu symptoms

Flu symptoms include fever, headache, tiredness, dry cough, sore throat, nasal congestion and body aches.

1

Cover Your Cough and Sneeze

- Use a tissue to cover your mouth and nose when you cough or sneeze.
- Drop your used tissue in a waste basket.
- You may be asked to wear a mask if you are coughing or sneezing.

and

2

Clean Your Hands

- Wash your hands with soap and warm water or clean with gels or wipes with alcohol.
- Cleaning your hands often keeps you from spreading germs.

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The need to protect the patients and ensure a safe health-care environment constitutes the basis for the clinical practice since the era of Hippocrates.