INFLUENZA (SEASONAL AND EPIDEMIC [H1N1])

(Last updated 07/23/2019; Reviewed by: Kang An, MD)

PRESENTING COMPLAINT: Febrile illness with respiratory symptoms

FINDINGS

- **A** Check airway
- **B** ↑ RR, increased work of breathing
- **C** ↓ /NBP, ↑ HR
- **D** Variable altered (V,P,U,D)*
- **E** Fever, Cough, Rhinitis, Headache
- **L**pc ↓ PaO_2, ↓ PCO_2, ↑ /N WBC, Influenza Swab +
- **U**pc B lines bilateral, C pattern; hyperdynamic LV/RV

***V** (verbal), **P** (pain), **U** (unconsciousness), **D** (delirious)

$\mathbf{U}_{\mathbf{PC}}$ (point of care ultrasound) $\mathbf{L}_{\mathbf{PC}}$ (point of care labs)

DEFINITION: Acute respiratory illness caused by either influenza A or B virus. Occurs in outbreaks and epidemics worldwide, mainly during the winter season.

OTHER HISTORY

- **Symptoms**
  - Fever, symptoms of upper and lower respiratory tract infection, cough, rhinitis, sore throat, myalgia, headache, weakness
- **Predisposing Conditions**
  - Residents of nursing homes and other chronic care facilities, adults ⩾ 65 years, pregnant and up to two weeks postpartum women, individuals with chronic medical conditions, morbidly obese, persons on long term aspirin therapy, children < 2 years, American Indians/Alaskan Natives (in United States and Canada)

DIFFERENTIAL DIAGNOSIS

- Other respiratory viruses and bacterial causes

OTHER INVESTIGATIONS

- **Labs**
  - The optimal specimens for influenza testing are nasopharyngeal aspirates, washings, and swabs
    - Video showing proper technique at the New England Journal of Medicine website
  - RT-PCR is most sensitive and specific, preferred

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

- Immunofluorescence antibody staining, direct or indirect
- Rapid influenza diagnostic test (screening)

- **Clinical**
  - During an influenza outbreak, acute febrile respiratory illnesses can be diagnosed as influenza with a high degree of certainty by clinical criteria

THERAPEUTIC INTERVENTIONS

- Antiviral therapy should be initiated as soon as possible, as it is most likely to provide benefit when initiated within the first 48 hours of illness; the benefits of antivirals in this context are not certain, but are recommended as current standards of care.
- **Current recommended antiviral therapy**
  - **Adult**
    - Oseltamivir: 75mg capsule twice daily orally for five days
    - Zanamivir: 10 mg inhaled twice daily for five days (adults and children over 7)
    - Peramivir: 600 mg IV once (Only approved for adults)
  - **Pediatric**
    - Oseltamivir (children 1 and under): 3 mg/kg twice daily
    - Oseltamivir (dosing for children >1)
      - 15 kg or less: 30 mg twice daily
      - 15 kg-23 kg: 45 mg twice daily
      - 23 kg-50 kg: 60 mg twice daily
      - >40 kg: adult dose
- Acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs) can be used to treat fever, headache, and myalgia associated with influenza
- Secondary bacterial pneumonia is an important complication of influenza and contributes substantially to morbidity and mortality, especially among individuals ≥ 65 years of age
  - For antibiotic regimens, see Pneumonia card
- Corticosteroid use controversial
- For management of other complications, like ARDS, sepsis, and shock, see the appropriate related cards
  - If ARDS, usually very severe hypoxemia sometimes treated with adjunct interventions, including prone positioning and ECMO
- Respiratory support, including high flow nasal cannula oxygen, noninvasive and invasive ventilation

ONGOING TREATMENT

- **Infection control and prevention**

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

- Vaccination, face masks, hand washing, standard and droplet precautions when caring for patients
- For select patients, chemoprophylaxis, considered as both oseltamivir and zanamivir, have been demonstrated effective at reducing the risk of developing influenza after exposure
    - These populations include: high risk individuals (see above) who have been exposed but were not vaccinated and unvaccinated healthcare workers with exposures and inadequate use of isolation precautions
- Oseltamavir prophylaxis
    - Children (< 3 months): not recommended
    - Children (Age 3-11 months): 3 mg/kg dose once daily for 7 days
    - Children 1 year or older
        - 15 kg or less: 30 mg daily
        - 15 kg-23 kg: 45 mg daily
        - 23 kg-50 kg: 60 mg daily
        - >40 kg: adult dose
    - Adult dosing: 75 mg PO daily for 7 days
- Zanamavir prophylaxis
    - Children 5 and over and adults: 10 mg inhaled once daily for 7 days

CAUTION

- Role of steroids is uncertain: Probably best avoid usage of them unless refractory septic shock or severe pneumonia

REFERENCES & ACKNOWLEDGMENTS

Acknowledgement: *Rashid Ali, MD; John (Jack) C. O'Horo, MD, MPH*

Harper, S. A., J. S. Bradley, et al. (2009). "Seasonal Influenza in Adults and Children—Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management: Clinical Practice Guidelines of the Infectious Diseases Society of America." Clinical Infectious Diseases 48(8): 1003-1032.

H1N1 Influenza A Disease — Information for Health Professionals — NEJM http://www.nejm.org/doi/full/10.1056/NEJMe0903992.

Centers for Disease Control and Prevention. http://www.cdc.gov/flu/index.htm

Centers for Disease Control and Prevention. Influenza antiviral medications: summary for clinicians. http://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm

Jefferson T, Jones MA, Doshi P, Del Mar CB, Heneghan CJ, Hama R, Thompson MJ. Neuraminidase inhibitors for preventing and treating influenza in healthy adults and children. Cochrane Database Syst Rev 2014;4:CD008965.65.

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt