Influenza Vaccination as Secondary Prevention for Acute Coronary Events – Where do we need to go in clinical practice?

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Disclosures

None

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The #1 Killer in the United States

- Facts about heart disease (CDC, AHA)
  - Heart disease is the leading cause of death in the United States for both men and women
    - Accounts for about **1 in every 4 deaths**
  - Each year ~720,000 people have heart attacks
    - 205,000 of these are recurrent events
  - 1 in 3 adults are affected by CV disease

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Traditional Risk Factors for CVD

- Hypertension
- Hyperlipidemia
- Age
- Smoking history
- Early family history of CVD in first degree relative
- Obesity
- Diabetes mellitus

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Preventing Adverse Events from CVD

- Medications
  - Aspirin, Beta-Blockers, ACEi/ARBs, Statins
- Lifestyle changes (exercise, weight loss)
- Smoking cessation
- Devices
  - Coronary stents, implantable defibrillators, etc..
- Improved management of comorbid conditions (hypertension, diabetes mellitus, obstructive sleep apnea, etc.)

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Pathophysiology of acute coronary events

- Lipid plaque invades the lining of the coronary arteries
- If this plaque ruptures, thrombosis can occur leading to heart attacks
- Inflammation is a key factor in the initiation of plaque formation as well as progression to rupture
- Infections have been linked to heart disease as well
  - Some organisms found directly in plaques
  - Others felt to cause CVD through their role in inflammation
- Observational studies have identified increased cardiovascular events during influenza season

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The real question…

- Does influenza vaccination reduce the risk for CV events?
  - FLUVACS (2004) study randomized patients with heart attack or planned angioplasty to vaccine or placebo
    - Showed significant reduction in risk of cardiovascular mortality at 1 year
  - FLUCAD (2007) study included optimally treated CAD patients randomized to vaccine or placebo
    - No difference in primary endpoint of CV death
    - However, vaccine group had significantly less coronary ischemic events

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A more recent study…

- A meta-analysis published in the *Journal of the American Medical Association* (JAMA) in 2013 evaluated the link between Influenza vaccination and cardiovascular outcomes
- This study looked at all RCTs that assessed the influenza vaccine in a placebo vs standard of care approach and cardiovascular events
- Primary endpoint was a composite of major cardiovascular events

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2013 Meta-analysis findings

- Results
  - Analysis of 5 RCTs showed a 64% relative risk reduction (p=0.003) in MACE within 1 year of the vaccine
    - NNT was 58
  - Subgroup analysis of RCTs involving patient with CAD suggested that the vaccine lowered risk most significantly in patients with a recent acute coronary syndrome (ACS)
    - NNT was 8 to prevent MACE in patients with recent ACS

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What do the guidelines recommend?

- AHA/ACCF 2011 Update on Secondary Prevention and Risk Reduction in patients with CVD
  - Class 1 (highest recommendation, should be done) with Level of Evidence *B* (single randomized trial or nonrandomized studies) that ALL patients with CVD receive annual influenza vaccination
- CDC recommends annual influenza vaccination for all patient with cardiovascular disease (except isolated hypertension)
  - Recommends use of inactivated vaccine

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Where do we go from here

- We have data showing that influenza increases CV events in patients at high risk for CV events, and that vaccination can reduce risk in targeted populations
- There are many people who avoid vaccinations, for a myriad of reasons
  - Nationwide telephone survey of patients with cardiovascular disease identified multiple reasons for lack of influenza vaccination
    - 1) Did not believe they were at high-risk
    - 2) Afraid of "catching the flu" from the vaccine
    - Also included "my doctor did not recommend it"
  - Many patients are not afraid of influenza

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Where do we go from here

- Patients with heart disease comprise a large proportion of our population and reduction of morbidity/mortality in this group could significantly impact overall outcomes
- Prior data from CDC suggests that only 1 in 3 patients with CAD receive the influenza vaccine
- These patients in general have regular clinic follow-ups which should offer opportunities to vaccinate at-risk individuals

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Where do we go from here

- As medical practitioners, we need to provide better education for our patients
- In addition to standard therapies discussed at the start of the talk, we have an additional (CHEAP and EFFECTIVE) therapy to offer our patients
- Based on data we have, we can educate patients that the **influenza vaccine** not only reduces the risk of getting the flu and its complications, but also **reduces the chance of a heart attack**
  - This discussion alone may help drive the point home to our at-risk patients with CVD

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Where do we go from here

- Continued education through professional societies (ACC, AHA, etc..) for physicians
- Public health campaigns could help to inform the public
  - Anecdotally, many patients make major behavioral modifications after an MI
    - Consider including a discussion of the importance of influenza vaccination during the hospitalization and at time of discharge following a CV event
- Patients with CVD take many prescription medications
  - Opportunity for pharmacists to identify at-risk patients and recommend influenza vaccination

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Thank you!

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