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

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Disclosures

None
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

• Prior data from CDC suggests that only 1 in 3 patients with CAD receive the influenza vaccine

Traditional Risk Factors for CVD

• Hypertension
• Hyperlipidemia
• Age
• Smoking history
• Early family history of CVD in first degree relative
• Diabetes mellitus
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.)

Pathophysiology of acute coronary events

- Lipids invade the lining of the coronary arteries and initiate plaque formation
- 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
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

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
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

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
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

Where do we go from here

• In addition to standard therapies discussed at the start of the talk, we have an additional (CHEAP and EFFECTIVE) therapy to offer our patients

• As medical practitioners, we need to provide better education for our patients
  – These patients in general have regular clinic follow-ups which should offer opportunities to vaccinate at-risk individuals

• 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
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

Thank you!