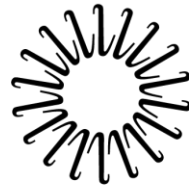




# COPD Exacerbation and Prevention/Control of Infection



## **Lifespan Cardiovascular Institute**

**Rhode Island Hospital • The Miriam Hospital  
Newport Hospital**

*Delivering health with care.®*

Center For Cardiac Fitness  
Pulmonary Rehab Program  
The Miriam Hospital

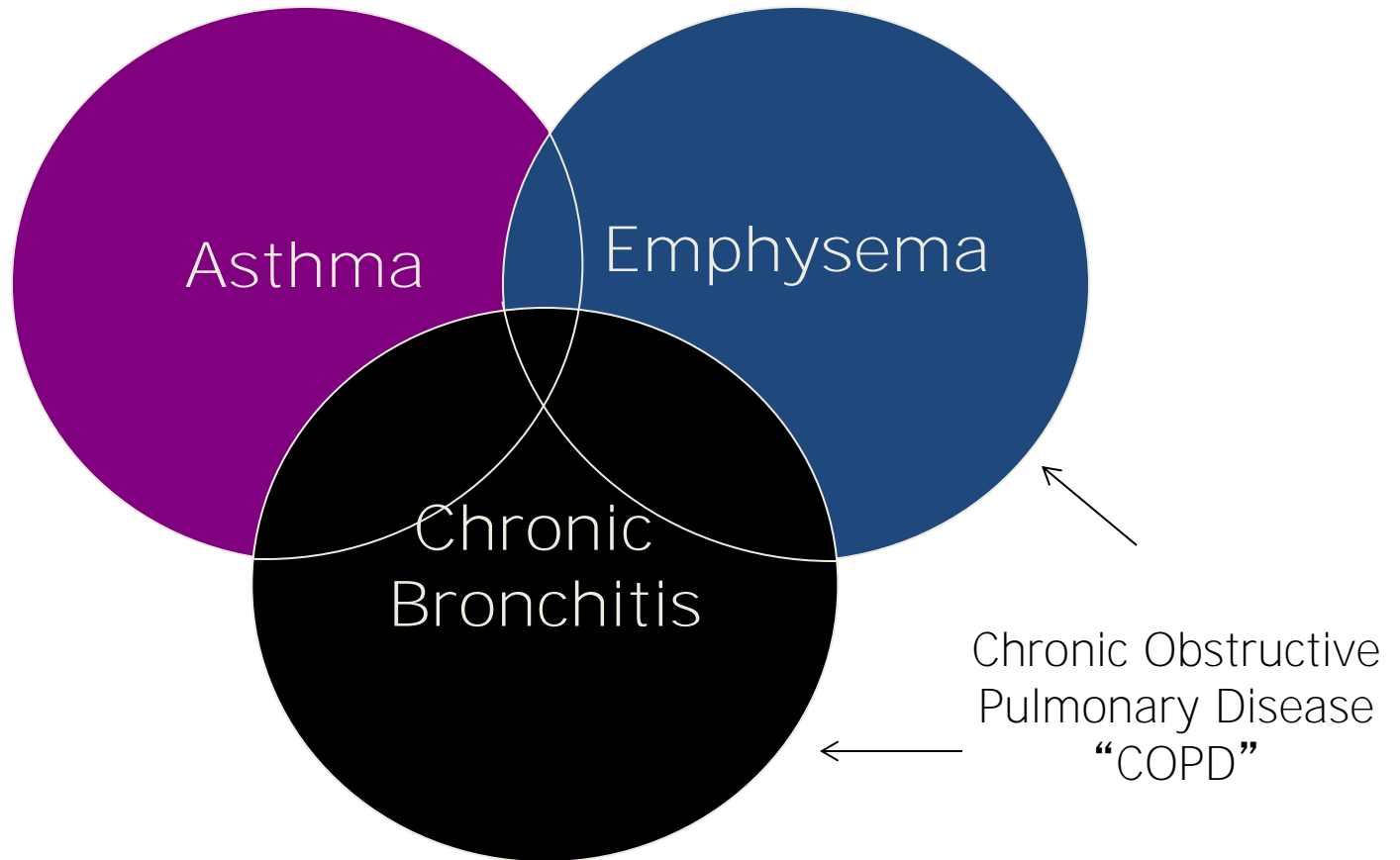
# Outline

- Background COPD
- Acute Exacerbation of COPD
  - Prevention of COPD Exacerbations
    - Tobacco Cessation
    - Medications in COPD
- Prevention of Infection
  - Hand Hygiene
  - Vaccinations

# What is COPD?

- COPD is a chronic respiratory disease characterized by airflow limitation
- Affects more than 5% of the population
  - 13 million adults in the United States
- Third leading cause of death in the United States
- Smoking is by far the most important risk factor

# Obstructive Lung Diseases



# COPD: Chronic Bronchitis

Normal bronchi



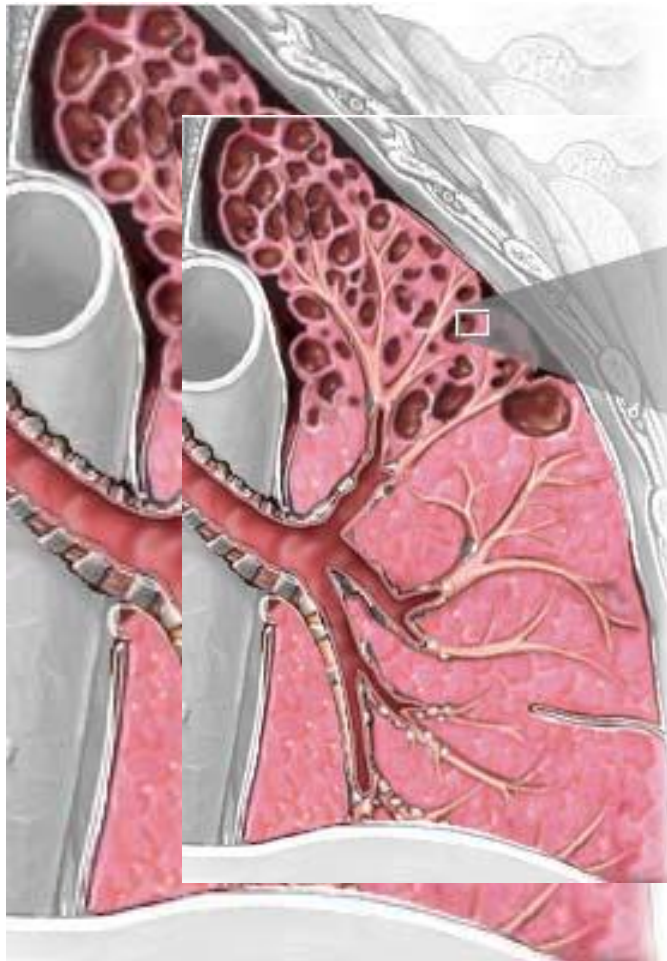
Bronchitis



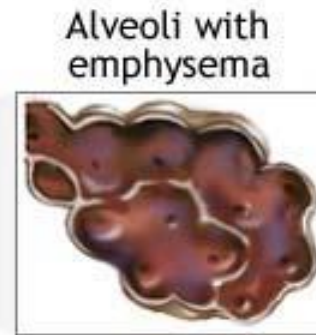
Thickened airway wall

Increased Mucus Production

# COPD: Emphysema



Alveoli with emphysema



Alveoli with emphysema

Microscopic view of normal alveoli



ADAM.

ADAM.

# What is COPD?

- COPD is a chronic disease that is both preventable and treatable
- Airflow limitation is typically progressive and gets slowly worse over time
- Enhanced airway inflammation makes patients susceptible to “exacerbations” and infections
  - 1.5 million ER visits and 750,000 hospitalizations per year

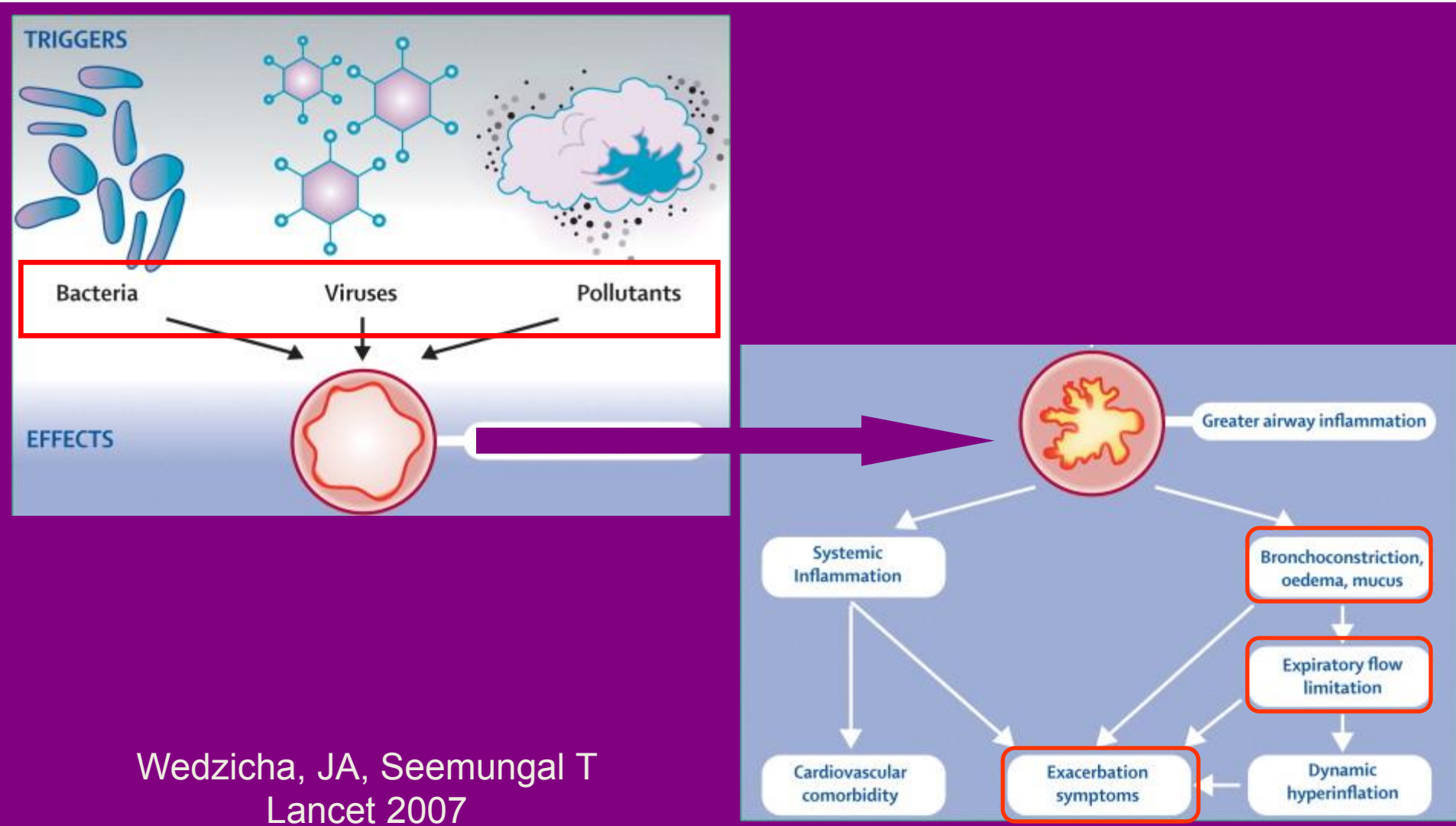
# Acute Exacerbations of COPD and Prevention



# COPD Exacerbation

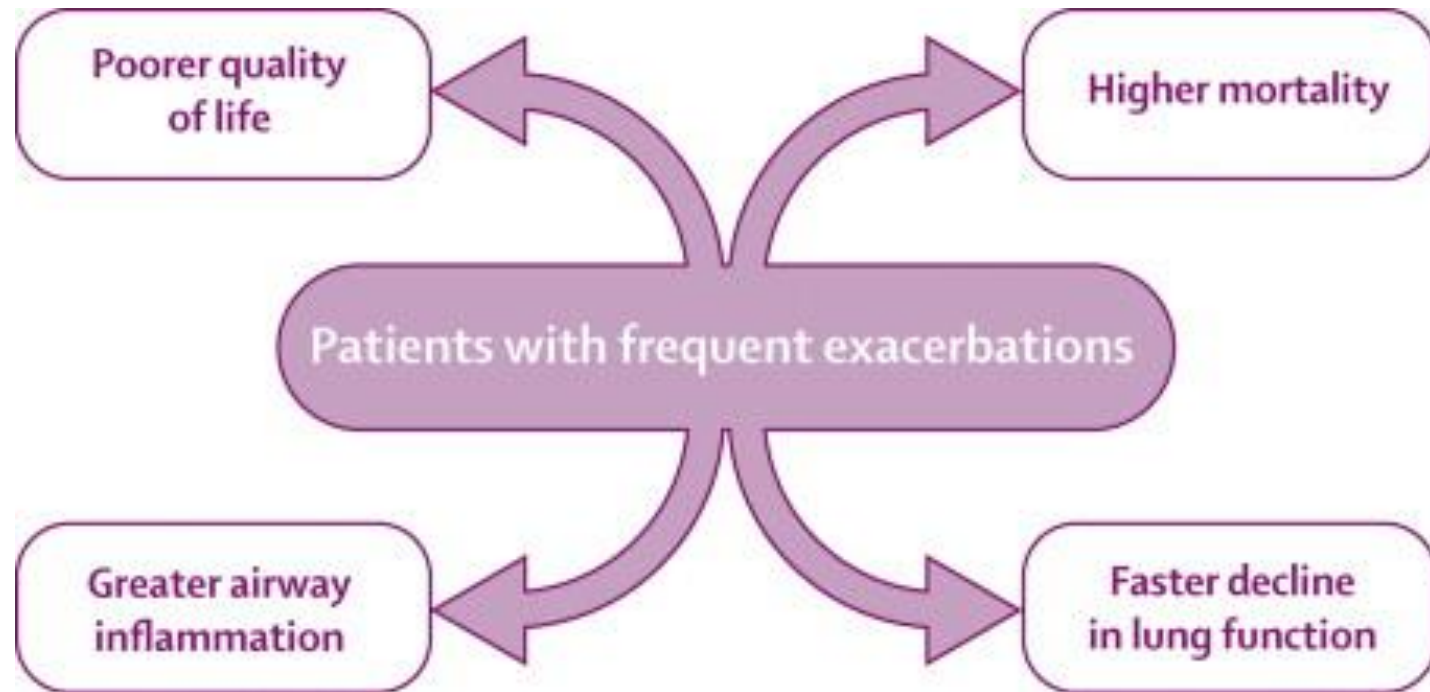
- Acute worsening of respiratory symptoms occurring over a few days to weeks
- Possible symptoms include:
  - More breathless than usual
  - Less energy for daily activities
  - Increased or thicker phlegm
  - Change in color of phlegm
  - Increased use of rescue inhaler
  - Increased cough
  - Feeling of having a “chest cold”
  - Symptoms at night
  - Loss of appetite
  - Feeling that medications are no longer helping

# Triggers of COPD Exacerbations

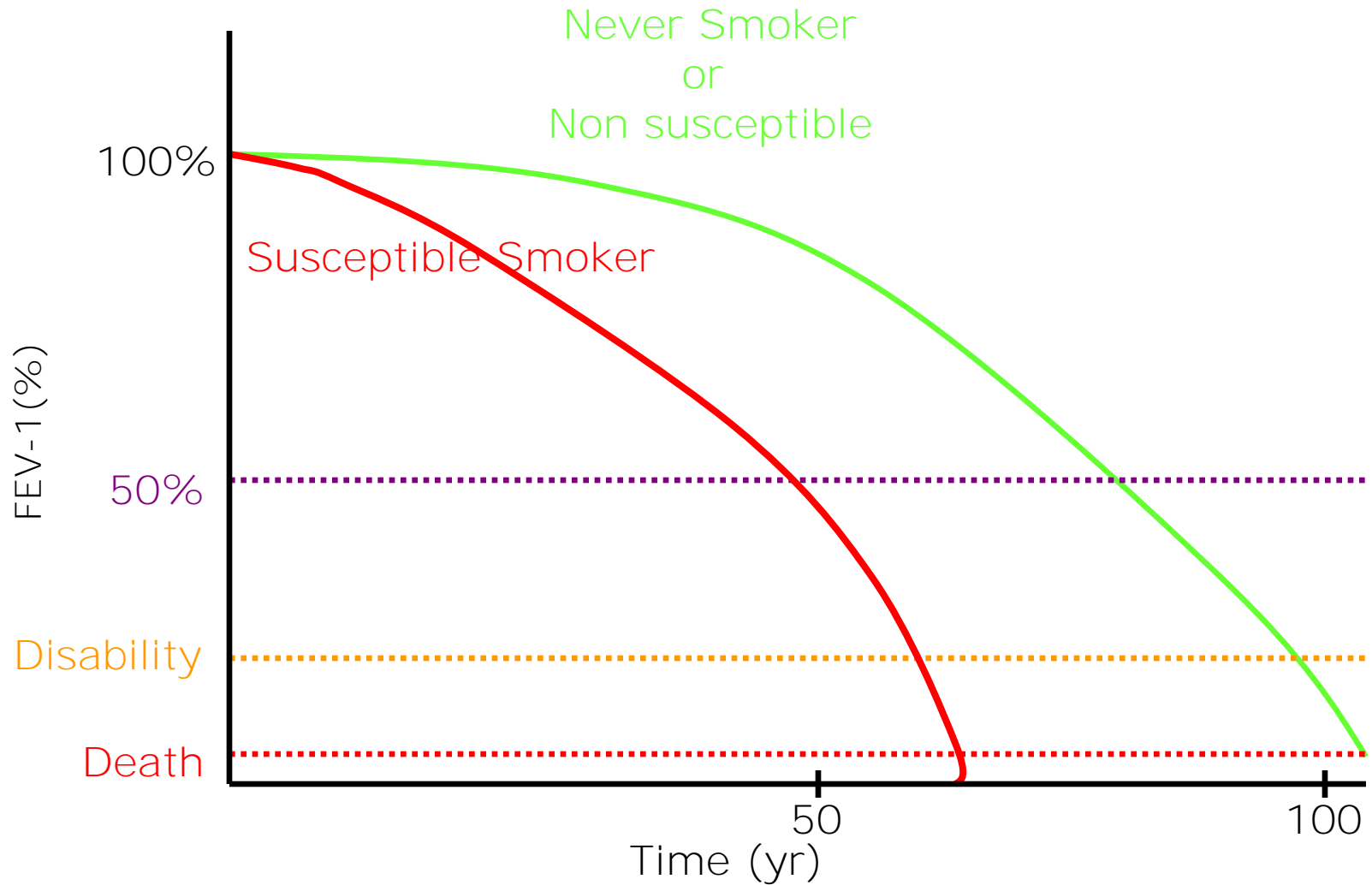


Wedzicha, JA, Seemungal T  
Lancet 2007

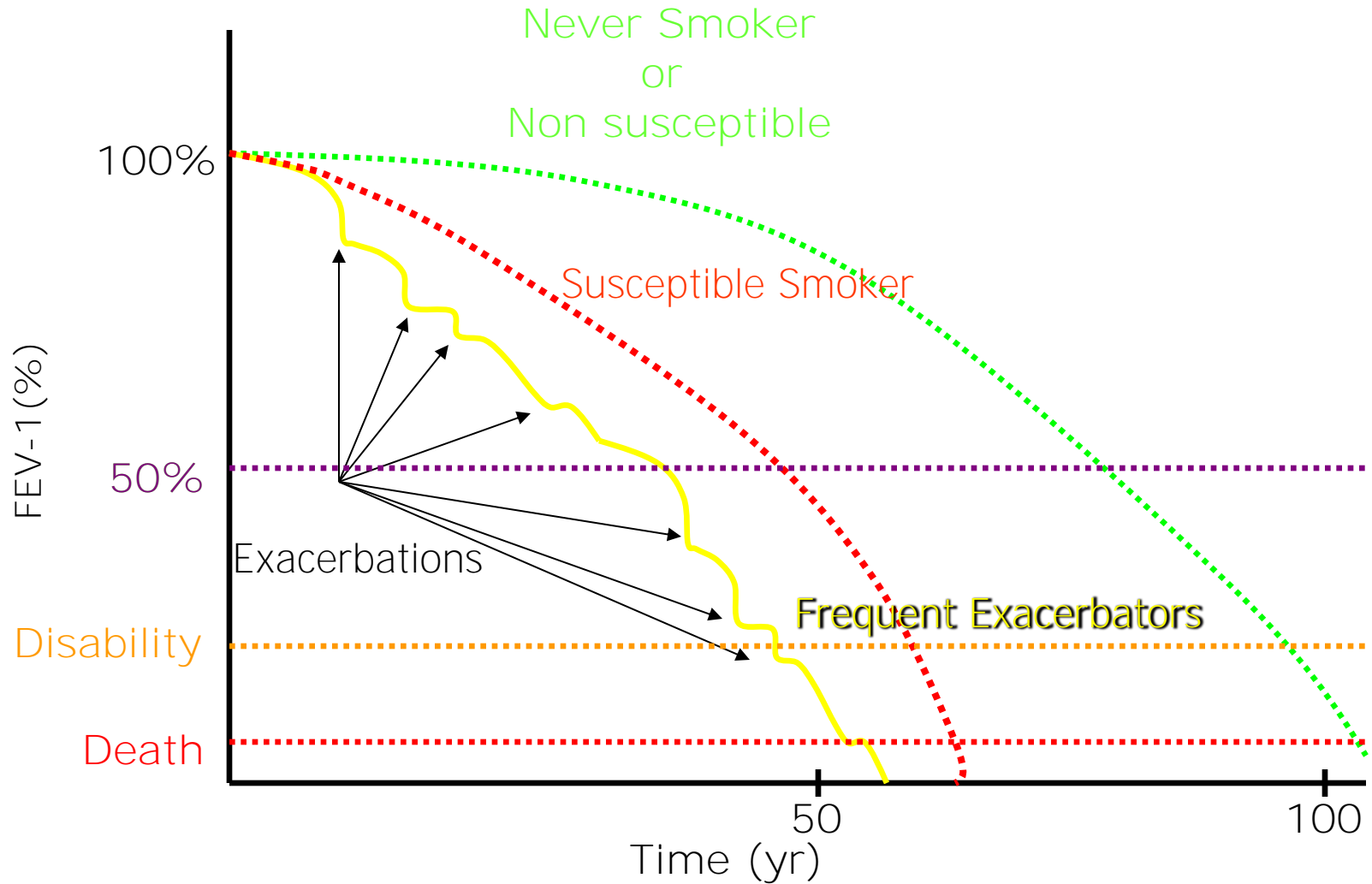
# Frequent *Exacerbators* Associated With Many Worse Outcomes



# Natural History of Lungs



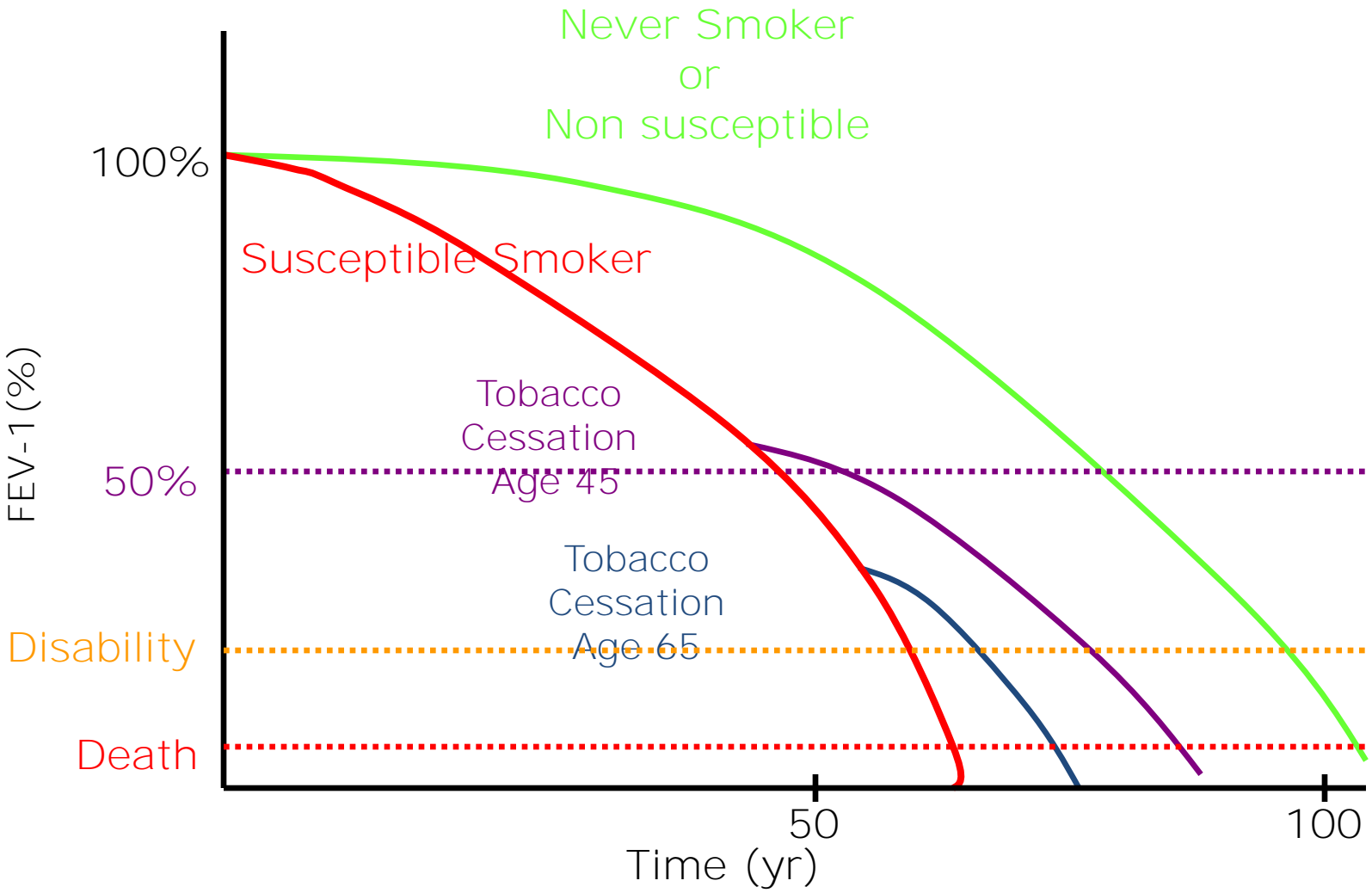
# Frequent Exacerbators



# Reduction in Exacerbations

- Smoking Cessation
- Medication Compliance
- Early Treatment of Exacerbations
- Hand Hygiene and Vaccinations

# Tobacco Cessation and Natural History of Lung Function



# Tobacco Cessation

- Self-help and group smoking cessation programs
  - Average 7 attempts to quit
- Nicotine replacement therapy
  - Chewing gum with better quit rates than counseling alone.
  - Transdermal nicotine patches
    - Long-term success rates range from 22-42%, vs 2-25%.
- Prescription Medications
  - Bupropion (Wellbutrin)
    - 1 year quit rates 23% vs. 12% with placebo
  - Varenicline (Chantix)
    - 1 year quit rates 23% vs. 9% with placebo

THE SATURDAY EVENING POST

## BELIEVE IN YOURSELF!



Don't test one brand alone ... compare them all!

Unlike others, we never ask you to test our brand alone. We say ... **compare** PHILIP MORRIS ... **match** PHILIP MORRIS ... **judge** PHILIP MORRIS against any other cigarette! Then make your own choice! Remember

**NO CIGARETTE HANGOVER**  
means MORE SMOKING PLEASURE!

**TRY THIS TEST!**  
Take a PHILIP MORRIS—and any other cigarette. Then, here's all you do:

- 1 Light up either cigarette. Take a puff—don't inhale—and s-l-o-w-l-y let the smoke come through your nose.
- 2 Now do exactly the same thing with the other cigarette.

NOTICE THAT PHILIP MORRIS IS DEFINITELY LESS IRRITATING, DEFINITELY MILDER!



CALL FOR **PHILIP MORRIS**





# Medications for COPD

- Short acting bronchodilators
  - Albuterol, ipratropium, combivent
- Also referred to as “rescue inhalers”
- All have been shown to improve symptoms and quality of life
- None have been shown to decrease the rate of exacerbations
- No added benefit to taking short acting bronchodilators “regularly” versus “as needed”

# Short acting bronchodilators (rescue inhalers)



ProAir



Proventil



Ventolin



Atrovent



Combivent

# Nebulizers

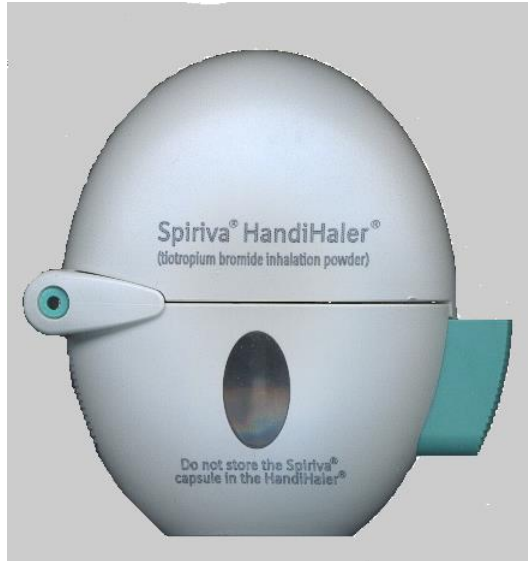
- The same medications that come in rescue inhalers are sometimes prescribed in nebulized form
- Albuterol, ipratropium, duonebs
- Most patients have similar improvement in lung function with inhalers vs nebulizers
- Some patients have a better response with neublizers



# Medications for COPD

- Long acting bronchodilators
  - Spiriva (tiotropium), Serevent (salmeterol), Foradil (formoterol)
- Maintenance Inhalers
  - Improve lung function
  - Improve quality of life
  - Reduce exacerbations

# Long Acting Bronchodilators



Spiriva



Foradil



Serevent

# Medications for COPD

- Combination long acting bronchodilator with inhaled corticosteroids
  - Advair, Symbicort, Dulera
- Reduces exacerbations compared to either agent alone
- Improves lung function
- Improves quality of life
- Can increase rate of pneumonia

# Combination long acting bronchodilators and inhaled corticosteroids



Advair

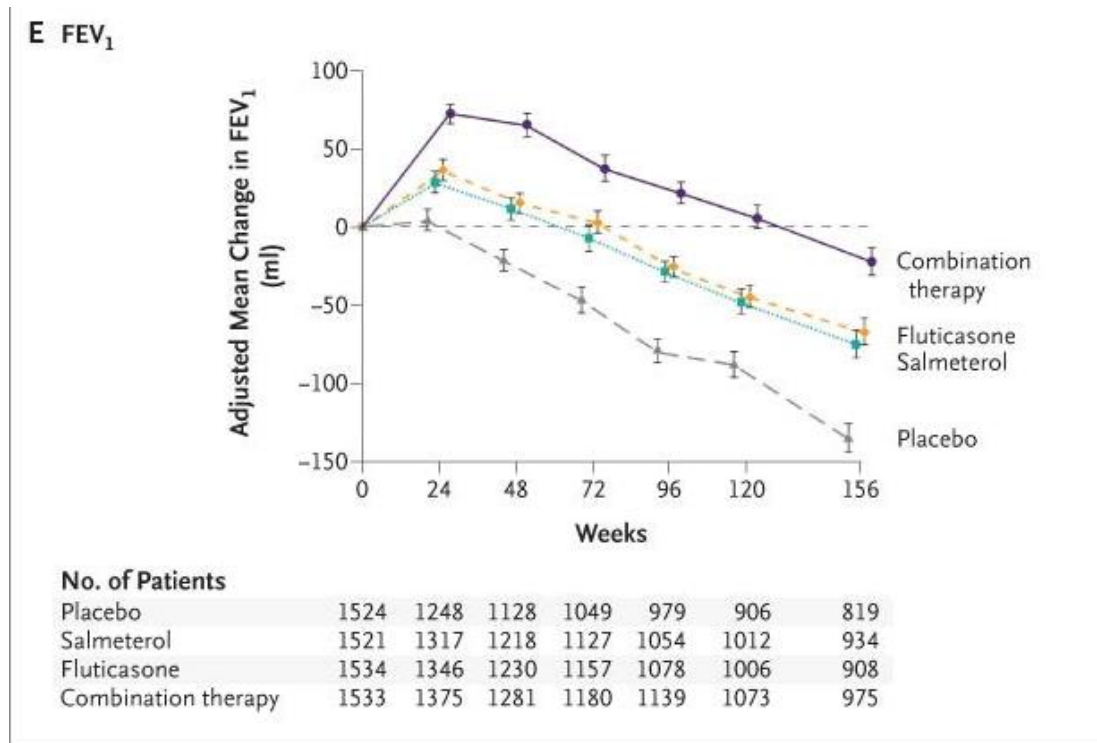


Dulera



Symbicort

# Medications improve lung function





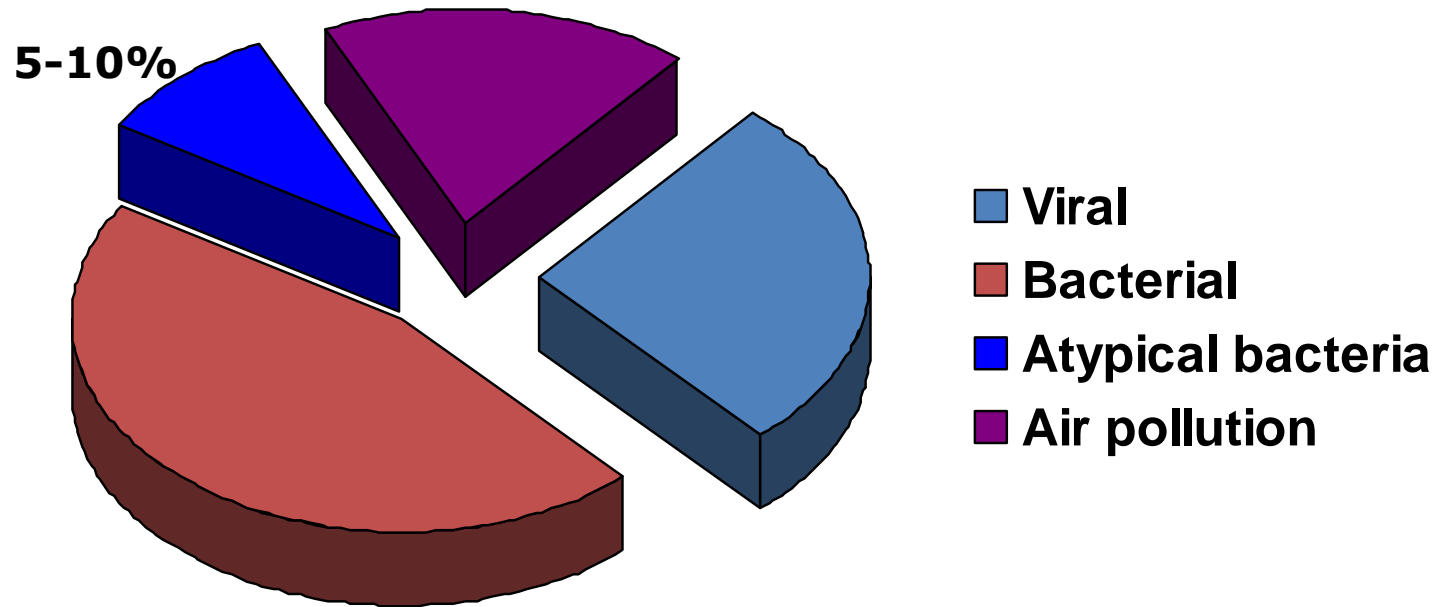
# Medication Conclusions

- Medications help to prevent hospital admission and keep patients healthy
- Common Problems:
  - feel no effect from medications
  - cost a lot of money

Avoid the urge to stop Medications

# Hand Hygiene and Vaccinations

# Triggers for COPD Exacerbations



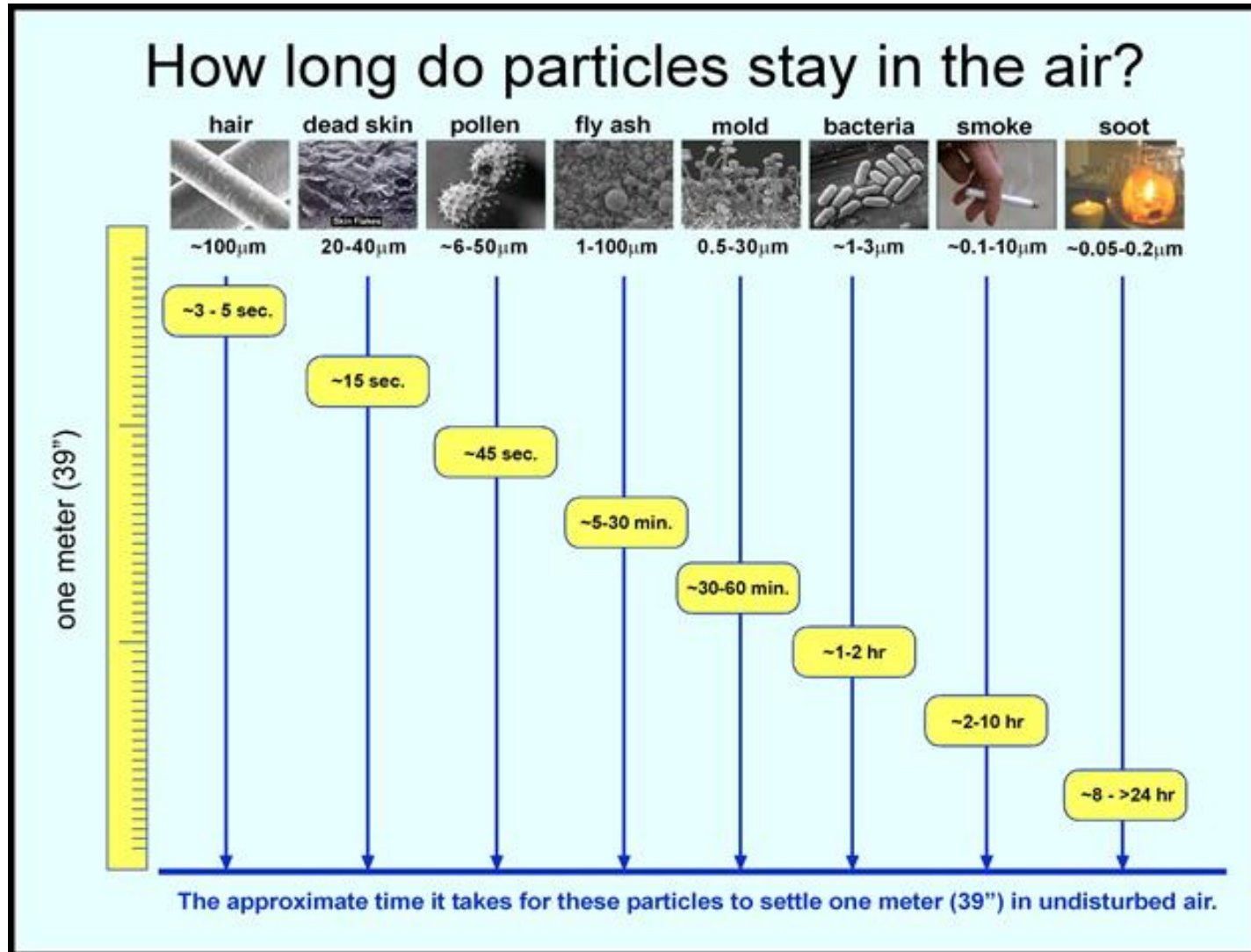
Majority of COPD exacerbations are triggered by infection

# How are germs spread?

- Germs are released into the air when you sneeze or cough



# Cover with Your Sleeve!!



# Prevent the Spread

- To prevent the spread of infection
  - Turn away from other people before sneezing or coughing
  - Sneeze or cough into your sleeve making sure to completely cover your mouth and nose
  - If you have to cough or sneeze into your hands try to use a tissue. Throw away tissue immediately after use.
  - Always wash your hands after coughing or sneezing

Your Mother Does Know Best

# Best Protection Is To Clean Your Hands

- 1 in 3 people leaving the restroom fail to wash their hands
- MD's in the hospital traveling from patient to patient
  - 70-80% compliance w/ hand hygiene
  - **Feel free to complain**



# Washing with Soap and Water

- Adjust water to desired temperature
- Moisten hands with soap and water
- Wash well under running water for a minimum of 15-20 seconds, using a rotary motion and friction
- Rinse hands well under running water
- Turn off faucet with paper towel and discard
- Dry hands with a clean paper towel and discard



# Use Alcohol Based Hand Gels

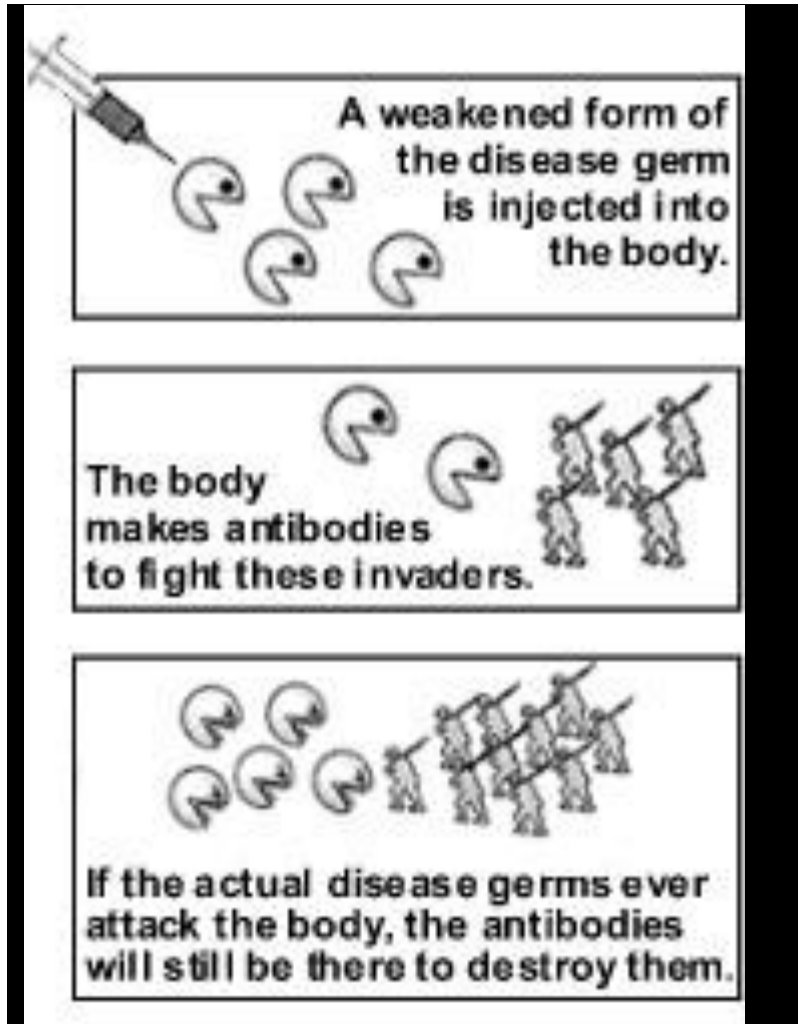
- For routine hand cleaning only if your hands are not visibly soiled
- After contact with another persons intact skin
  - i.e. shaking hands
- After contact with inanimate objects
  - i.e. telephone, door knob



# Vaccinations

Influenza and pneumococcal vaccinations are recommended for all patients with chronic lung disease!

# General Concepts



- Inject either live weakened form or part of the bacteria/virus
- Body forms antibodies against the component of the vaccine
- Antibodies subsequently fight infection if you are exposed
- Myth
  - Neither flu or pneumococcal vaccine can give you the disease
- Neither guarantee that you will not get the disease

# Community Acquired Pneumonia

# Community Acquired Pneumonia

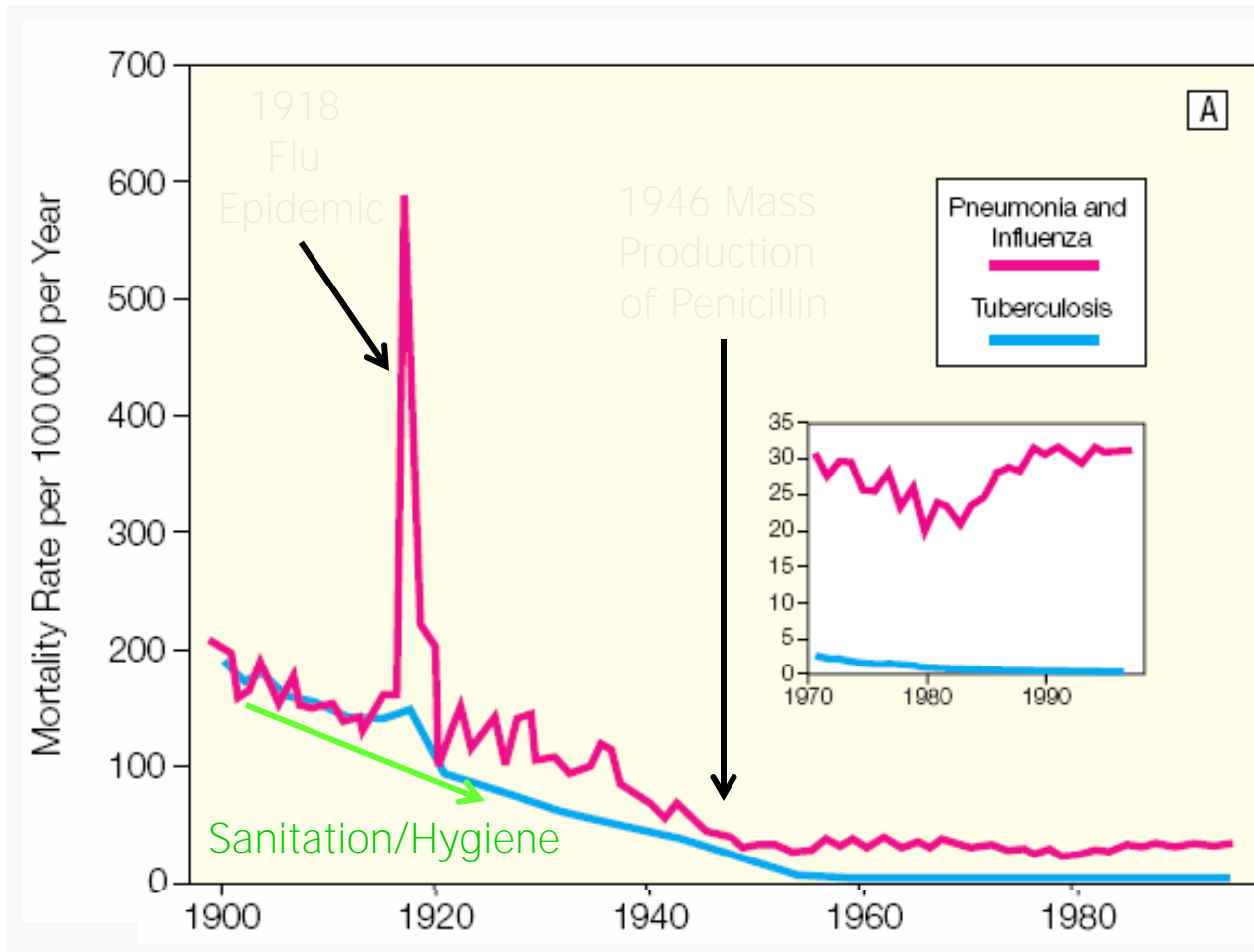
- Pneumonia No. 1 cause of infection-related mortality
  - 3<sup>rd</sup> Most frequent hospital diagnosis in patient >65 years
  - 1.3 million cases/yr in US in 2005

Cassiere et al Diss. Mon 1998 44:613-75

Niedeman et al. Annals Int Med 2009; s2-18

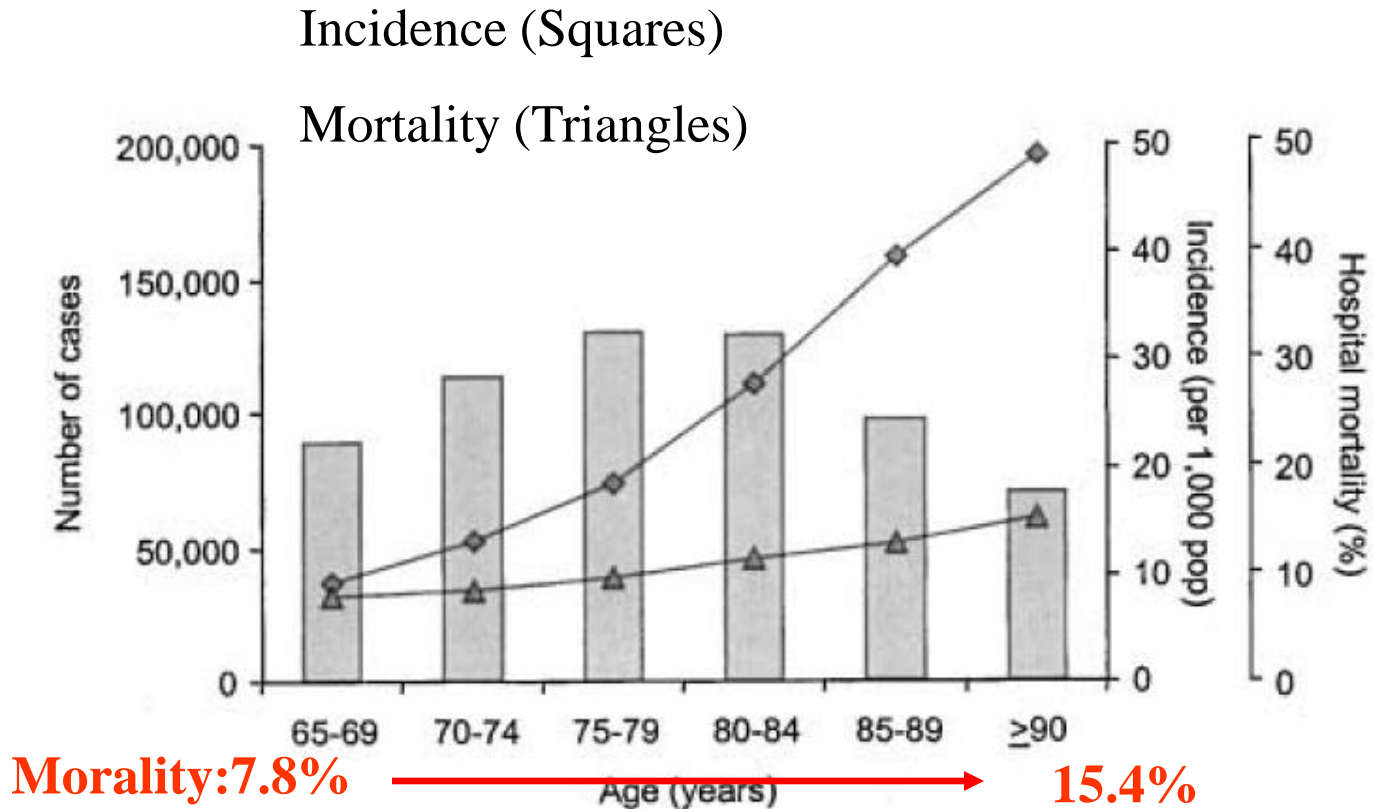
Niedermen et al Clin Ther 1998;20: 820

# Pneumonia Associated Mortality Rates



Mortality rates for pneumonia have not improved since penicillin

# Incidence and Mortality Increase with Age



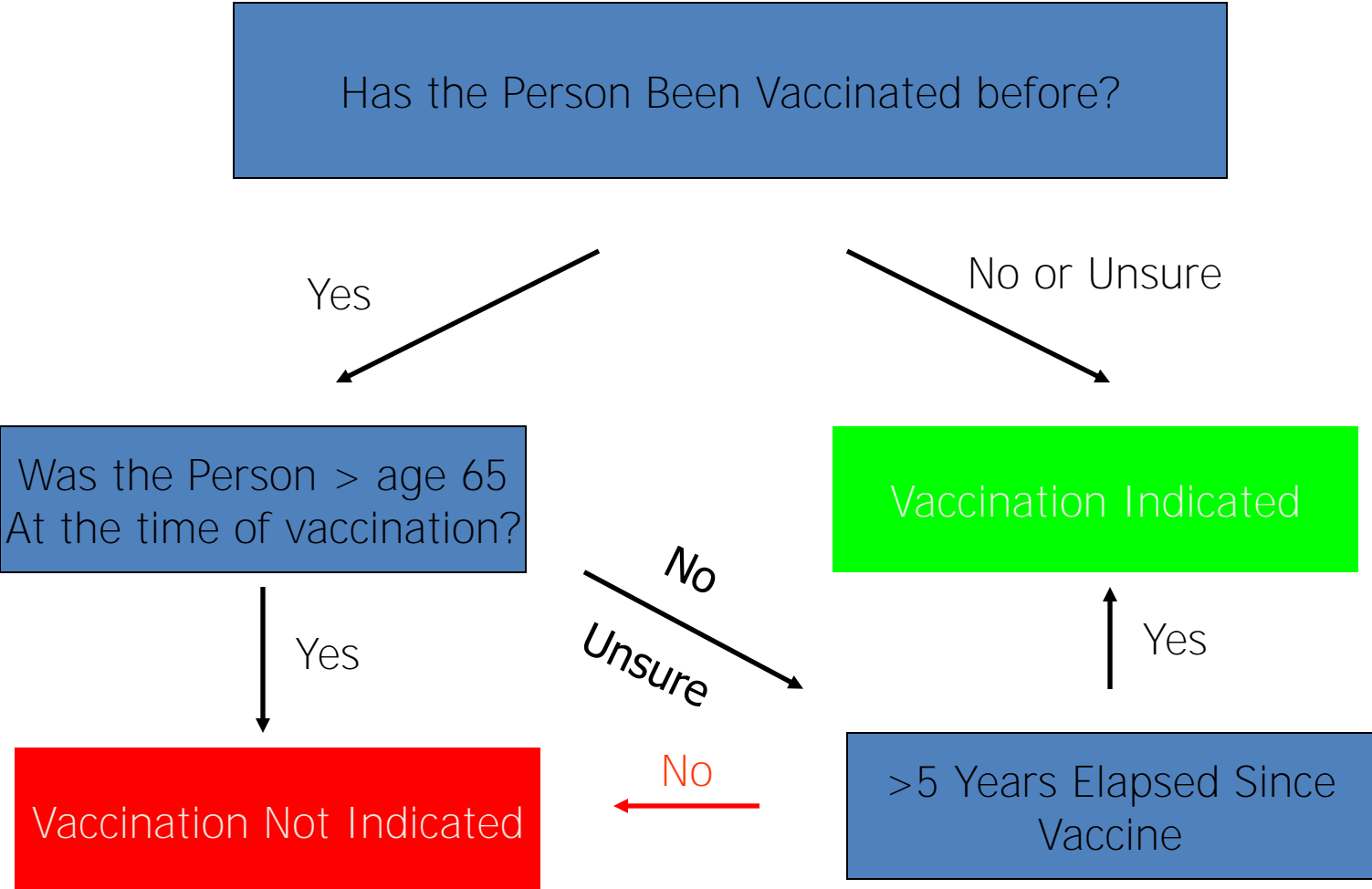
Pneumonia is the most common cause of infectious death in people age >65

# Pneumococcal Vaccination

- *Streptococcus Pneumoniae*: “Pneumococcus”
  - Common inhabitant of mouth
  - Most common cause of bacterial pneumonia- acquired in the community
    - 500,000 Cases per Year
  - Responsible for >40,000 deaths/yr
- Vaccine Recommendations:
  - Age 2-64 w chronic disease
  - All patients >65
- Vaccine does not prevent all cases of pneumococcal pneumonia but decreases the severity of disease
  - I.e. less likely to die from it
- Vaccine does not prevent other types of bacterial pneumonia



# Pneumococcal Vaccination Algorithm

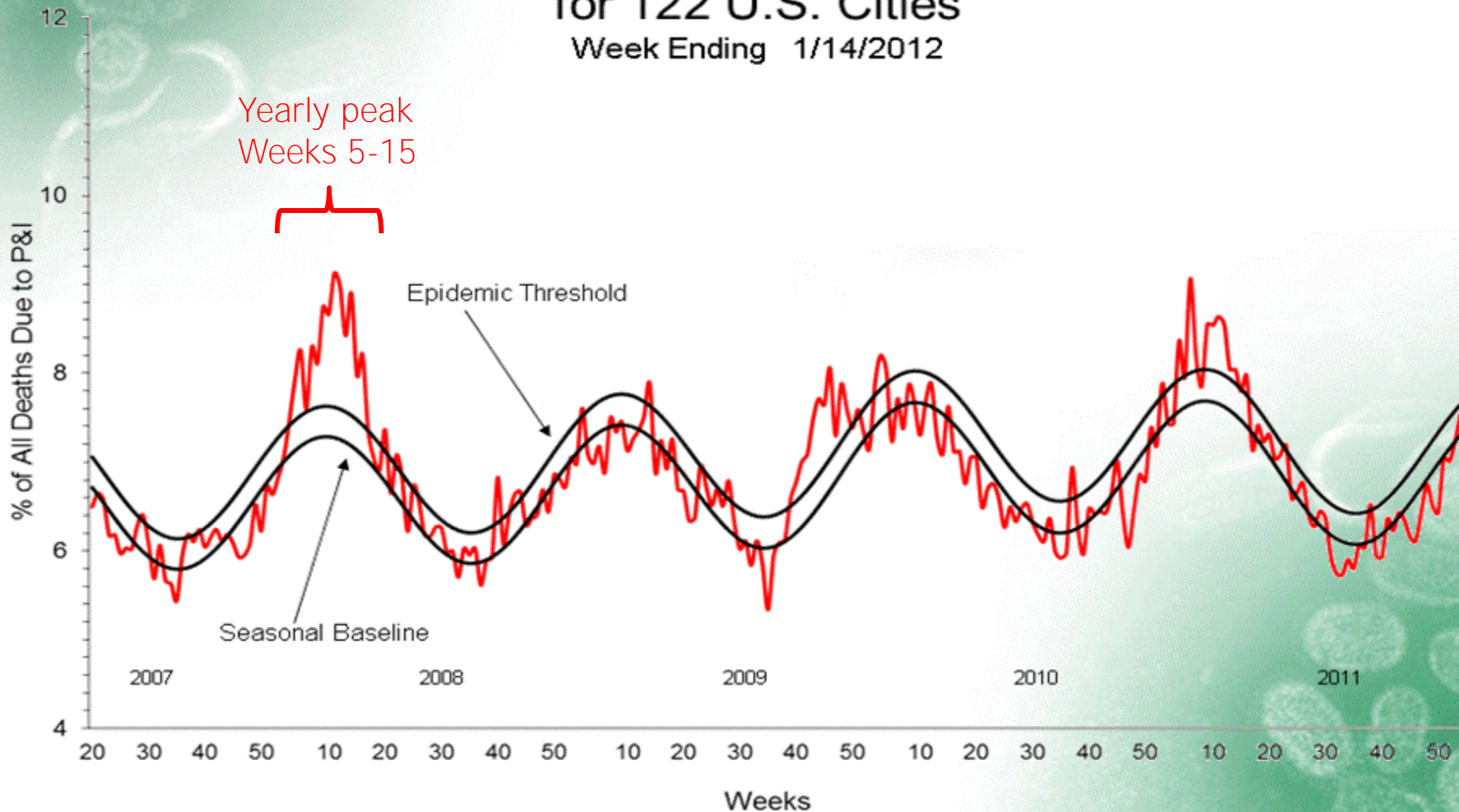


# Flu Vaccine

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

## Pneumonia and Influenza Mortality for 122 U.S. Cities

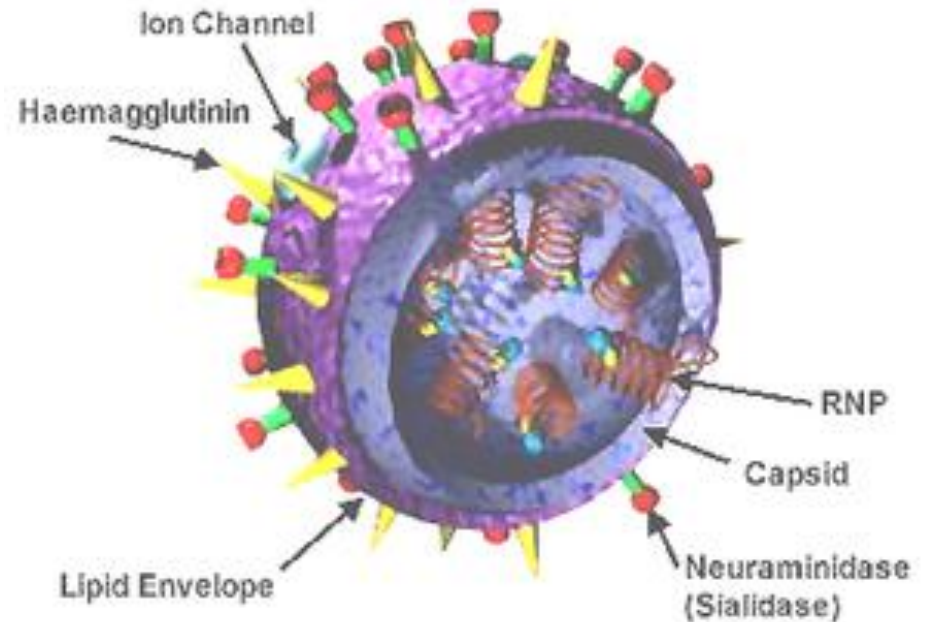
Week Ending 1/14/2012



# During Flu Season

## Vaccination:

- May not prevent the “Flu”
  - Decreases severity of disease
    - Less hospitalization, less loss of work, lower mortality



Important For People at RISK

# Conclusions

- COPD is a common progressive disease
- Acute exacerbations present significant short and long term risk to patient
- Medications can help to prevent acute exacerbations of COPD
- Tobacco cessation is the only therapy known to slow the decline of lung function in COPD
- Washing your hands is important
- The flu and pneumonia vaccines play an important role in keeping you healthy

Comments/Questions