USF HEALTH

GERIATRIC WORKFORCE ENHANCEMENT PROGRAM (GWEP)

SENIOR CONNECTION CENTER INC.
YOUR AGING & DISABILITY RESOURCE CENTER

Suncoast Community Health Centers, Inc.
"The Best Health Care Under the Sun"

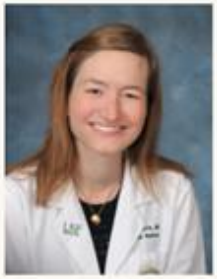
Advancing Care for Older Adults

Jan. 17, 2018

2nd Quarter QI Focus

- Smoking Status Assessment and Intervention
- Senior Connections Center Bi-directional referral process
- Advanced Directives
- Influenza Vaccinations

To Shoot or Not to Shoot: Immunization Rates & Disparities in the Elderly *Influenza Edition



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Disclosures

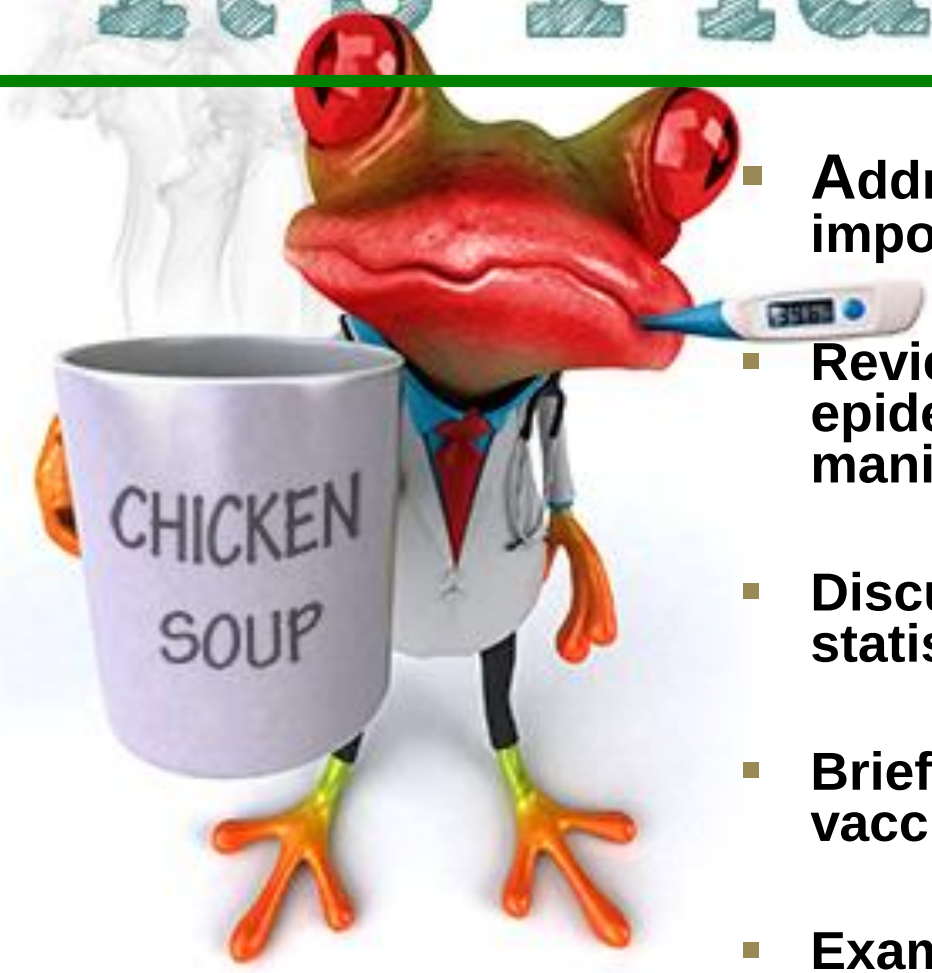
- I have no financial, personal, or familial associations to disclose

What is a Vaccine?

Agent stimulates the body's immune system to recognize the agent as foreign, destroy it, and "recognize" it, so that the immune system can more easily recognize and destroy at a later time.

-UpToDate, 2014

It's Flu Season



- Address why vaccines are an important public health measure
- Review the pathophysiology, epidemiology, and clinical manifestations of Influenza
- Discuss the current Influenza statistics in Florida
- Briefly review guidelines for flu vaccines in older adults
- Examine disparities in vaccination rates in the geriatric population
- Understand vaccine myths

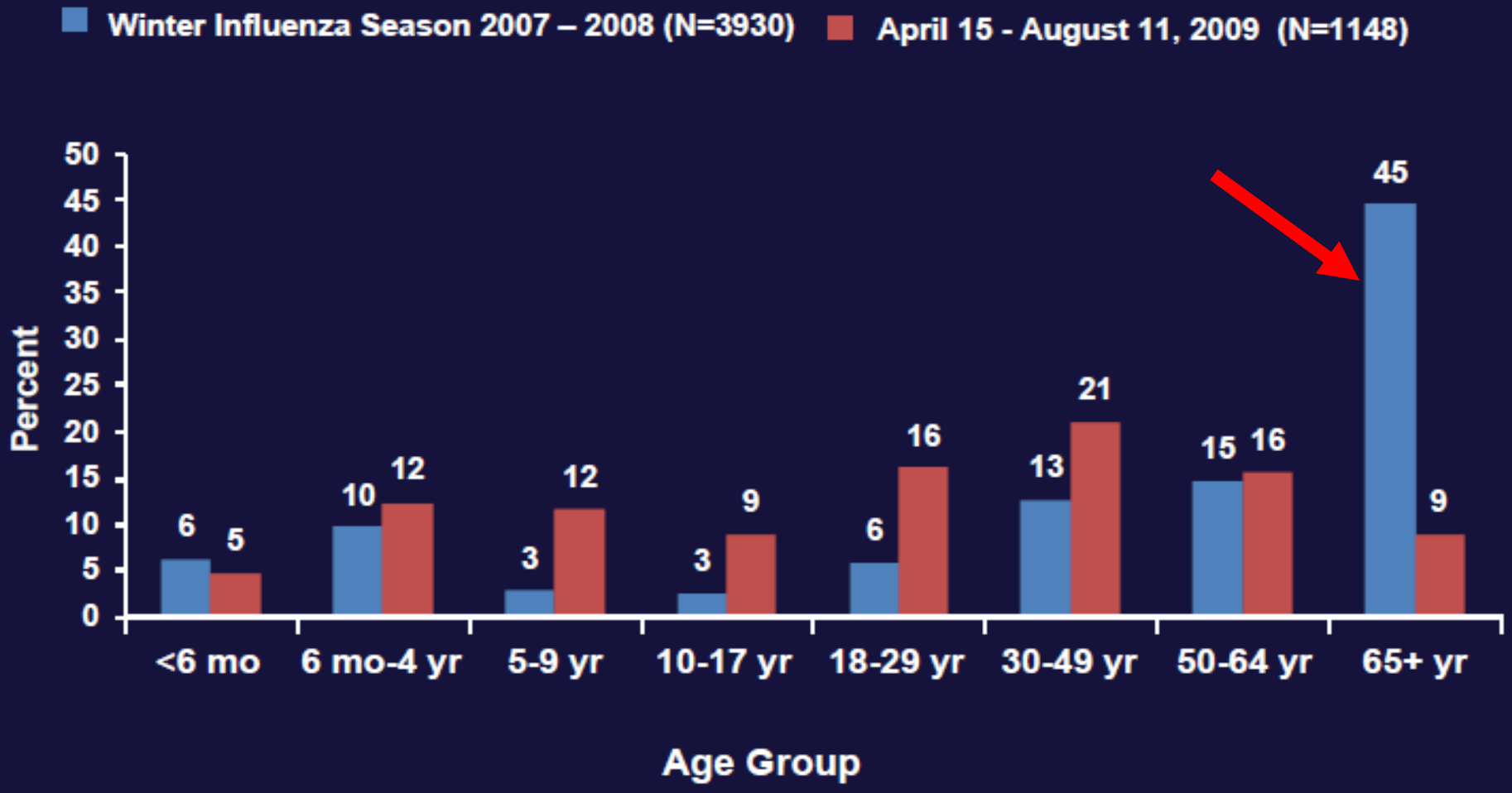
Vaccination is one of the greatest public health achievements in the United States in the 20th Century. Immunizations have eradicated smallpox, eliminated polio in the Americas, and controlled measles, rubella, tetanus, diphtheria and others.

Today, the greatest vaccine-preventable disease burden for the U.S. population is among older adults.

- Surgeon General David Satcher, MD, PhD

Remarks to Congress, August 1999

Distribution by age group of persons hospitalized with laboratory-confirmed influenza* – U.S.

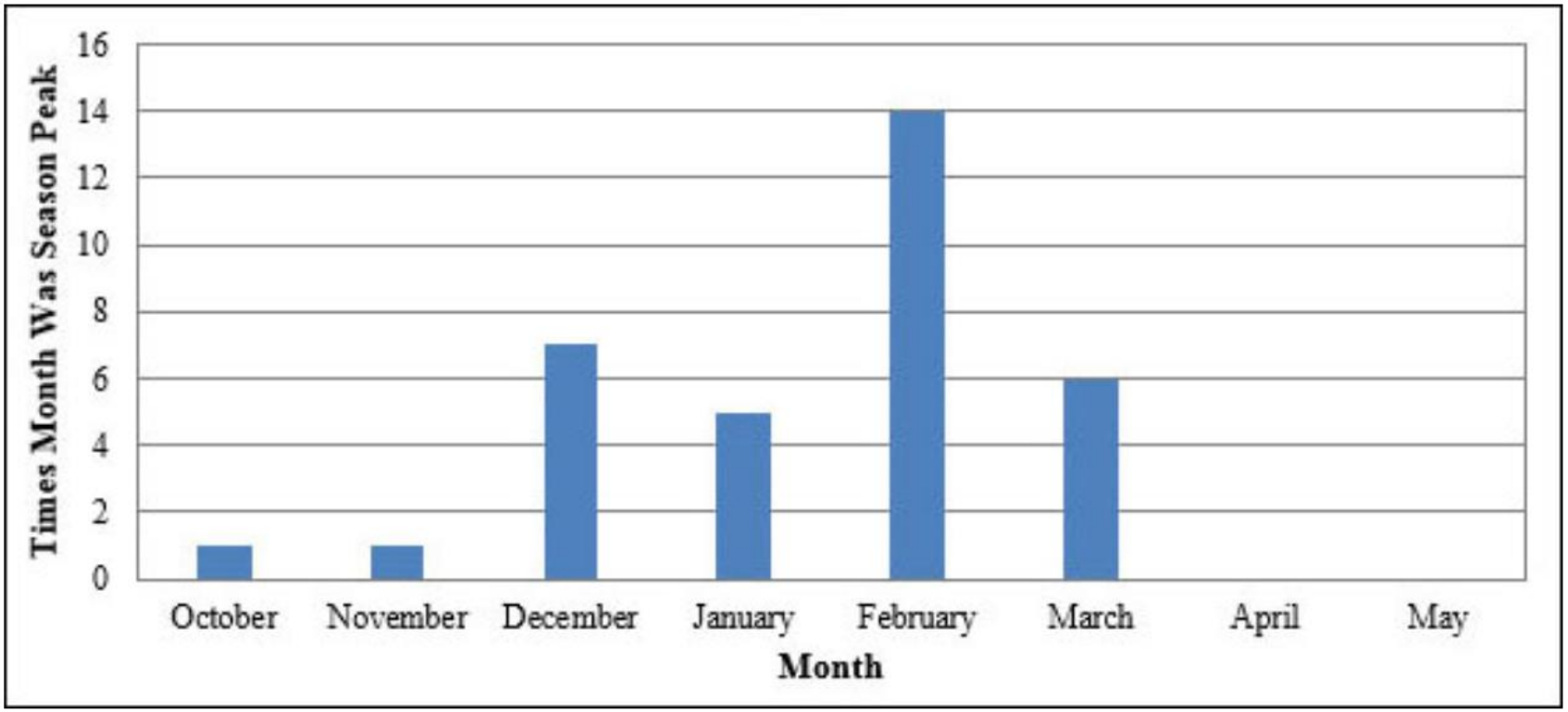


*Evidence of a positive influenza test result by viral culture, DFA/IFA, RT.

Geriatric Immunosenescence

- Decline in immune function that occurs with aging
- Multiple parts of the adaptive immune system become deregulated
- Is has effects on vaccine responses
- May be driven by chronic infections

Flu Season!!


Peak Month of Flu Activity
1982-1983 through 2015-2016
Times Month Was Season Peak
16
14
12
10
8
6
4
2
0
October
November
December
January
February
March
April
May
Month

In 2015-2016, vaccination prevented:

- Approximately 5.1 million influenza illnesses
- 2.5 million influenza-associated medical visits
- 71,000 influenza associated hospitalizations
- A 2017 study in Clinical Infectious Diseases (CID) showed that influenza vaccination reduced deaths, intensive care unit (ICU) admissions, ICU length of stay, and overall duration of hospitalization among hospitalized influenza patients.

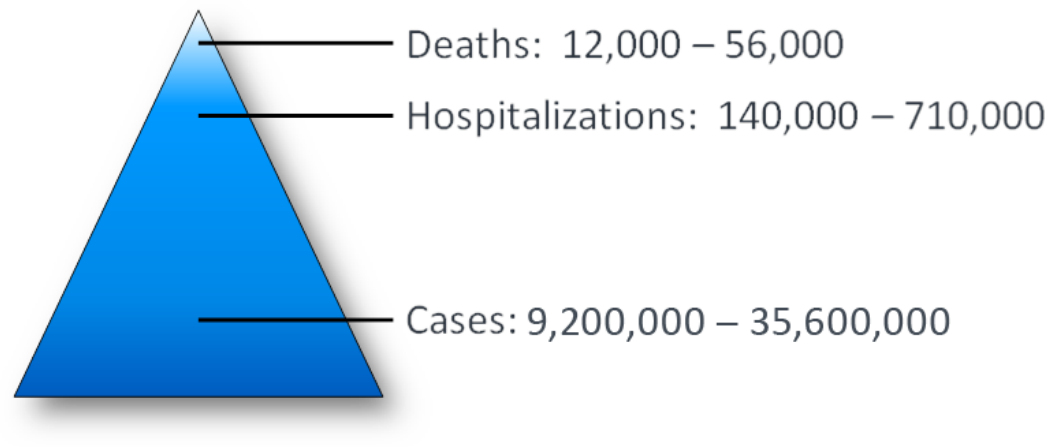
Let's not forget the kids!

- In 2017, a study in Pediatrics was the first of its kind to show that flu vaccination also significantly reduced a child's risk of dying from influenza.

RESULTS: From July 2010 through June 2014, 358 laboratory-confirmed influenza-associated pediatric deaths were reported among children aged 6 months through 17 years. Vaccination status was determined for 291 deaths; 75 (26%) received vaccine before illness onset. Average vaccination coverage in survey cohorts was 48%. Overall VE against death was 65% (95% CI, 54% to 74%). Among 153 deaths in children with underlying high-risk medical conditions, 47 (31%) were vaccinated. VE among children with high-risk conditions was 51% (95% CI, 31% to 67%), compared with 65% (95% CI, 47% to 78%) among children without high-risk conditions.

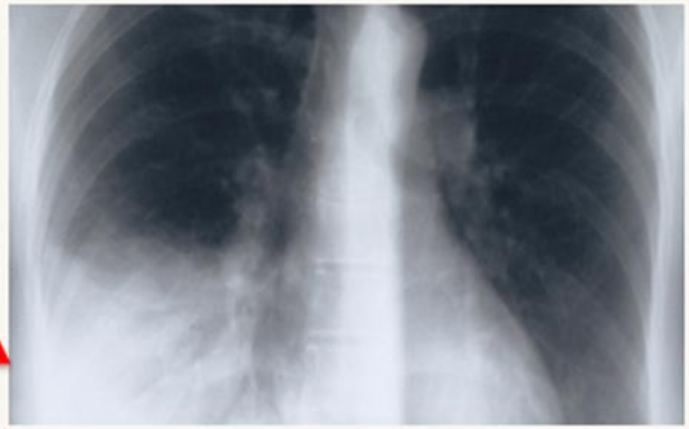
Burden of Influenza

- Between 12,000 and 56,000 deaths annually since 2010. **(>85% elderly)**
- **Influenza is the most important vaccine preventable contagious infectious disease for older adults**
- Can result in: Bacterial pneumonia, ear infections, sinus infections, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes. ARDS and multiorgan failure.



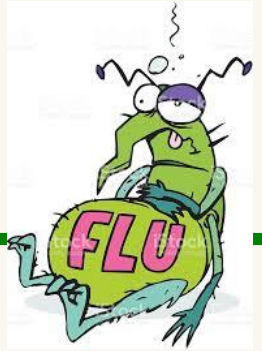
Important Public Health Measure: Vaccines Prevent Disease

Pneumonia



Influenza Pandemic of 1918

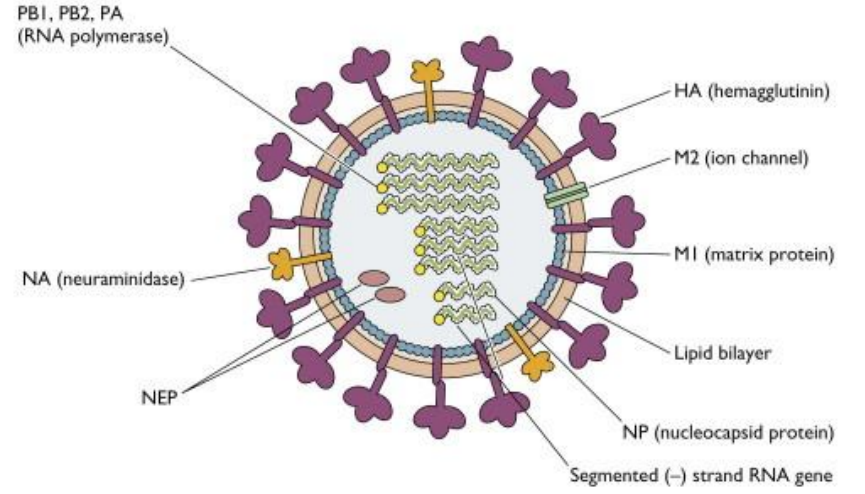
Influenza Infection



- Culprits: A, B, or C
  - Influenza A is generally more pathogenic than influenza B
  - Epidemics of influenza C have been reported, especially in young children
- Incubation period: average of 2 days
- Aerosol transmission may occur 1 day **before** the onset of symptoms
- Most contagious in the first 3-4 days
- Can last up to 5 to 7 days after becoming sick.

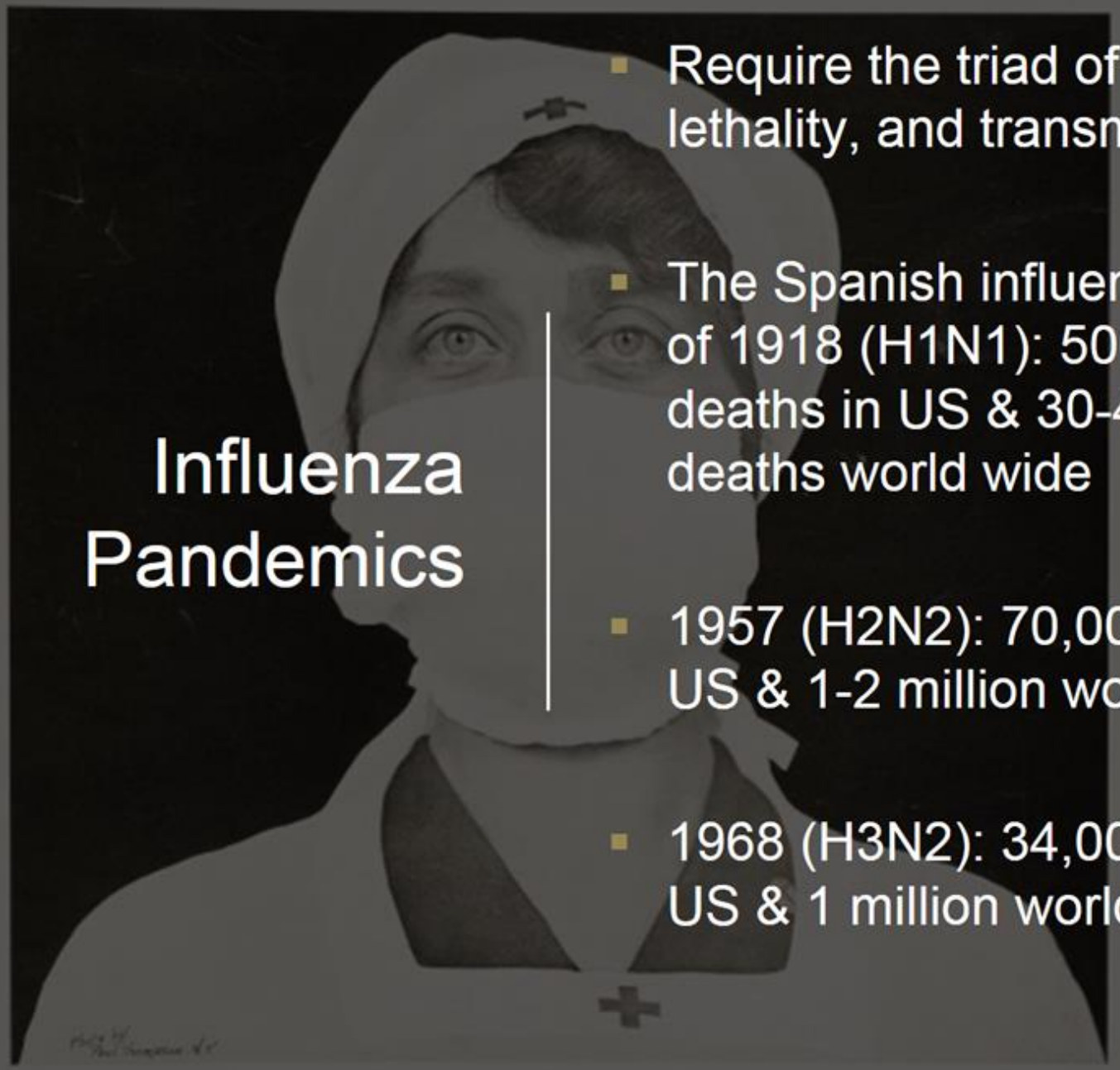
Pathophysiology

- Enveloped, negative-sense, single-stranded RNA viruses of the family Orthomyxoviridae.
- Virulence: surface proteins **hemagglutinin** (H) and **neuraminidase** (N).
- **Hemagglutinin:** binds to respiratory epithelial cells, allowing cellular infection
- **Neuraminidase:** cleaves the bond that holds the newly replicated virons to the cell surface, permitting the infection to spread



Quick Change Artist

- Influenza A has **mutation rates** as high as 300 times that of other microbes
- **Antigenic Drift:** inaccurate viral RNA polymerase produces point mutations in certain error-prone regions in the genes.
- **Antigenic Shift**: genes between 2 strains are reassorted, presumably during coinfection of a single host. Segmentation of the viral genome, which consists of 10 genes on 8 RNA molecules, facilitates genetic reassortment.

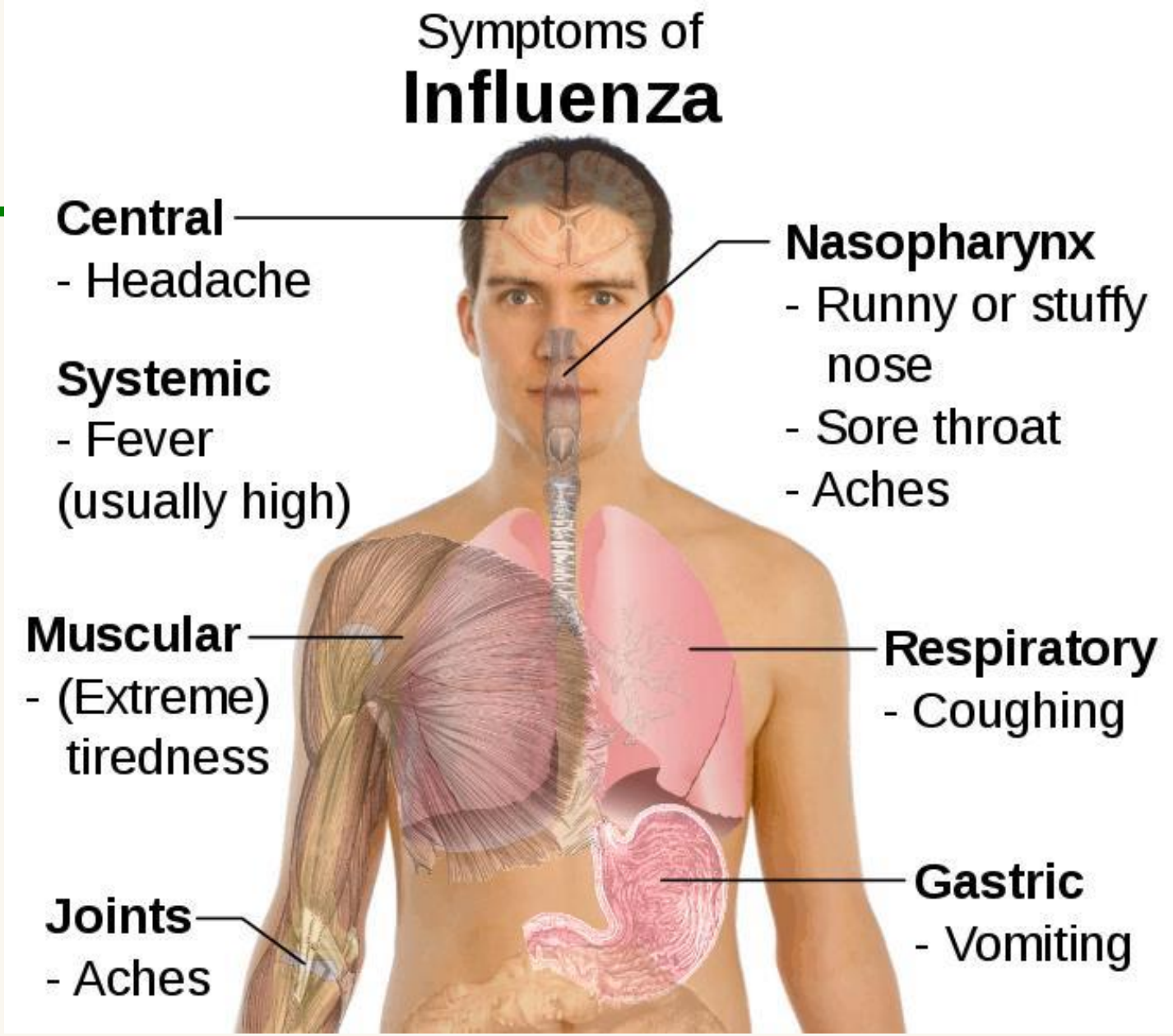


Influenza Pandemics

- Require the triad of infectivity, lethality, and transmissibility
- The Spanish influenza pandemic of 1918 (H1N1): 500-700,000 deaths in US & 30-40 million deaths world wide
- 1957 (H2N2): 70,000 deaths in US & 1-2 million worldwide
- 1968 (H3N2): 34,000 deaths in US & 1 million worldwide

What a pandemic would mean to FL

- An influenza pandemic occurs **when a novel and highly contagious strain** of the influenza virus emerges, affecting populations around the world.
- Historically, influenza pandemics have occurred **every 11-39 years**. It has been **more than 30 years** since the last pandemic.
- Florida's geographic and demographic characteristics make it particularly vulnerable
- A pandemic in FL could result in up to 10 million persons infected, with 5 million chronically ill.


Symptoms of
Influenza
Central
- Headache
Systemic
- Fever
(usually high)
Nasopharynx
- Runny or stuffy nose
- Sore throat
- Aches
Muscular
- (Extreme) tiredness
Respiratory
- Coughing
Joints
- Aches
Gastric
- Vomiting

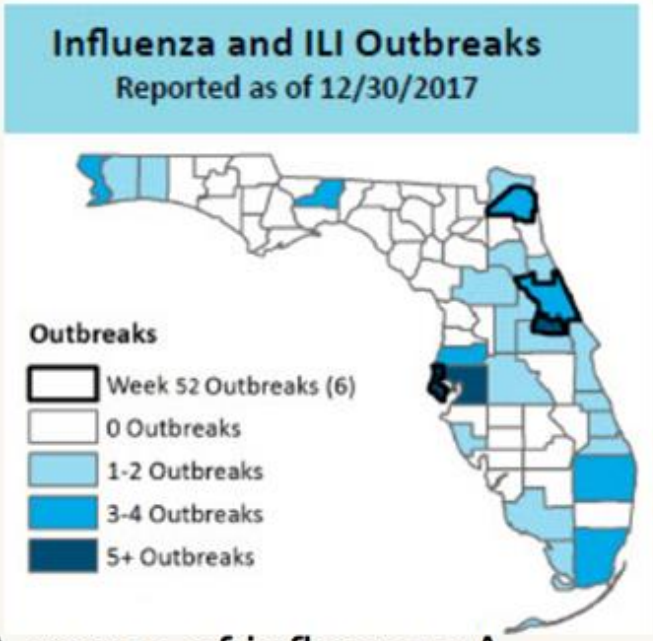
Updates from ***Florida Flu Review***

- **Dec 24-30 Flu activity levels statewide continued to increase sharply. For the fourth week in a row, they were above peak levels that had been observed during the previous two seasons. Sharp increases in activity were observed in all regions of the state and across all age groups.**

- **Visits to emergency departments among pregnant women increased sharply and remained well above levels observed during the previous two flu seasons at this time.**

- **64 outbreaks of influenza and influenza like illness (ILI) have been reported since the start of the 2017-18 season. More outbreaks have been reported so far this season than in previous seasons at this time, which may be an indication of a more severe season.**

National Statistics

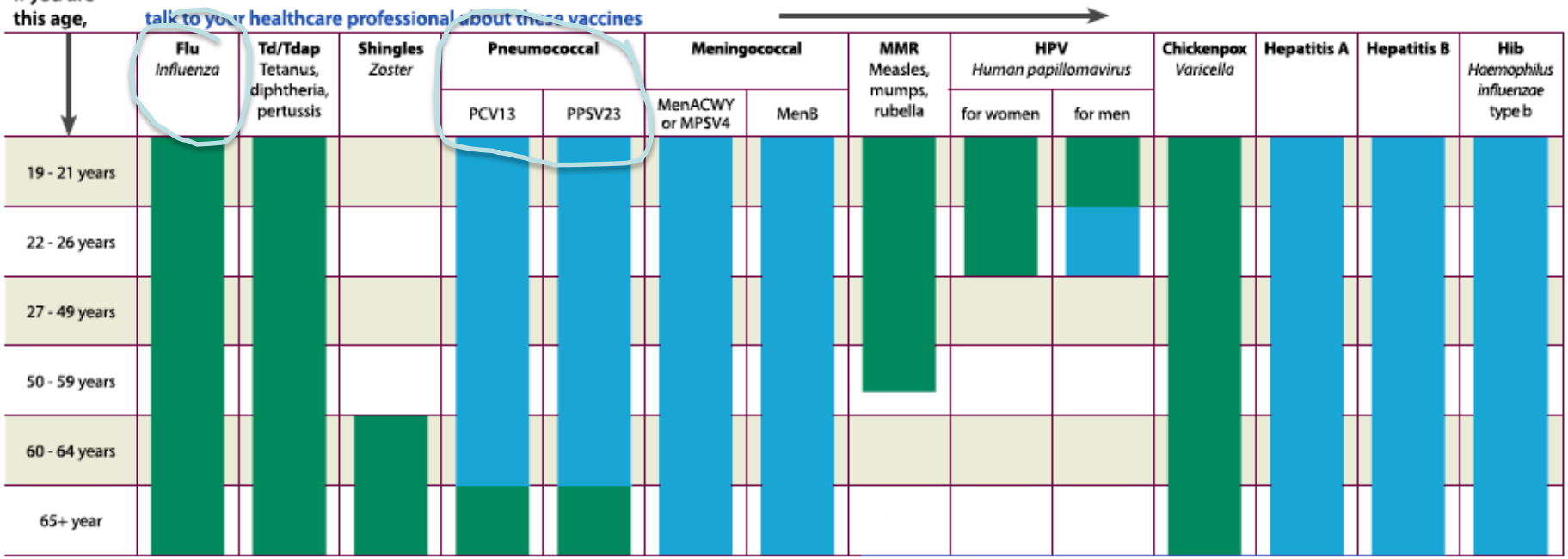


- **Influenza activity increased sharply and was well above the national baseline. The majority of states are experiencing high levels of ILI activity.**
- **As in Florida, influenza A (H3) has been the most common influenza subtype reported to the CDC.** CDC has continued to report extensive genetic diversity in the HA genes of influenza A (H3) viruses submitted to CDC for phylogenetic analysis. **No significant antigenic drift has been reported.**
- In the past, A(H3N2) virus-predominant influenza seasons have been associated with **more hospitalizations** and **deaths** in persons aged **65 years and older and young children** compared to other age groups. In addition, influenza vaccine effectiveness (VE) in general has been lower against A(H3N2) viruses than other types.

Guidelines for Vaccinations in Older Adults

INFORMATION FOR ADULT PATIENTS

2016 Recommended Immunizations for Adults: By Age



More Information:

- **Flu:** You should get flu vaccine every year.
- **Td/Tdap:** You should get a Td booster every 10 years. You also need 1 dose of Tdap. Women should get a Tdap vaccine during every pregnancy to protect the baby.
- **Shingles:** You should get shingles vaccine even if you have had shingles before.
- **Pneumococcal:** You should get 1 dose of PCV13 and at least 1 dose of PPSV23 depending on your age and health condition.
- **MMR, HPV, Chickenpox, Hepatitis A, Hepatitis B, Hib:** You should get this vaccine if you did not get it when you were a child.
- **HPV:** You should get HPV vaccine if you are a woman through age 26 years or a man through age 21 years and did not already complete the series.

Recommended For You: This vaccine is recommended for you ***unless*** your healthcare professional tells you that you cannot safely receive it or that you do not need it.

May Be Recommended For You: This vaccine is recommended for you if you have certain risk factors due to your health, job, or lifestyle that are not listed here. Talk to your healthcare professional to see if you need this vaccine.

If you are traveling outside the United States, you may need additional vaccines.
Ask your healthcare professional about which vaccines you may need at least 6 weeks before you travel.

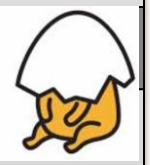
For more information, call 1-800-CDC-INFO (1-800-232-4636) or visit www.cdc.gov/vaccines

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Annual Flu Vaccine

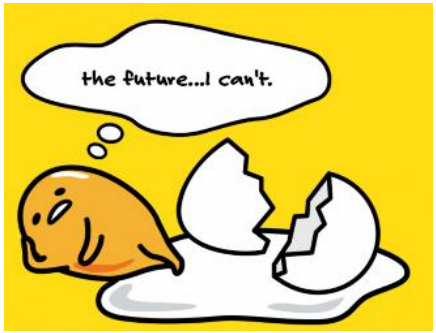
- Every year, a vaccine that contains antigens from the strains most likely to cause infection during the winter flu season is produced.
- It is effective 10-14 days after administration.
- This year's includes an A (H1N1) virus, an A (H3N2) virus, and a B virus.
- Live attenuated influenza vaccine is not recommended again this year.

Inactivated influenza vaccines, quadrivalent (IIV4s), standard-dose†	
Afluria Quadrivalent	≥ 5 y/o
Fluarix Quadrivalent	≥ 3 y/o
FluLaval Quadrivalent	≥ 6 mo
Fluzone Quadrivalent	6-35 mo (0.25 mL); ≥6 mo (multidose); ≥3 y/o (0.5 mL single dose)
Inactivated influenza vaccine, quadrivalent (ccIIV4), standard-dose,† cell cx	
Flucelvax Quadrivalent	≥ 4 y/o (single dose & multi dose)
IV QUADRIVALENT, STANDARD-DOSE, INTRADERMAL (Intradermal IIV4)	
Fluzone Intradermal Quadrivalent	18 – 64 y/o
IIV TRIVALENT, STANDARD-DOSE (SD-IIV3)	
Afluria	≥5 yrs
Fluvirin	≥4 yrs
ADJUVANTED IIV TRIVALENT, STANDARD-DOSE (aIIV	
Fluad	≥65 yrs
IIV TRIVALENT HIGH-DOSE (HD-IIV3)	
Fluzone High-Dose	≥65 yrs



High Dose: 65 & Older

- Data from clinical trials comparing Fluzone to Fluzone High-Dose among persons aged 65 years or older indicate that a **stronger immune response** occurs after vaccination with Fluzone **High-Dose.**
- A study published in the *New England Journal of Medicine* indicated that the high-dose vaccine was **24.2% more effective** in **preventing flu** in adults 65 years of age and older relative to a standard-dose vaccine (DiazGranados, 2014).
- A separate study published in *The Lancet Respiratory Medicine* reported that Fluzone High-dose was associated with a lower risk of hospital admissions compared with standard-dose Fluzone for people aged 65 years or older, especially those living in long-term care facilities. The study compared hospitalization rates among more than 38,000 residents of 823 nursing homes in 38 states during the 2013-14 flu season.



Egg allergy?

- An influenza vaccine that has been FDA approved for use in adults 18 years and older.
- Does not use influenza virus or chicken eggs in manufacturing process.
- *Guidelines for patients with egg allergy:*
- Can receive any licensed, recommended age-appropriate influenza vaccine and no longer have to be monitored for 30 minutes after receiving the vaccine.
- Those w/ severe egg allergies should be vaccinated in a medical setting and be supervised by a health care provider who is able to recognize and manage severe allergic conditions.
- A recent CDC study found the rate of anaphylaxis after all vaccines is **1.31 per one million vaccine doses given**.

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Disparities in Vaccination Rates…

Vaccination Gaps in Older Adults

Healthy People 2020 Vaccination Gaps

Objectives	Baseline Data 2008 and *2006	Healthy People 2020 Goals
INFLUENZA VACCINE		
Adults 18 to 64 years	25%	80%
High-risk adults 18 to 64 years	39%	90%
High-risk adults 65 years +	67%	90%
*Institutionalized adults 18 years +	62%	90%
Health care personnel	45%	90%
PNEUMOCOCCAL VACCINE		
Adults 65 years +	60%	90%
High-risk adults 18 to 64 years	17%	60%
*Institutionalized adults	66%	90%
HERPES ZOSTER VACCINE		
Adults 60 years +	7%	30%

Other vaccines: Tdap, HPV, hepatitis, MMR, meningococcal

Healthy People 2020. Immunization and Infectious Diseases. Available at: www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=23

Vaccination Gaps in Older Adults

Older Adults Own the Bulk of Influenza's Morbidity and Mortality

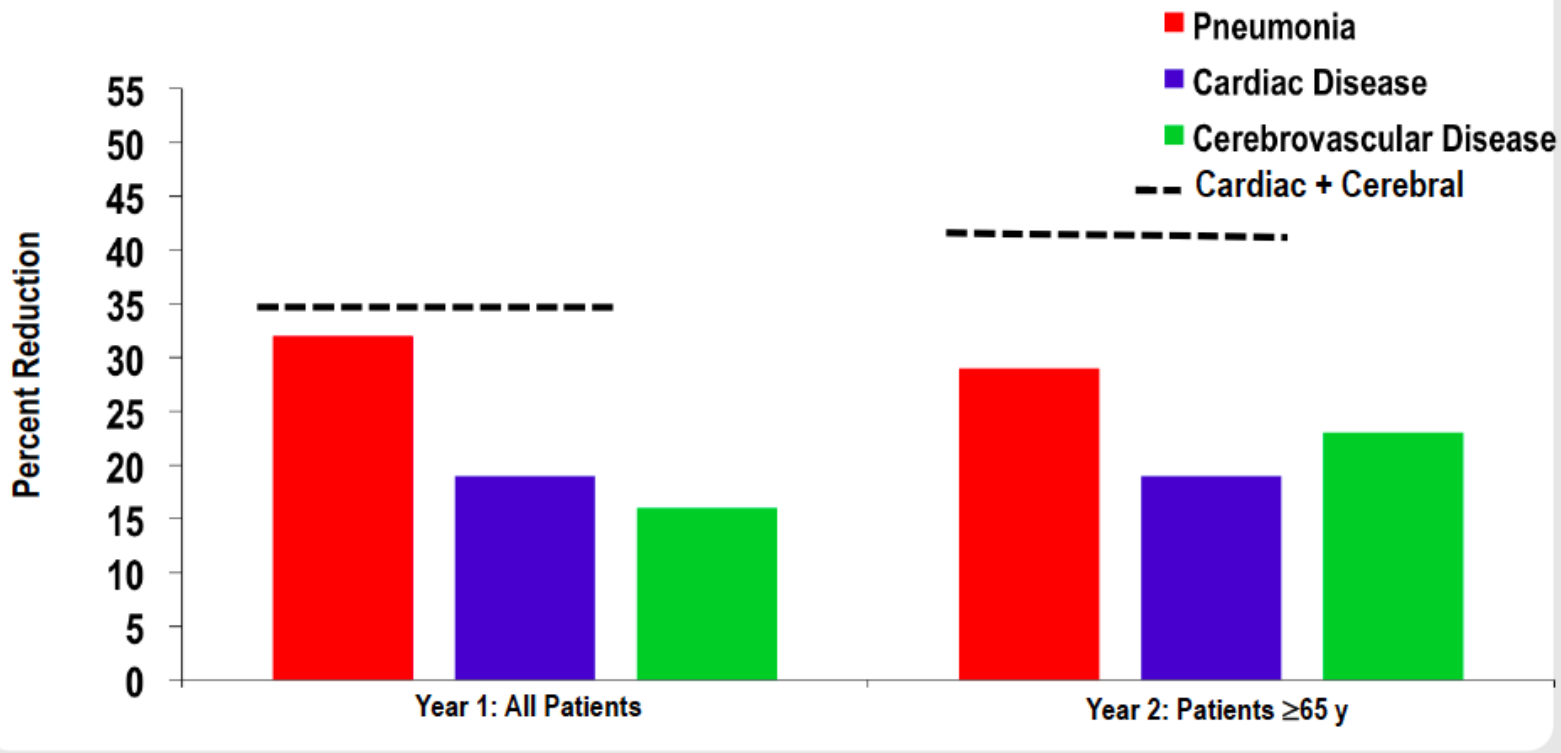
- Adults ≥65 years of age represent:
  - 13% of the US population[1]
  - 63% of influenza-related hospitalizations[2]
  - 90% of influenza-related deaths[3]
  - 64% of the total economic burden of influenza[4]

Increase in the older adult population globally represents a substantial challenge for influenza vaccination programs

References:
1. US Department of Health & Human Services Administration on Aging. http://www.aoa.gov/aoaroot/ aging_statistics/Census_Population/census2010/Index.aspx. Accessed March 8, 2012.
2. Thompson WW, et al. *JAMA*. 2004;292(11):1333-1340.
3. CDC. *MMWR*. 2010;59(33):1057-1062.
4. Molinari NM, et al. *Vaccine*. 2007; 25(27): 5086-5096.
5. Nichol KL, et al. *Clin Infect Dis*. 2009;48(3):292-298.

Flu Vaccine Prevents Other Diseases in Geriatric Patients

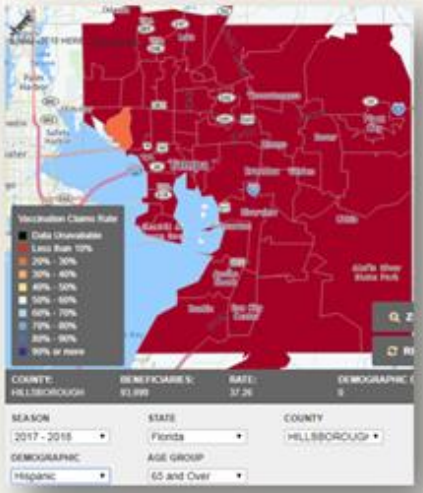
Influenza Vaccine Reduces PNA, MI, and CVA in Older Patients



Nichol KL, et al. *N Engl J Med*. 2003;348:1322-1332.

Medicare Vaccination Claims Rates Age 65 and Over by Race/Ethnicity, Hillsborough

Hispanic



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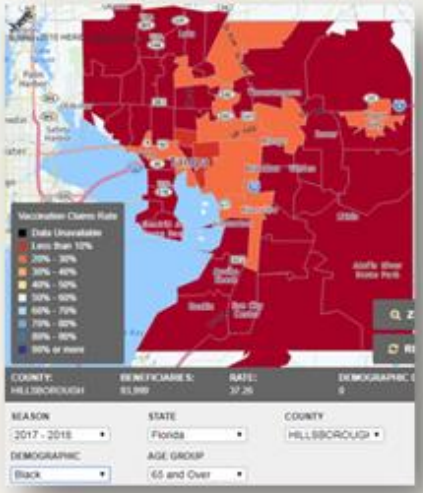

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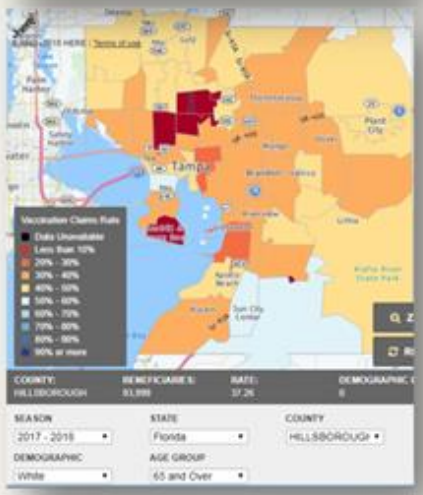

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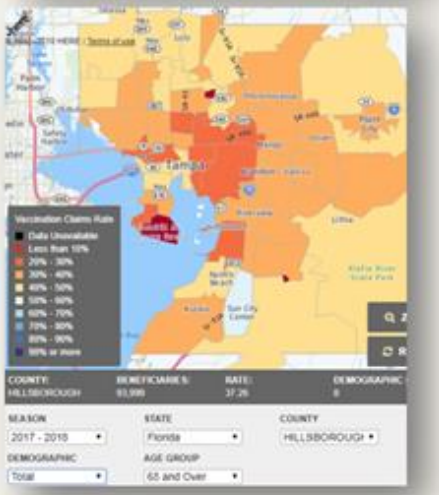
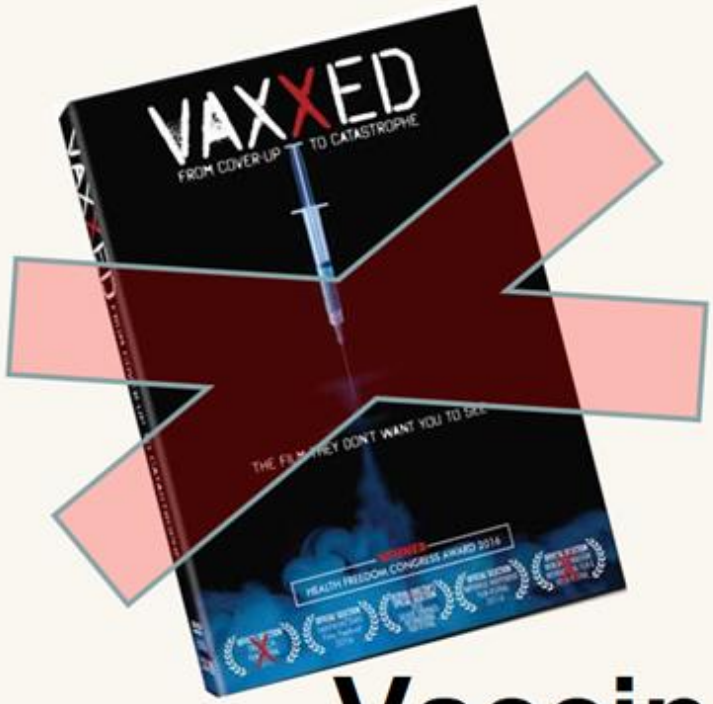


https://www.hhs.gov/nvpo/about/resources/interactive-mapping-tool-tracking-flu-vaccinations/index.html



Vaccination Myths…

"…introduce alien microorganisms into our children's blood."

UNIVERSITY OF SOUTH FLORIDA

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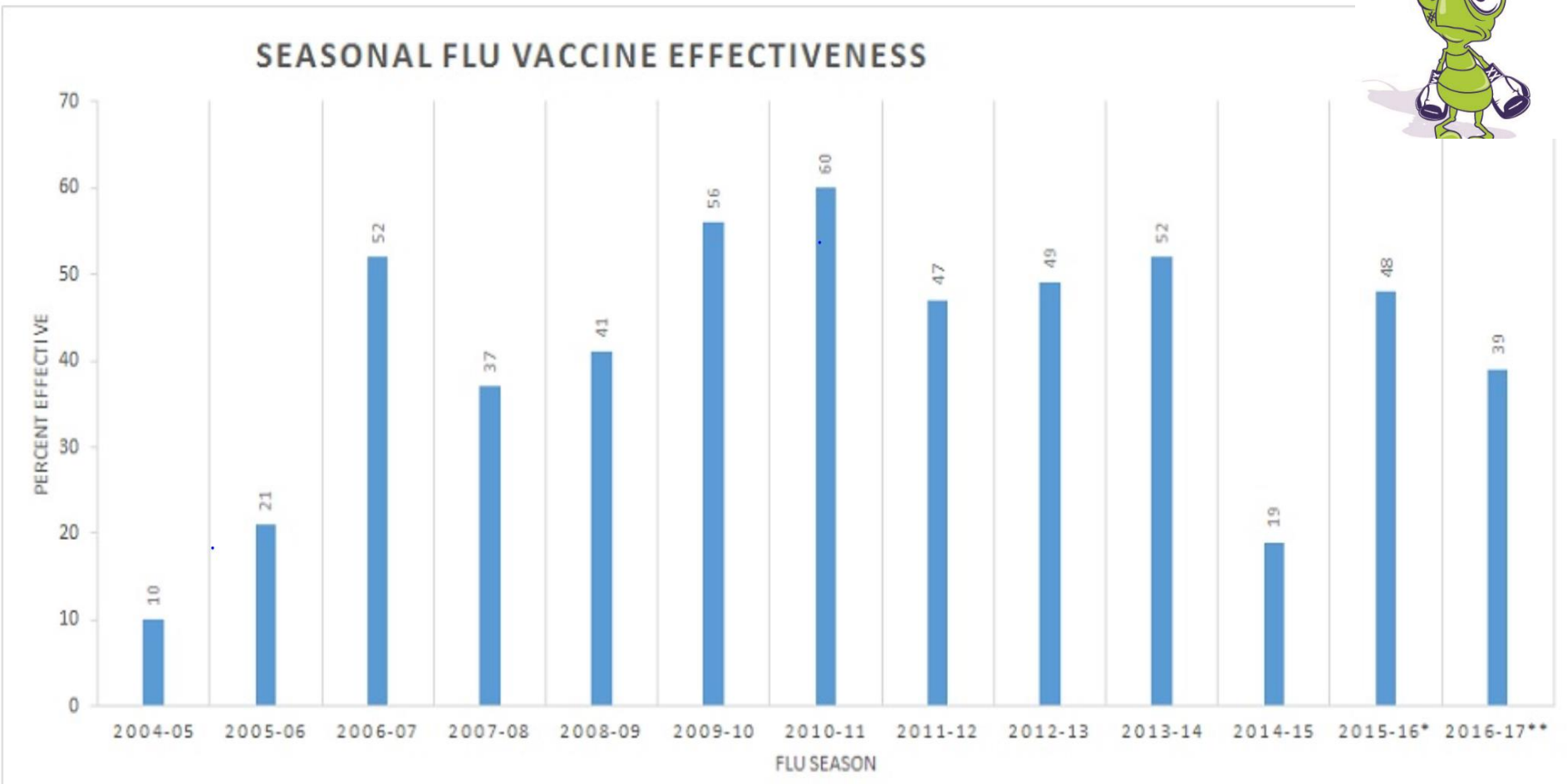
What About This 10% Effectiveness?

The 10% vaccine effectiveness (VE) figure reported in the news is an **Australian** interim estimate of the vaccine's benefit against **one flu virus (the H3N2 virus)** that circulated in Australia during its most recent flu season.

In the United States last season, overall VE against all circulating flu viruses was **39%,** and VE was only a bit lower (32%) against H3N2 viruses.

This season's flu vaccine includes the same H3N2 vaccine component as last season, and most circulating H3N2 viruses that have been tested in the United States this season are still similar to the H3N2 vaccine virus.

Figure. Effectiveness of Seasonal Flu Vaccines from the 2004-2017 Flu Seasons



Vaccinations & Autism Myth

THE LANCET

FRAUD

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

A J Wakefield, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, A P Dhillon, M A Thomson, P Harvey, A Valentine, S E Davies, J A Walker-Smith

Summary

Background We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Methods 12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

Findings Onset of behavioural symptoms was associ... by the parents, with measles, mumps, and rub... vaccination in eight of the 12 children, with meas... infection in one child, and otitis media in ... All 12 children had intestinal abnormalities ... from lymphoid nodular hyperplasia to ... Histology showed patchy chronic infl... in 11 children and reactive ileal lymphoid hyperplasia in seven, but no granulomas. Behavioural disorders included autism (nine), disintegrative psychosis (one), and possible postviral or vaccinal encephalitis (two). There were no focal neurological abnormalities and MRI and EEG tests were normal. Abnormal laboratory results were significantly raised urinary ... acid compared with age-matched contr... 03), low haemoglobin in four children, ... low ... IgA in ... children.

Inter... ... associated gastrointestinal d... and developmental regression in a group of pre... which was generally associated in time ... possible environmental triggers.

Lancet 199... **351**: 637–41
See Commentary page

Introduction

We saw several children who, after a ... of apparent normality, lost acquired skills, incl... communication. They all had gastrointestinal ... symptoms, ...luding abdominal pain, diarrhoea, and ...nting and, ... worse cases, food intolerance. We ...scribe... clinical ...dings, and gastrointestinal featur... these cl...en.

Patients and meth...ds

12 children, con...ecutively ...ferred to ... department of paediatric gastr...terology ... a history of a pervasive developmental ...der with los... acquired skills and intestinal symptoms ... abdominal ...n, bloating and food intolerance, were inv...gated. All children were admitted to the ward for ...week, accom...ied by their parents.

Clinical investigations

...took histo... including details of immunisations and ...posure to infe...us diseases, and assessed the children. In 11 ... the histo... was obtained by the senior clinician (JW-S). Neur... and psychiatric assessments were done by ...sultant staff (PH, MB) with HMS-4 criteria.[5] Developmental ... included a review of prospective developmental records from parents, health visitors, and general practitioners. Four children did not undergo psychiatric assessment in hospital; all had been assessed professionally elsewhere, so these assessments were used as the basis for their behavioural diagnosis.

After bowel preparation, ileocolonoscopy was performed by SHM or MAT under sedation with midazolam and pethidine. Paired frozen and formalin-fixed mucosal biopsy samples were taken from the terminal ileum; ascending, transverse, descending, and sigmoid colons, and from the rectum. The procedure was recorded by video or still images, and were compared with images of the previous seven consecutive paediatric colonoscopies (four normal colonoscopies and three on children with ulcerative colitis), in which the physician reported normal appearances in the terminal ileum. Barium follow-through radiography was possible in some cases.

Also under sedation, cerebral magnetic-resonance imaging (MRI), electroencephalography (EEG) including visual, brain stem auditory, and sensory evoked potentials (where compliance made these possible), and lumbar puncture were done.

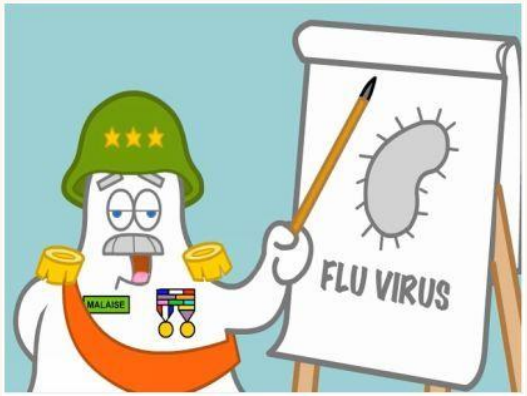
Laboratory investigations

Thyroid function, serum long-chain fatty acids, and cerebrospinal-fluid lactate were measured to exclude known causes of childhood neurodegenerative disease. Urinary methylmalonic acid was measured in random urine samples from

RETRACTED

MYTH: Too Many Vaccines at Once

- Vaccines use only a tiny proportion of a baby's immune system's ability to respond
- Today's vaccines contain fewer antigens than previous vaccines. Smallpox **vaccine alone** contained **200 proteins**; the 11 currently recommended routine vaccines contain **fewer than 130** immunologic components.
- Delaying vaccines increases the time children will be susceptible to diseases.
- There is no evidence that spreading out the schedule decreases the risk of adverse reactions.



MYTH: Thimerosal Causes Harm

- The form of mercury found in thimerosal is ethylmercury (EM), not methylmercury (MM). **MM is the form that has been shown to damage the nervous system.**

- Although **no evidence of harm** has ever been demonstrated, thimerosal was taken out of vaccines as a precaution.

- Since 2001, with the exception of a few influenza vaccine products, **thimerosal has not been used as a preservative in any routinely recommended childhood or adult vaccines.**

MYTH: The Flu Shot Gave Me the Flu

- **Less than 1% of people who are vaccinated with the injectable vaccine develop flu-like symptoms. These side effects are not the same as having influenza.**
- **Protective immunity doesn't develop until 1–2 weeks after vaccination. Some people who get vaccinated later in the season may be infected with influenza virus shortly afterward because they were exposed to someone with the virus before they became immune.**
- **For many people, "the flu" is any illness with fever and cold symptoms or gastrointestinal symptoms. If they get any viral illness, they may blame it on flu vaccine or think they got "the flu" despite being vaccinated. Influenza vaccine only protects against certain influenza viruses, not all viruses.**
- **Influenza vaccine is not 100% effective, especially in older persons.**

MOST COMMON Vaccine Side Effects

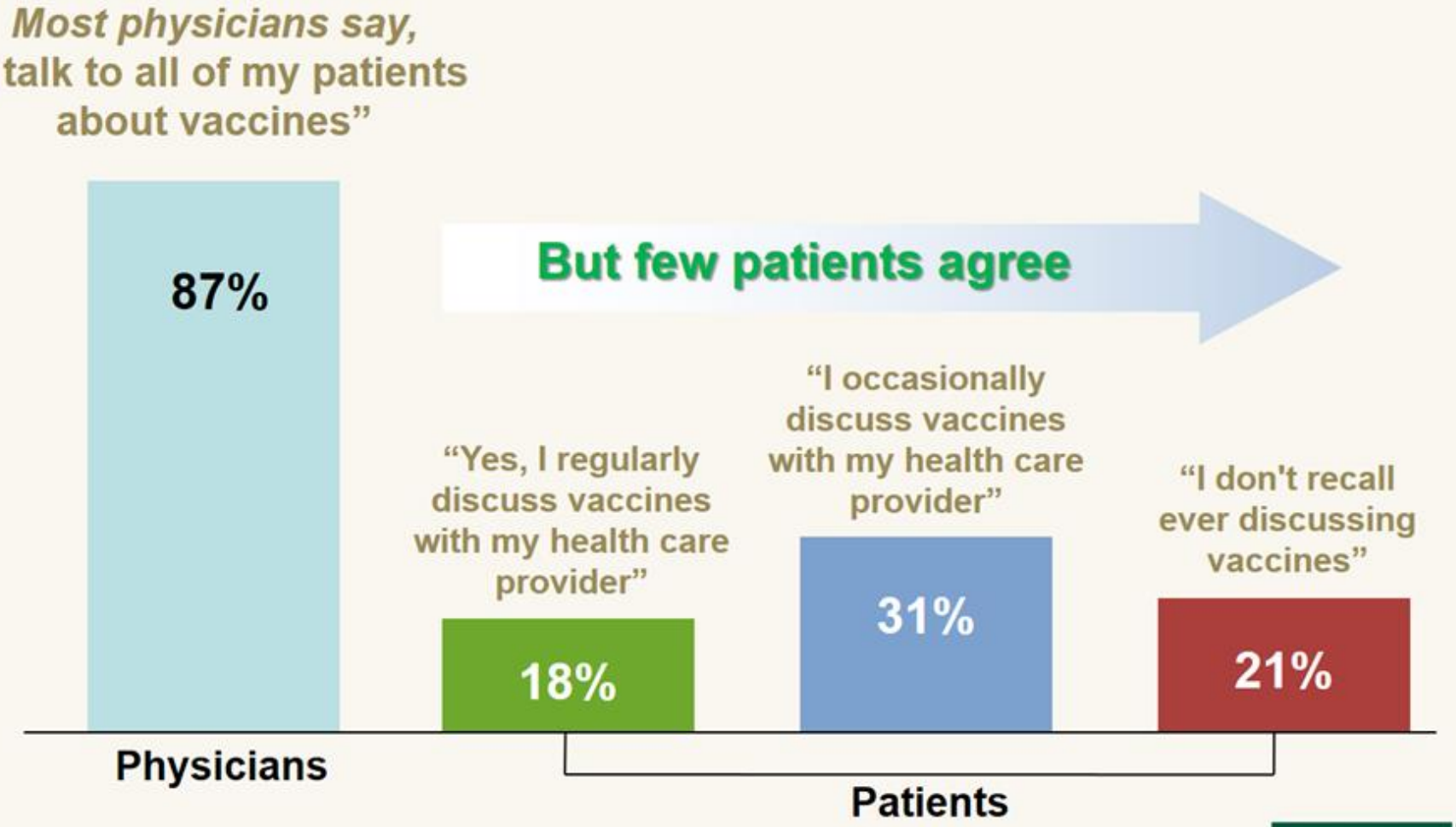
- **Any Vaccine Can Cause Side Effects**
  - **Mild Problems**
    - Reactions on the arm where the shot was given:
    - Tenderness (about 1 person out of 2)
    - Redness & Itching
    - Lump or bruise
  - **Muscle aches & Fatigue**
- **Severe Problems**
  - **Serious allergic reaction (very rare – less than once in 100,000 doses).**

-CDC Vaccine Update, 2016

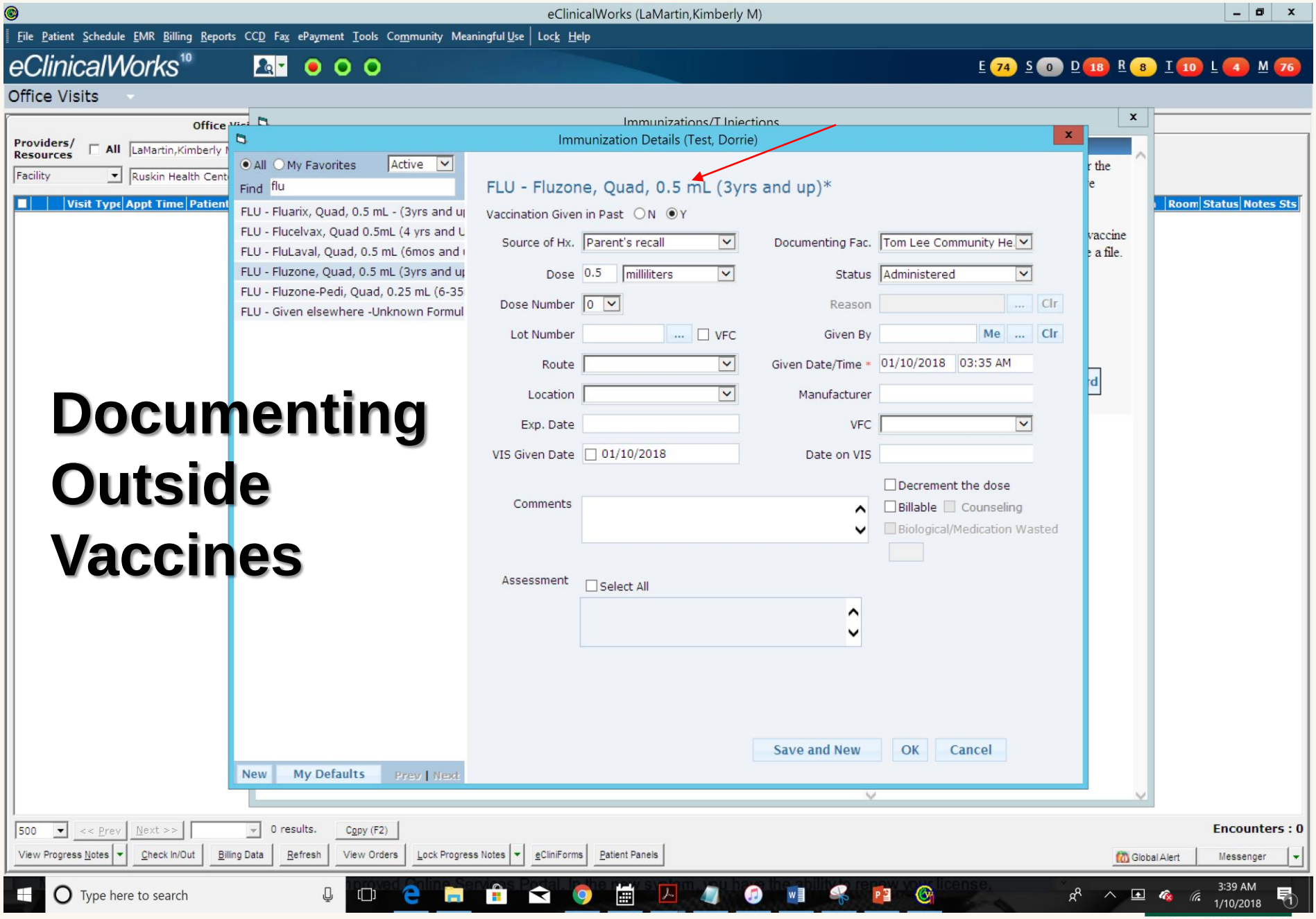
Overcoming Vaccination Barriers in Geriatric Patients

- Facts vs. Myth
- Affordable Vaccines
- Databases
- Better Communication:
  Poor Health Literacy
- Transitioning Care: Immunization Records

Communication: When It Comes to Vaccines, Doctors and Patients Aren't Hearing One Another

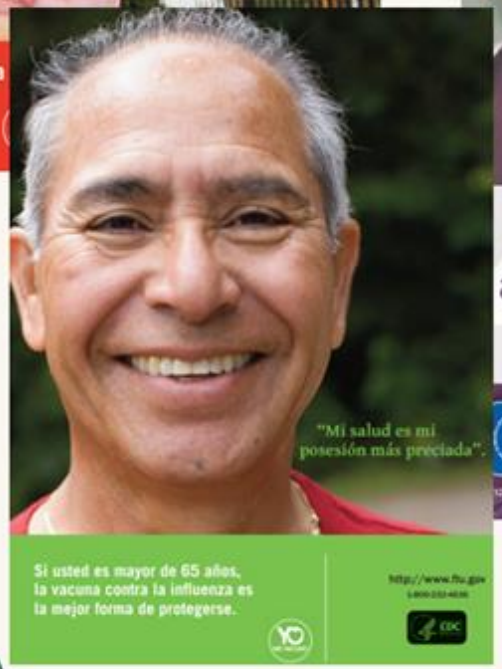


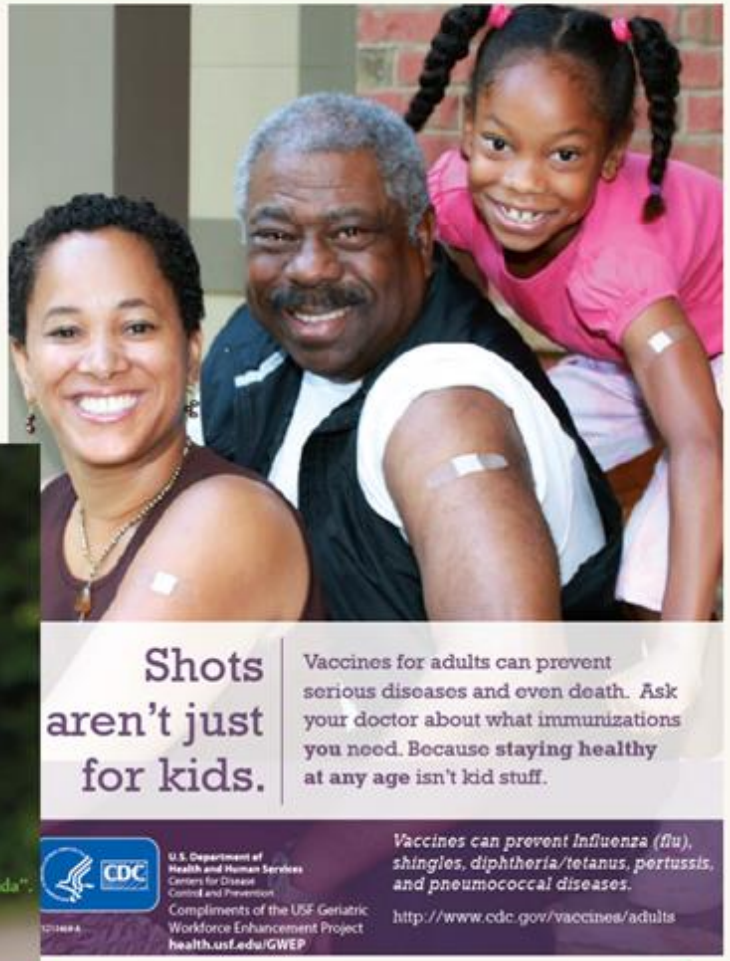
Results are based on surveys by the National Foundation for Infectious Diseases. November 2010.



Documenting Outside Vaccines

Spread the Word – Not the Flu!





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BE
AN ADVOCATE
FOR
VACCINATING
YOUR GERIATRIC
PATIENTS!

THANK YOU!!

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