The Role of Healthcare Professionals in Protecting Older Adults against Influenza

Wednesday, September 6, 2017
12:00 PM ET

National Foundation for Infectious Diseases®

In Case of Technical Difficulties

- **If you hear an echo:**
  - Make sure you are only logged in once on your computer
  - Select one form of audio only (either computer speakers or telephone connection)
- **If the audio is choppy:**
  - Press pause in the top left corner of your screen
  - Wait 10 seconds and then click the play button
- **Dial 800-843-9166 at any time for live assistance**

National Foundation for Infectious Diseases®

Welcome and Introductions

William Schaffner, MD
NFID Medical Director
Professor of Preventive Medicine and Infectious Diseases
Vanderbilt University School of Medicine
Nashville, TN

National Foundation for Infectious Diseases

Agenda

Welcome and Introductions

William Schaffner, MD
NFID Medical Director
Professor of Preventive Medicine and Infectious Diseases
Vanderbilt University School of Medicine

Snapshot: Burden of Influenza in the 65+ Population and Importance of Healthcare Professional (HCP) Recommendation

Robert H. Hopkins, Jr., MD (American College of Physicians Representative)
Professor of Internal Medicine and Pediatrics
Director, Division of General Internal Medicine
Director, Internal Medicine-Pediatrics Residency Program
University of Arkansas for Medical Sciences

The Specialist's Role in Promoting Influenza Vaccines for Older Adults

Martha Gulati, MD, MS (American College of Cardiology Representative)
Chief of Cardiology
University of Arizona College of Medicine
Editor-in-Chief, *CardioSmart*, American College of Cardiology

Care For Older Adults? Care About Flu! HCP Toolkit Overview

Questions and Answers

National Foundation for Infectious Diseases

This webinar is supported by an unrestricted educational grant from Seqirus, Inc.
NFID policies restrict funders from controlling program content.

General Information

- Please note that today's webinar is being **recorded**
- All phone lines will be placed on **mute** throughout the program
- To hear audio:
  - Computer: Follow directions
  - Phone: 303-248-0285; Access Code 6560003
- After the presentations, there will be a Question and Answer period
  - Use the Chat box on the lower left side of your screen to type your question
- At the end of the webinar, participants will be directed to an online evaluation
- Following the webinar, all registered participants will receive an email with a link to the presentation slides
- **Continuing education (CE) credits are not available for this activity**

National Foundation for Infectious Diseases

Disclosures

- **Marla Dalton** (NFID staff, content reviewer) owns stock, stock options, or bonds from Merck & Co., Inc.
- **William Schaffner** (NFID medical director, presenter) served as an advisor or consultant for Dynavax, GSK, Merck & Co., Inc., Novavax, Inc., Pfizer Inc., Sanofi Pasteur, and Seqirus, Inc.
- All other activity planners/reviewers and staff for this activity have no relevant financial relationships to disclose

National Foundation for Infectious Diseases

Learning Objectives

At the conclusion of this activity, participants will be able to:

- Describe the phenomenon of immunosenescence and how the immune system grows weaker with aging
- Discuss the importance of safe and effective influenza vaccines specifically developed for adults age 65 years and older
- Describe resources available to help healthcare professionals (HCPs) talk with adult patients about specific influenza vaccines most beneficial for them

National Foundation for Infectious Diseases

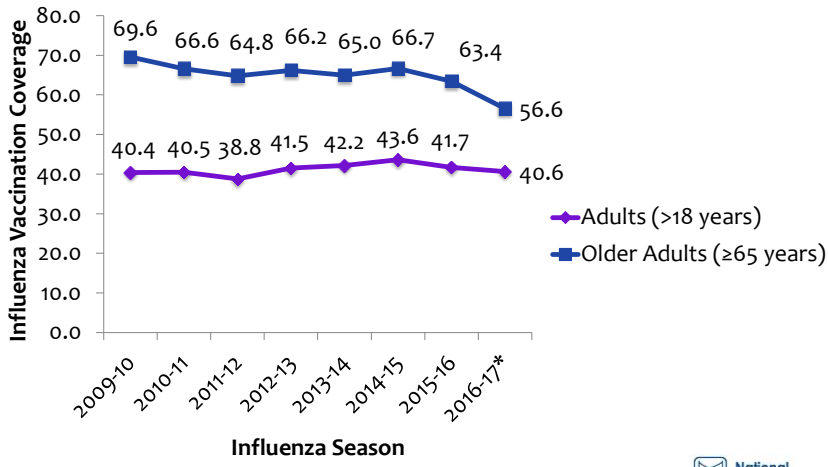
About NFID

Non-profit 501(c)(3) organization dedicated to educating the public and healthcare professionals about causes, treatment, and prevention of infectious diseases across the lifespan

- Reaches consumers, healthcare professionals, and media through:
  - Coalition-building activities
  - Public outreach initiatives
  - Professional educational programs (ACCME accredited with commendation)
  - Scientific meetings, research, and training
- Longstanding partnerships to facilitate rapid program initiation and increase programming impact
- Flexible and nimble organization

National Foundation for Infectious Diseases

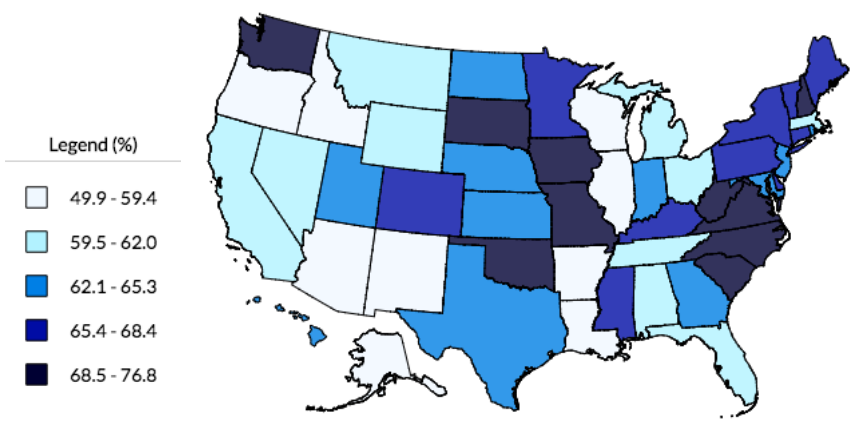
Opportunity to Improve Influenza Vaccination Rates Among Adults 65+



*Coverage estimate based on CDC National Early Season Flu Vaccination Coverage, November 2016

National Foundation for Infectious Diseases

Regional Variation in Influenza Vaccination Rates Among Adults 65+



CDC FluVaxView; Influenza Vaccination Coverage for 2015-16, >65 years

National Foundation for Infectious Diseases

ACIP Vaccine Recommendations

- Advisory Committee on Immunization Practices (ACIP) published recommendations in August 2017 for 2017-2018 flu season
- Routine annual influenza vaccination is recommended for all persons age ≥6 months who do not have contraindications
- A licensed, recommended, and age-appropriate vaccine should be used. No preferential recommendation is made for one influenza vaccine product over another for persons for whom more than one licensed, recommended product is available. For adults age 65 years and older, any age-appropriate IIV formulation (standard-dose or high-dose, trivalent or quadrivalent, unadjuvanted or adjuvanted) or RIV are acceptable options.

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2017–18 Influenza Season (www.cdc.gov/mmwr/volumes/66/rr/rr6602a1.htm)

National Foundation for Infectious Diseases

New NFID HCP Toolkit

Care For

OLDER ADULTS?

Care About FLU!

National Foundation for Infectious Diseases

Snapshot: Burden of Influenza in the 65+ Population and Importance of HCP Recommendation

Robert H. Hopkins, Jr., MD
Professor of Internal Medicine and Pediatrics
Director, Division of General Internal Medicine
Director, Internal Medicine-Pediatrics Residency Program
University of Arkansas for Medical Sciences
Little Rock, AR

National Foundation for Infectious Diseases

Burden of Influenza in the Adult 65+ Population

- Disproportionate impact on adults age 65+
- Standard-dose vaccine effectiveness
- Economic burden
- Specifically-designed vaccines for adults age 65+
- Importance of HCP vaccine recommendation

National Foundation for Infectious Diseases

Who Needs Influenza Vaccination?
EVERYONE!

- Age 65 years and older
- Chronic illness
- Immunocompromised
- Pregnancy
- Prior splenectomy
- Healthcare professionals
- Young children

AAAA

All

Adults

And children ≥6 months

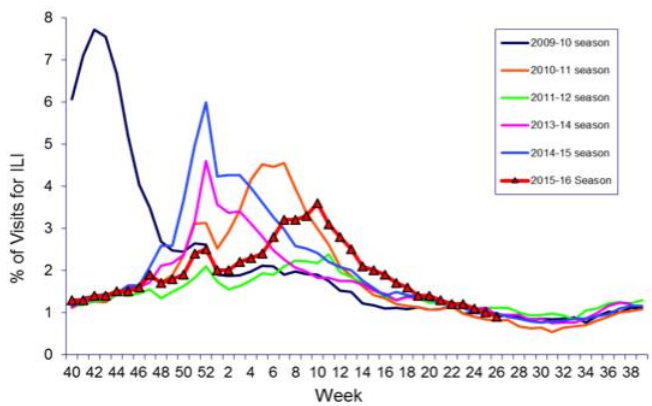
Annually

No excuse to miss this vaccine and its protective value at near zero risk!!

National Foundation for Infectious Diseases

IMPACT: Influenza is Seasonal but Not Predictable

Percentage of visits for influenza-like Illness (ILI) reported to CDC ILINet for selected previous seasons from all US states



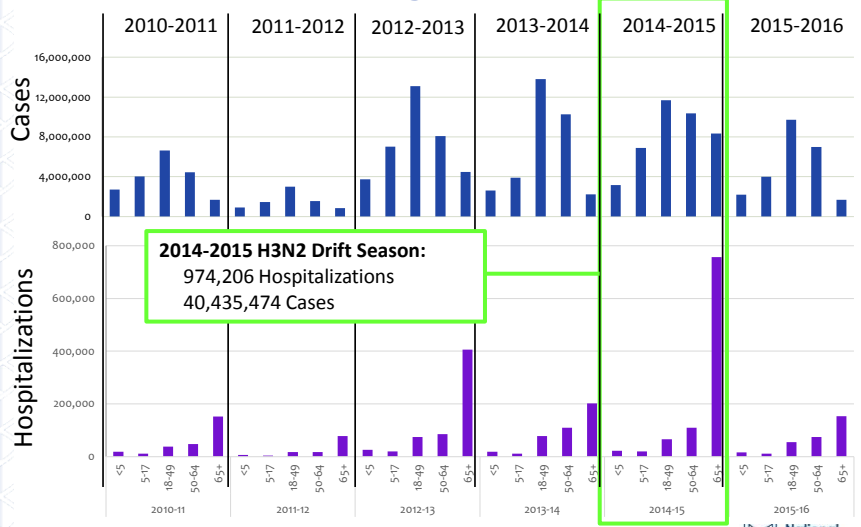
Take home messages:

1. **Timing** of influenza illness in your community varies from season to season
2. Influenza varies in **severity** from season to season
3. Influenza-related illness affects all age groups but **age 65+ have greatest morbidity and mortality…**

National Foundation for Infectious Diseases

CDC FluView Interactive. gis.cdc.gov/GRASP/FluView.

Annual Influenza Impact Varies by Age Group



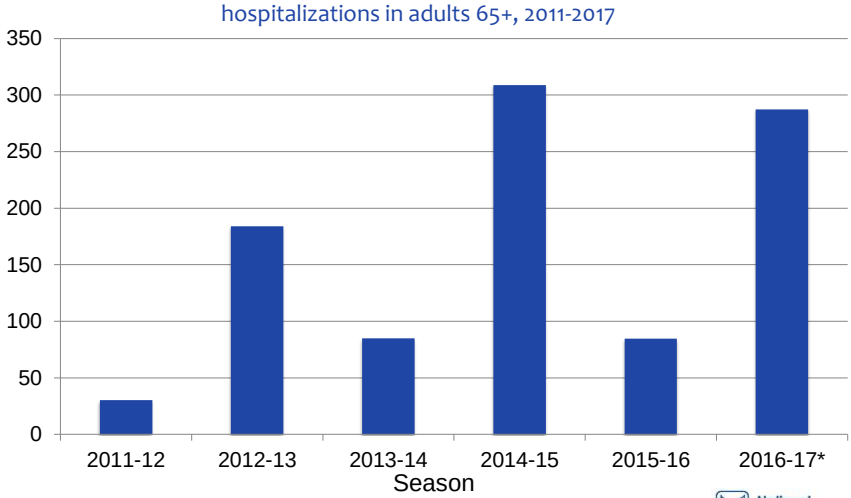
National Foundation for Infectious Diseases

Reed et al. PLOS One 10(3):e0118369.

www.cdc.gov/flu/about/disease/2015-16.htm.

Cumulative Hospitalization Rates in Adults 65+

Cumulative rate per 100,000 for laboratory-confirmed influenza hospitalizations in adults 65+, 2011-2017



National Foundation for Infectious Diseases

CDC. FluSurv-NET FluView Interactive.
gis.cdc.gov/GRASP/Fluview/FluHospRates.html.
*2016-17 hospitalizations based on preliminary cumulative rates as of August 26, 2017.

Influenza-Associated Deaths in Adults 65+

- Older adults (age 65+) account for up to 85% of all flu-related deaths in the US
- Influenza-related all-cause death rate in adults age 65 years and older is 133 per 100,000 people, more than six times the rate of 20 per 100,000 across all ages
- Findings are consistent with estimates from other countries, where mortality rates are 7 to 11 times higher in those age 65 years and older than the general population

NFID Call to Action: Reinvigorating Influenza Prevention in US Adults Age 65 Years and Older. www.nfid.org/flu-older-adults

National Foundation for Infectious Diseases

Influenza-Related All-Cause Mortality

Comparing rates of influenza-related all-cause mortality in different settings (per 100,000 person-years)

Country	>65 years	All Ages	Reference
United States	133	20	Thompson et al*
Hong Kong	136	16	Wong et al†
Singapore	168	15	Chow et al‡
Australia	116	Not done	Newall et al‖
China, South China, North	151 75	18 11	Feng et al**
South Africa	545	Not done	Cohen et al§

* Thompson et al JAMA 2003.
† Wong et al Clin Infect Dis 2004.
‡ Chow et al Emerg Inf Dis 2006.
‖ Newall et al Epidem Infect 2008.
**Feng et al. WHO Bull 2012.
§ Cohen et al Clin Infect Dis 2011.

National Foundation for Infectious Diseases

Immunosenescence

- The gradual deterioration of the immune system due to aging (immunosenescence) results in an elevated risk of complications from flu in adults age 65 years and older
- The weakening immune system makes it harder for our bodies to combat disease and may decrease the immune response to standard influenza vaccines

National Foundation for Infectious Diseases

Vaccine Effectiveness (VE) in Adults Age 65+

- Lower measured vaccine effectiveness in age 65+ populations
- Studies are difficult
  - Randomized Controlled Trials (RCTs) rare: flu vaccine has been recommended in this group "forever"
  - Confounding in observational studies
- Regardless, well-done RCT and observational studies demonstrate significant reductions in disease
- Sole RCT of influenza vaccine VE in older adults
  - Subjects: aged ≥60 years, generally healthy
  - VE overall = 50% (CI: 39–65)
  - 60-69 years: 57% (CI: 33–72)
  - >70: 23% (CI: -51–61)

Govaert et al. JAMA 1994; 272:1661-1665.

National Foundation for Infectious Diseases

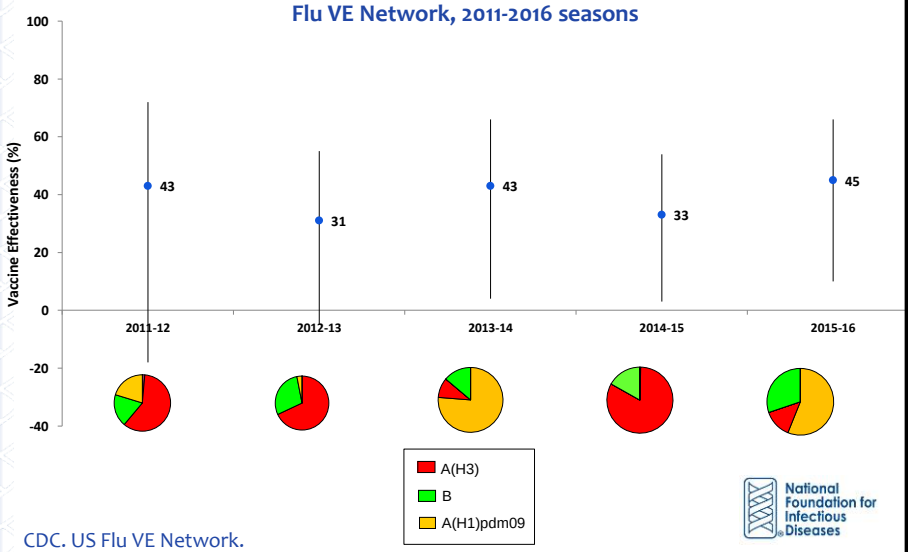
Vaccine Effectiveness (VE) in Adults Age 65+

- Studies in nursing homes
  - VE against medically-attended acute respiratory illness and pneumonia: 20%-50%
  - VE against influenza-related death: 27%-70%
  - Lower when drifted strains predominate
  - Effective in persons with and without high-risk condition
- Studies in community-dwelling elderly
  - Effective against hospitalization for pneumonia and influenza
  - Reduces death due to pneumonia and influenza

National Foundation for Infectious Diseases

Vaccine Effectiveness in Adults 65+ 2011-2016

Adjusted VE against medically attended influenza among adults 65+, US Flu VE Network, 2011-2016 seasons



CDC. US Flu VE Network.

National Foundation for Infectious Diseases

Adjusted VE Against Any Influenza A and B Among Patients Age ≥65 Years by Vaccine Type, 2014-2015

	Influenza-Positive	% Vaccinated	Influenza-Negative	% Vaccinated	Adjusted VE*	95% CI
High dose (IIV3)						
≥ 65 years	112	20%	235	26%	**14%**	**-72 to 57**
Standard dose (IIV3/IIV4)						
≥ 65 years	317	72%	778	78%	**31%**	**2 to 51**
Standard dose (IIV3)						
≥ 65 years	193	53%	429	59%	**38%**	**3 to 60**

* Adjustment for age (years), study site, race/Hispanic ethnicity, sex, self-rated general health status, interval from onset to enrollment, and calendar time (biweekly intervals).

- Relative effectiveness of high-dose IIV3 vs. standard dose IIV3/IIV4 was not significant (adjusted OR: 0.98; 95% CI, 0.53, 1.83).

National Foundation for Infectious Diseases

Overall Influenza Illness Averted

Estimated number of influenza illnesses, medical visits, hospitalizations, pneumonia, and influenza deaths averted by vaccination by season – United States, 2010-2011 through 2015-2016 influenza seasons

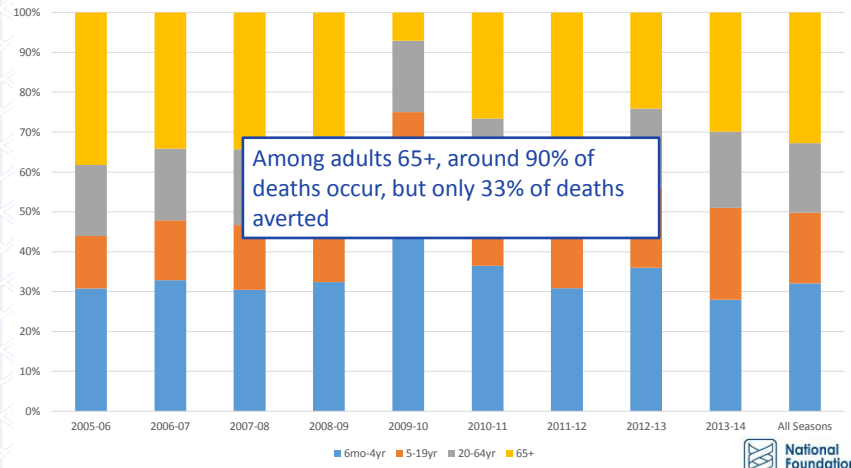
Season	Averted Illnesses	Averted Medical Visits	Averted Hospitalizations	Averted Deaths	
				Pneumonia & Influenza Deaths	Respiratory & Circulatory Deaths
2010-2011	5,039,277	2,514,353	70,821	3,434	9,880
2011-2012	1,981,571	968,312	39,301	1,227	3,618
2012-2013	5,628,332	2,701,875	61,522	1,823	5,280
2013-2014	6,683,929	3,080,284	86,730	3,840	9,172
2014-2015	1,606,813	792,958	47,449	1,419	--
2015-2016	5,083,498	2,504,323	71,479	2,882	--

www.cdc.gov/flu/about/disease/2015-16.htm

National Foundation for Infectious Diseases

Influenza Deaths Averted

Estimated proportion (in percent) of deaths averted by influenza vaccination, US, 2005-2014 seasons



National Foundation for Infectious Diseases

Economic Burden of Influenza (USD 2003)

- Total burden for all ages: $87.1B ($7.2-$149.5B)
  - In 2017: $117.3B ($9.7-$201.4B)
- Total direct medical costs: $10.4B ($4.1-$22.2B)
  - In 2017: $14B ($5.5-$29.9B)
- Percent of GDP: 0.24%-0.79%
- 64% of total economic burden falls on the elderly

Molinari et al. Vaccine 2007;25:5086-5096.

National Foundation for Infectious Diseases

Cost Considerations


PLOS | ONE

RESEARCH ARTICLE

Net Costs Due to Seasonal Influenza Vaccination — United States, 2005–2009

Cristina Carias[1,2]*, Carrie Reed[3], Inkyu K. Kim[3,4], Ivo M. Foppa[3,4], Matthew Biggerstaff[3], Martin I. Meltzer[3], Lyn Finelli[3], David L. Swerdlow[1]

- Influenza vaccination was cost saving in the 65+ population when taking into account productivity losses and, in some seasons, taking into account medical costs only
- Seasonal influenza vaccination in the US can be cost saving from a societal perspective:
  - Averted costs varied per season
  - Net savings occurred in seasons with high averted morbidity and mortality

National Foundation for Infectious Diseases

Specifically-Designed Vaccines for Adults 65+

- Adjuvanted Vaccine[1]
  - Case-control study in adults 65+
    - 50% were age 85+, 57% in LTCF
  - 60% VE for adjuvanted trivalent inactivated vaccine (ATIV)
  - Relative effectiveness of ATIV over TIV was 63%
- High-Dose Vaccine
  - Significantly higher antibody responses to influenza A vaccine strains vs. standard-dose TIV vaccine for adults 65+ with or without underlying medical conditions[2]
  - 22% more effective in adults 65+ than standard-dose for prevention of probable influenza infection and prevention of influenza hospital admissions[3]

[1]Van Buynder, et al. Vaccine. 2013;31:6122-6128; [2]Falsey A, et al. *J Infect Dis.* 2009;200:172-180; [3]Izurieta H, et al. *Lancet* 2015;15:293-300.

National Foundation for Infectious Diseases

MF59 Adjuvanted Influenza Vaccine

- Licensed in US by FDA in November 2015
  - First approved for use in Italy in 1997; subsequently approved for use in 38 countries, including Canada and 15 in Europe
- Safety established in multiple clinical and observational studies (more injection site reactions versus standard-dose vaccine)
- >60 million doses distributed worldwide for use in adults age 65 years and older by 2013

O'Hagan DT et al. *Expert Rev Vaccines*. 2013;12(1):13-30.

National Foundation for Infectious Diseases

High-Dose Influenza Vaccine

- Licensed in US by FDA in 2009
- Safety established in pre- and post-licensure studies (more injection site reactions versus standard-dose vaccine)
- More than 50 million doses distributed in US alone

Falsey A, et al. *J Infect Dis*. 2009;200:172-180;
Izurieta H, et al. *Lancet* 2015;15:293-300;
Van Buynder, et al. Vaccine. 2013;31:6122-6128.

National Foundation for Infectious Diseases

ACIP Recommendations for Adults 65+

- Adults age 65 years and older may receive any age-appropriate IIV (standard- or high-dose, trivalent or quadrivalent, adjuvanted or unadjuvanted) or RIV
- High-dose IIV3 exhibited superior efficacy over comparator standard-dose IIV3 in a large randomized trial, and may provide better protection than standard dose IIV3 for this age group
- Vaccination should not be delayed to find a particular product if an appropriate one is available

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2017–18 Influenza Season (www.cdc.gov/mmwr/volumes/66/rr/rr6602a1.htm)

National Foundation for Infectious Diseases

Importance of HCP Vaccine Recommendation

- According to a National Council on Aging Survey[1], more than half of adults age 65+ were more likely to get a flu shot if recommended by their doctor
- Public health officials, medical professionals, professional societies, and others who are part of the US vaccine infrastructure must take advantage of every opportunity to provide optimal protection for adults age 65 years and older and continue to work collaboratively to remove any ongoing barriers to vaccination[2]

[1] www.ncoa.org/healthy-aging/flu-you/resources/#survey
[2] NFID Call to Action: Reinvigorating Influenza Prevention in US Adults Age 65 Years and Older. www.nfid.org/flu-older-adults

National Foundation for Infectious Diseases

Conclusions

- Influenza is a key contributor to morbidity and mortality in older adults
  - They have the highest rate of influenza-associated deaths and hospitalizations of any defined high-risk group
  - The majority of influenza-associated deaths during most seasonal epidemics occur in adults > 65 years
  - Even if they recover, older adults may never fully regain their pre-influenza health and abilities, significantly impacting their lifestyle
- Even at low VE, vaccination can be cost-effective in adults 65+
- Epidemiology and impact of influenza on adults age 65+ may change
  - As current 'baby boomers' age, susceptibility to severe disease may come from different influenza strains than we have seen in the current 'class' of seniors…

National Foundation for Infectious Diseases

The Specialist's Role in Promoting Influenza Vaccines for Older Adults

Martha Gulati, MD, MS
Editor-in-Chief, *CardioSmart*, American College of Cardiology
Chief of Cardiology
University of Arizona College of Medicine
Phoenix, AZ

National Foundation for Infectious Diseases

The Specialist's Role in Promoting Influenza Vaccines for Older Adults

- Higher risk of developing flu-related complications for adults age 65+ with chronic diseases
- Influenza vaccine in prevention of acute myocardial infarction
- Outpatient visits as opportunities for discussion
- Importance of specialist vaccine recommendation

National Foundation for Infectious Diseases

Chronic Diseases Increase Risk of Flu-Related Complications

- Immunosuppressive drugs used to treat chronic conditions, like rheumatoid arthritis, decrease a patient's ability to prevent or fight off infections, making them more susceptible to illnesses such as flu
- CDC places individuals with key medical conditions in a high-risk category, including:
  - Asthma
  - Neurological and neurodevelopmental conditions
  - Chronic lung disease
  - Heart disease
  - Endocrine disorders

National Foundation for Infectious Diseases

Cardiovascular Disease and Flu-Related Complications

- Individuals with cardiovascular disease are at high risk for developing serious complications from influenza infection
- Having cardiac disease is estimated to increase the risk of influenza-related hospitalization by almost threefold
- In fact, among adults hospitalized with flu-related complications, cardiovascular disease is the most common chronic condition

National Foundation for Infectious Diseases

Influenza and Chronic Disease

- Several weeks after recovering from flu symptoms, adults age 65+ may still be at an increased risk of a heart attack, stroke, or other cardiovascular problems
- The decline in general health and abilities from flu may be permanent in adults age 65+

National Foundation for Infectious Diseases

Preventing Acute Myocardial Infarction (AMI)

- Influenza is one of the leading infectious causes of morbidity and mortality globally, and evidence is accumulating that it can precipitate AMI
- The pathobiology is thought to be due to a range of factors including enhanced sympathetic activity, hypoxemia, inflammatory release of cytokines, coronary plaque disruption, and thrombogenesis, which may result in thrombotic occlusion of the coronary artery
- Estimates of the efficacy of influenza vaccine in preventing AMI range from 15% to 45%, which is in a similar range of efficacy compared with proven routine coronary prevention measures such as smoking cessation (32–43%), statins (19–30%), and antihypertensive therapy (17–25%)

Influenza Vaccine as a Coronary Intervention for Prevention of Myocardial Infarction. Heart 2016;Sep 19

National Foundation for Infectious Diseases

Outpatient Visits as Opportunities for Vaccine Discussion

- Outpatient visits to cardiology practices present an excellent, but often missed, opportunity to provide vaccine if the office stocks it or recommends that patients receive it
- Providing patients with take-home information or a prescription for influenza vaccine can encourage them to follow through with vaccination more than a recommendation alone
- Practicing specialists and office staff should also be immunized to protect themselves and patients against flu

National Foundation for Infectious Diseases

Conclusions

- Older adults (age 65+) with chronic diseases are at risk for flu-related complications both because of their age and their chronic condition[1]
- 92% of older adults have at least one visit with a medical provider over the course of a year and 67% have three or more visits[1]
- Although primary care professionals (PCPs) are more likely to vaccinate in their offices, patients with chronic diseases may see specialists more often than PCPs

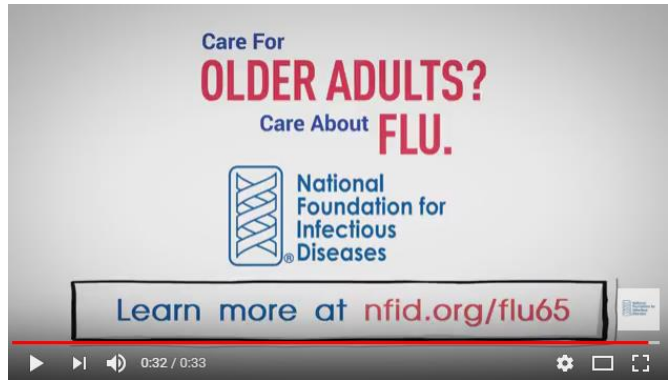
[1]US Census Bureau, Health Status, Health Insurance, and Medical Services Utilization: 2010, July 2013.

National Foundation for Infectious Diseases

Care For Older Adults? Care About Flu! HCP Toolkit Overview

National Foundation for Infectious Diseases

Public Service Announcement



National Foundation for Infectious Diseases

Care For
OLDER ADULTS?
Care About FLU!

Toolkit available at:
www.nfid.org/flu65

National Foundation for Infectious Diseases

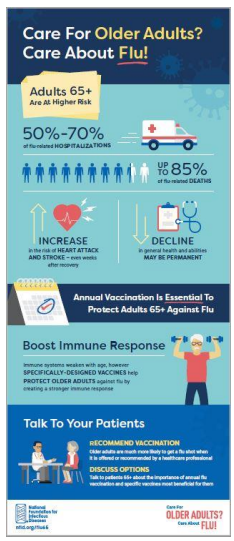
Resources

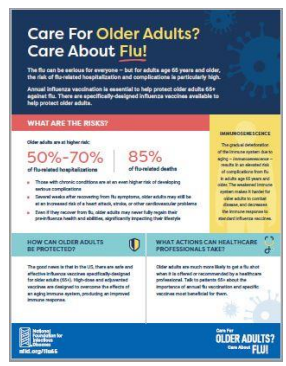
- Infographic
- Fact Sheet
- Poster/Handout
- Email Template
- On-Hold Scripts

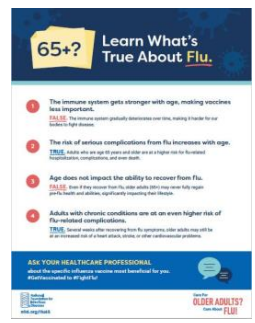
www.nfid.org/flu65

National Foundation for Infectious Diseases

Questions & Answers







www.nfid.org/flu65

National Foundation for Infectious Diseases

Join Us for Future NFID Webinars

Registration: nfid.org/webinars

Subscribe to NFID email updates: nfid.org/subscribe

National Foundation for Infectious Diseases