Improving Adult Immunization Coverage in the US

May 1, 2013
9:45 AM – 11:00 AM
Anaheim, California
Session 2: Improving Adult Immunization Coverage in the United States

Learning Objectives

1. Identify adult patients for appropriateness of administering vaccines based on current recommendations.
2. Act to increase provider recommendations to patients who should be vaccinated.
3. Implement standing orders for adult immunization within practice settings.

Faculty

William Schaffner, MD
Chairman
Department of Preventive Medicine
Professor of Infectious Diseases
Department of Medicine
Vanderbilt University School of Medicine
Nashville, Tennessee

William Schaffner, MD, is chairman of the department of preventive medicine as well as professor of infectious diseases in the department of medicine at the Vanderbilt University School of Medicine, Nashville, Tennessee. After undergraduate studies at Yale University in New Haven, Connecticut, Dr Schaffner attended the University of Freiburg, Germany, as a Fulbright Scholar. He received his medical degree from Cornell University Medical College and completed his residency at Vanderbilt University Medical Center, where he also undertook specialty training in infectious diseases. For 2 years he served as an epidemic intelligence service officer with the Centers for Disease Control and Prevention in Atlanta, Georgia, after which he returned to Vanderbilt.

Dr Schaffner’s primary interests are infectious diseases and their prevention. He has worked extensively on the effective use of vaccines and is a strong proponent of collaboration between academic medical centers and public health institutions.

Dr Schaffner is a past president of the National Foundation for Infectious Diseases and has served on the board of directors of the Infectious Diseases Society of America.

Robert H. Hopkins Jr, MD, FACP, FAAP
Professor of Internal Medicine and Pediatrics
University of Arkansas for Medical Sciences College of Medicine
Little Rock, Arkansas

Robert H. Hopkins Jr, MD, FACP, FAAP, is professor of internal medicine and pediatrics at the University of Arkansas for Medical Sciences (UAMS) College of Medicine, Little Rock, Arkansas. He received his medical degree from the Medical College of Georgia in Augusta and served a residency in internal medicine-pediatrics at UAMS.

Dr Hopkins is an active clinician and educator who serves as the director of the division of general internal medicine and combined internal medicine-pediatrics residency program at UAMS. His professional and academic interests have focused on medical education, adult immunization, and evidence-based patient care; he has published more than 100 articles in these
disciplines. Within his local community, Dr Hopkins is a member of the Arkansas Department of Health Vaccine Medical Advisory Committee. Nationally, he is a member of the executive committee of the National Influenza Vaccine Summit and of the American College of Physicians Adult Immunization Advisory Committee. Dr Hopkins frequently speaks locally, regionally, and nationally about issues related to vaccine-preventable disease and immunization.

M. Susan Burke, MD, FACP
Clinical Assistant Professor of Medicine
Thomas Jefferson University
Philadelphia, Pennsylvania

M. Susan Burke, MD, is a clinical assistant professor of medicine at Thomas Jefferson University in Philadelphia, Pennsylvania, an adjunct associate professor of geriatrics at the Philadelphia College of Osteopathic Medicine in Philadelphia, and a senior advisor at the Lankenau Internal Medicine Clinical Care Center, Wynnewood, Pennsylvania. Having earned her medical degree from the University of Pennsylvania Perelman School of Medicine (Philadelphia), she completed a residency in internal medicine at Lankenau Hospital (now the Lankenau Medical Center). Dr Burke is board certified in internal medicine and geriatrics and is a fellow of the American College of Physicians.

A 2-time recipient of the Osler-Blockley Award for Excellence in Clinical Teaching from Thomas Jefferson University, Dr Burke also has received the residents’ award for best teacher from the Lankenau Internal Medicine house staff. She has been named Best Doctor for Women (2005) and, more recently, Top Doctor (2006) by Main Line Today magazine. Dr Burke lectures nationally and has published chapters and articles in publications such as The Journal of the American Osteopathic Association and Annals of Long-Term Care on numerous primary care and geriatric topics, as well as in CD-ROM format.

Faculty Financial Disclosure Statements
The presenting faculty reports the following:

Dr Schaffner has received consultant honoraria from Dynavax, GlaxoSmithKline, and Pfizer. Dr Schaffner also has received honoraria from Merck & Co, Inc., and from Sanofi-Pasteur for being a member of Data Safety Monitoring Boards.

Dr Hopkins has no financial relationships to disclose.

Dr Burke has received speaker and advisory board honoraria from Merck & Co, Inc.; Dr Burke also has received advisory board honoraria from Iroko Pharmaceuticals, LLC.

Education Partner Financial Disclosure Statement
The content collaborators at Miller Medical Communications, LLC, report the following:
Lyerka D. Miller, PhD, has no financial relationships to disclose.

Suggested Reading List


SESSION 2
9:45 AM – 11:00 AM
Improving Adult Immunization Coverage in the US

SPEAKERS
William Schaffner, MD
Robert H. Hopkins Jr, MD, FACP, FAAP
M. Susan Burke, MD, FACP

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Learning Objectives
• Identify adult patients for appropriateness of administering vaccines based on current recommendations
• Act to increase provider recommendations to patients who should be vaccinated
• Implement standing orders for adult immunization within practice settings

What type of practitioner are you?
1. Physician
2. Nurse Practitioner
3. Physician Assistant
4. Nurse
5. Other

For approximately how many patients have you recommended the shingles vaccine over last 6 months?
1. None
2. 1-5
3. 6-10
4. 11-20
5. Over 20
Outcomes Question 1
How would you rate your knowledge of the current ACIP recommendations for adult vaccines?

1. Expert
2. Very knowledgeable
3. Knowledgeable
4. Somewhat knowledgeable
5. Not at all knowledgeable

Outcomes Question 2
How frequently do you use standing orders for adult vaccines?

1. Never or rarely
2. Some of the time
3. Most of the time
4. Always

Outcomes Question 3
How frequently do you check the immunization status of your adult patients?

1. Never or rarely
2. Some of the time
3. Most of the time
4. At every visit
5. Only if they are 65 or older

Outcomes Question 4
How frequently do you discuss vaccines with your adult patients and recommend them whenever indicated?

1. Never or rarely
2. Some of the time
3. Most of the time
4. At every visit
5. Only if they are 65 or older

Adult Immunization
An Unexploited Opportunity for Prevention

William Schaffner, MD
Chairman
Department of Preventive Medicine
Professor of Infectious Diseases
Department of Medicine
Vanderbilt University School of Medicine
Nashville, Tennessee
The Yearly Toll of Vaccine-Preventable Diseases

Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>20th Century Annual Morbidity</th>
<th>2010 Reported Cases</th>
<th>Percent Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallpox</td>
<td>29,005</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>21,653</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Measles</td>
<td>530,217</td>
<td>61</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Mumps</td>
<td>162,344</td>
<td>2528</td>
<td>98%</td>
</tr>
<tr>
<td>Pertussis</td>
<td>290,752</td>
<td>21,291</td>
<td>93%</td>
</tr>
<tr>
<td>Polio (paralytic)</td>
<td>16,316</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Rubella</td>
<td>47,745</td>
<td>6</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Congenital Rubella Syndrome</td>
<td>152</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>580</td>
<td>8</td>
<td>99%</td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>20,000</td>
<td>270</td>
<td>99%</td>
</tr>
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Burden of Vaccine-Preventable Diseases – 1

<table>
<thead>
<tr>
<th>United States/Annual Rates</th>
</tr>
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<tbody>
<tr>
<td>INFLUENZA</td>
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<tr>
<td></td>
</tr>
<tr>
<td>INVASIVE</td>
</tr>
<tr>
<td>PNEUMOCOCCAL</td>
</tr>
<tr>
<td>DISEASE</td>
</tr>
<tr>
<td>HEPATITIS B</td>
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</table>

AA, African American; HBV, hepatitis B virus.

Burden of Vaccine-Preventable Diseases – 2

<table>
<thead>
<tr>
<th>United States/Annual Rates</th>
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<tbody>
<tr>
<td>HUMAN PAPILLOMAVIRUS (HPV)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PERTUSSIS</td>
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</tbody>
</table>

Burden of Vaccine-Preventable Diseases – 3

<table>
<thead>
<tr>
<th>United States/Annual Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHINGLES</td>
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Adult Vaccination Rates Too Low – 1

<table>
<thead>
<tr>
<th>United States/Annual Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFLUENZA</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HCW</td>
</tr>
<tr>
<td>PNEUMOCOCCAL</td>
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<td></td>
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<td></td>
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<tr>
<td>TDAP</td>
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</tbody>
</table>

HCW, health care worker; TDAP, tetanus, diphtheria, and pertussis.
Adult Vaccination Rates Too Low – 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV</td>
<td></td>
</tr>
<tr>
<td>Women, 19-26 (≥1 dose)</td>
<td>30%</td>
</tr>
<tr>
<td>HERPES ZOSTER (shingles)</td>
<td></td>
</tr>
<tr>
<td>≥60 AA Hispanic</td>
<td>16%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>8%</td>
</tr>
</tbody>
</table>

Conclusions: Coverage remaining very low – tiny improvement since 2009 Racial/Ethnic disparities persist
An opportunity for improvement!

Reasons Why Patients Not Vaccinated
- Healthy, don’t think they need it
- Didn’t know about disease
- Didn’t know about vaccine
- Doctor didn’t recommend it

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.

Advent Immunization: Case-Based Approach

Robert H. Hopkins, Jr, MD, FACP, FAAP
Professor of Internal Medicine and Pediatrics
University of Arkansas for Medical Sciences
College of Medicine
Little Rock, Arkansas
Maria is a 25-year-old woman with asthma since childhood. She presents to your office for preventive care prior to embarking on a missionary trip to central Africa. She has brought a health record for your review demonstrating that she was appropriately immunized prior to college entry 6 years ago.

In addition to any prophylaxis and vaccines specifically recommended for her planned travel/destinations, which other vaccinations should be administered today?

1. Tdap, influenza, HPV
2. Pneumococcal, MMR, influenza
3. Pneumococcal, HPV, influenza, Tdap
4. Influenza, meningococcal, pneumococcal, varicella

Maria’s case also raises a second question...

Which type of flu vaccine should Maria receive?

1. LAIV
2. TIV
3. High-dose TIV
4. Intradermal TIV
5. Not sure

US Influenza Vaccines

- IV: ‘Inactivated’ and replaces ‘TIV’, IM administration ‘All comers’ 6 months+
  - Multiple vaccines varied indications [age, etc.], 2013-2014 most Trivalent—Limited supply of quadrivalent inactivated vaccine expected to be available
- Intradermal IV [Approved May 2011 for 18-64 years—smaller needle]
- High-Dose IV for 65+ population’ [First available 2010-2011]
  - Same production as TIV, higher Ag content ‘; More local reactions
  - Phase 3 trials: Seroconversion, seroprotection rates ≥TIV for A,B strains
  - ’Real world’ efficacy data not yet published
- New Cell culture vaccine approved 2013
  - Option in egg-allergic (2013-2014)
- New Recombinant HA Vaccine approved 2013
  - Higher HA content, no NA
- LAIV: Live-attenuated/cold-adapted nasal.
  - Indicated only for ‘healthy people’ 2-49 years
- IV, inactivated influenza vaccine [IM, intramuscular]


Influenza Vaccine Priorities

<table>
<thead>
<tr>
<th>HEALTH CARE WORKERS</th>
<th>PATIENTS AT HIGHEST RISK OF SEVERE ILLNESS /TRANSMISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk for disease</td>
<td>Pregnant women</td>
</tr>
<tr>
<td>(symptomatic and asymptomatic)</td>
<td></td>
</tr>
<tr>
<td>High risk for transmission</td>
<td>Newborns and children</td>
</tr>
<tr>
<td>If sick, not available to provide health care</td>
<td>Older adults</td>
</tr>
<tr>
<td>Medical comorbidities, including obesity</td>
<td></td>
</tr>
<tr>
<td>Household contacts of high risk</td>
<td></td>
</tr>
<tr>
<td>Long-term care, institutionalized, crowded living conditions</td>
<td></td>
</tr>
</tbody>
</table>

*Vaccine indicated in all >6 months of age wanting to prevent flu.

**Influenza ‘Nuts and Bolts’**

- **IIV**: 1 dose for adults
  - If: QIV, TIV, svQIV, sDTIV, LAIV, ccTIV, rHAd (Flublock)
  - Kids <9 years, first vaccine season: 2 doses 4+ weeks apart
  - LAIV can be safely used in MOST health care settings as alternative to TIV
- **Egg allergy**: ACIP, AAAI: NO contraindication
  - Anaphylaxis EXCEEDINGLY rare (~1 in 4 million doses)
  - History is key; Hives+higher risk, consider allergy referral
  - Risk/benefit of disease vs vaccine → usually favors vaccine...
    - When vaccinating egg-allergic, observe in office ~ 30 minutes

AAAI = Academy of Allergy and Immunology; ACIP = Advisory Committee on Immunization Practices; AAAI = American Academy of Allergy, Asthma, and Immunology.


**Pneumococcal Polysaccharide**

- >2000 adults aged 65+ years die of invasive pneumococcal disease each year
- Traditional vaccine is purified capsular polysaccharide
  - 23 types—cause of 88% bacteraemic PNC disease
- 60%-70% efficacy vs invasive disease
- Does not ‘protect pneumococcal
- Immunity lasts at least 5 years following 1 dose
- Local reactions – only common AE

Pneumococcal Conjugate Vaccine vs Influenza Vaccine

- **Safety**
  - Maximum doses: 1 influenza TIV dose + 1 pneumococcal PCV13/PPS23 dose
  - IIV: 2 doses + 1 TIV dose + 1 pneumococcal PCV13/PPS23 dose

**PCV13 Vaccine in Adults NEW 2012**

- Routine PCV13 in US infants since 2010
- 2010 FDA approved + ACIP recommended
  - All children 6 weeks – 71 months [Series = another talk...]
- December 30, 2011 FDA approves for adults:
  - Prevention of pneumonia and IPD ≥50 years
  - Based on immunogenicity studies [not clinical efficacy]
  - Safety in ~6000 adults similar to PPSV23
- June 20, 2012 [Published October 12, 2012] ACIP recommends PCV13 in adults:
  - Immune compromised adults ≥19 years + CSF leak/cochlear implant
  - Best practice PCV13 should be administered before PPS23
  - 1 Booster in children 6-18 years with immune compromise

CSF: cerebrospinal fluid; IPD: invasive pneumococcal disease.


**Pneumococcal Recommendations**

- **Recommended for**:
  - Adults aged 65+ years
  - Cigarette smokers
  - Chronic conditions: heart, lung, liver, kidney...
    - Including asthma
    - CSF leak, cochlear implant
  - Core measure: PNC and influenza vaccine
  - Immunocompromised (from treatment or disease)
    - Includes Sickle cell, hemoglobinopathy, asplenia
    - Need PCV13 AND PPS23


**PPS23 [1 dose, boost at 65] is recommended for**:

- Adults aged 65+ years
- Cigarette smokers (since 2009)
- Chronic conditions:
  - Diabetes
  - Heart, lung, liver, kidney disease
    - Including asthma (since 2009)
  - Immunocompromised (PCV13+PPS since 2012)
    - Disease-based: Solid tumor, hematologic malign, myeloma, HIV...
    - Iatrogenic: Steroids, organ transplants, BMT...
  - Anatomic/functional asplenia [Sickle cell, etc] (PCV13+PPS since 2012)
  - CSF leak, cochlear implant (PCV13+PPS since 2012)

BMT: bone marrow transplantation; HIV: human immunodeficiency virus.

PCV13 Recommended in Adults With:
- Solid Organ Transplants
- Multiple myeloma
- Hematologic malignancy [leukemia, lymphoma, Hodgkin’s]
- General Malignancy
- ESKD, Nephrotic Syndrome
- Sickle Cell, hemoglobinopathy
- HIV
- Immunosuppression/Immunodeficiency
- Not-immune-compromised
  - CSF leak, Cochlear implant

RPCV13 Vaccine in Adults NEW 2012
- Pneumococcal (PPS23) vaccine-naive patients:
  - Adults ≥21 yrs with immunocompromise, CSF-leak/Cochlear implant
  - PCV13 FIRST followed by PPS23 at least 8 weeks later
  - Booster PPS23 in 5 years
  - AND boost PPS23 after 5 years PLUS 65+ years old
- Previously PPS23-vaccinated subjects:
  - Adults ≥21 yrs with immunocompromise, CSF-leak/Cochlear implant
  - PCV13 should be given 1+ years AFTER PPSV23
  - Booster PPS23 in 5 years
  - AND boost PPS23 after 5 years PLUS 65+ years old

HPV
- More than 200 types of the virus identified to date
  - 30+ HPV types infect the human genital tract
  - HPV-16 and HPV-18 are the most common oncogenic HPV types, associated with cervical, anal, penile, and oropharyngeal malignancies
  - HPV-6 and HPV-11 are associated with genital warts and respiratory papillomatosis
  - Very common infection; at least 50% of sexually active men and women infected with HPV during lifetime
  - Malignancies associated with persistent infection; HPV is responsible for:
    - 99% of cervical cancers and cervical dysplasia
    - 13% to 74% of malignancies in the oral cavity
    - 50% of penile and vaginal cancers
    - 90% to 95% of anal cancers
  - 25,000 HPV-associated cancers in United States annually

HPV Vaccines

<table>
<thead>
<tr>
<th>HPV</th>
<th>Prevention of cervical, vaginal, and oropharyngeal cancer</th>
<th>Prevention of cervical cancers and precancerous lesions in females aged 9 to 26 years</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HPV4</th>
<th>HPV2</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV Types 6, 11, 16, and 18</td>
<td>Prevention of genital warts in males and females aged 9 to 16 years</td>
</tr>
<tr>
<td>HPV Types 16 and 18</td>
<td>Prevention of genital warts in males and females aged 9 to 26 years</td>
</tr>
<tr>
<td>Prevention of cervical cancers and precancerous lesions in females aged 9 to 26 years</td>
<td></td>
</tr>
<tr>
<td>Prevention of anal cancers in males and females aged 9 to 26 years</td>
<td></td>
</tr>
<tr>
<td>Prevention of anal and intestinal neoplasia (AIN) in males and females aged 9 to 26 years</td>
<td></td>
</tr>
</tbody>
</table>

Td/Tdap
- Recommendation
  - All adults should have a primary tetanus, diphtheria series, followed by a Td booster” every 10 years
  - Replace 1 dose Td with Tdap
  - Many adults aged ≥60 years never received primary Td series
  - Primary series includes: 3 doses at 0, 1 month, 6 months
  - Results in protective Ab in nearly all, duration 10 yrs+
  - Many adults do not receive Td boosters
  - More than 50% of adults do not have protective Td Ab’s
  - Most boosters given are episodic trauma-related
- Td/Tdap Contraindications
  - Severe allergy to vaccine components or Arthus Reaction following T vac
  - (Tdap) Encephalopathy <7 days after pertussis-containing vaccine
  - (Tdap) Unstable neurologic disease, moderate-severe acute illness

Ab, antibody; T, year; Td, tetanus vaccine; Td, tetanus diphtheria toxoid.

Herpes

Tdap Recommendations

- Single dose to replace 1 dose Td for all adults
- 2009 added 65+
- 2012 Booster dose with each pregnancy
- Current recommendation for subsequent Td q10yr
- May be given (anytime) <10 years following last Td
- As little as 2 years demonstrated safe/effective
- Special emphasis:
  - Adults with close infant contact: (health care workers, parents, child care workers, etc)
  - To follow primary T series [DTaP, DTP, DT, or Td]
- Or as part of primary series

Herpes Zoster – Shingles

- Most who have varicella have measurable Ab for life
- Zoster (shingles) occurs when CMI surveillance declines
- Reactivation or varicella exposure re-stimulates CMI
- Cycle can repeat
- Lifetime risk of shingles ~33% (increases with age)
- (99.5% adults have serologic evidence of prior varicella)
  - At 85—lifetime risk ~50%
  - Postherpetic neuralgia (PHN) is the most common complication
  - Occurs in up to one-third of patients with shingles
  - Pain ranges from mild to excruciating
  - More common if >70 years, immunocompromised
  - Vaccination stimulates CMI and decreases zoster

Zoster Vaccine

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>LIVE ATTENUATED VIRUS VACCINE</th>
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</thead>
<tbody>
<tr>
<td>ACRP Recommendation</td>
<td>Healthy adults aged 60 years, regardless of prior history of zoster</td>
</tr>
<tr>
<td>TDA Indication</td>
<td>Healthy adults aged 50 years</td>
</tr>
<tr>
<td>Other Recommendations</td>
<td>ACR: administer before initiating biologic DMARDs</td>
</tr>
</tbody>
</table>
| Contraindications | • Pregnancy
  • Anaphylactic hypersensitivity to neomycin or gelatin
  • Known severe immunodeficiency |
| Other Considerations | • No need to defer for on-risk contact
  • Transmission risk low
  • No need to defer if recent transfusion, Ab-containing products |
| Adverse Events | Occasional mild varicella-like rash at vaccine site |
| Frozen Powdered Vaccine | Must be administered within 60 minutes of reconstitution
  • 0.5 mL subcutaneous/deltoid |
| Duration of Protection | At least 4 years |

MMR, Varicella

- Live virus vaccines, 2-dose vaccine series
  - Contraindications: Immune compromise
    • MMR: Egg allergy
    • VAR: Neomycin, gelatin allergy
  - Routinely recommended in children
    - Most born before 1957 immune to measles, mumps, rubella
    - Most born before 1980 immune to varicella
  - Risk groups
    - HEALTH CARE WORKERS
    - Education, day care, institutional employees
    - Women of childbearing age
    - Vaccinate prepregnancy or postpartum
    - International travel/adoption

Oscar is a 70-year-old man with longstanding hypertension and osteoarthritis who recently moved to your community. He has come to your office to establish primary care. He does not recall receiving any vaccines within the past several years other than the ‘shingles shot’ when he turned 65.

Which vaccines are appropriate for Oscar?

1. Tdap, TIV influenza, pneumococcal
2. Pneumococcal, varicella, TIV influenza
3. Tdap, LAIV influenza, pneumococcal
4. Tdap, LAIV influenza, pneumococcal, zoster

TD >> Tdap

- Pertussis incidence increasing since 1970s
  - 2012: CDC Passive Surveillance US >42,000 cases, likely 10+ times higher
  - Community outbreaks: Most in fall, winter, and in persons of all ages
  - Nosocomial Disease: Academic, Community
  - [Med/Surg, OR, I&O, NICU, Oncology]
  - Residential Care
- Adults/Adolescents do not have ‘classic’ triphasic disease
  - Must have persistent cough: Median 4 months [6 studies]
  - 20%-40% ‘whoop’, 40%-50% posttussive emesis
  - 12%-32% lymphophytosis
  - ~10% develop complications [pneumonia most common]

CDC, Centers for Disease Control and Prevention; I&O, labor & delivery; Med/Surg, medical/surgical; NICU, neonatal intensive care unit; OR, operating room.


Hepatitis B Recommendations

- Chronic liver disease, including chronic HCV
- End-stage renal disease, including dialysis patients (high-dose vaccine)
- Recipients of clotting factors
- Alaska and Pacific Islands natives
- HIV
- Sexual partners of HIV-positive individuals
- Household and sexual contacts of HBV patients
- Health care workers
- Travelers to endemic areas and internationally adoptive families
- Current or recent injection drug users
- Correctional facility inmates and staff, developmental disability facility patients and staff
- Any person seeking protection from HBV infection

HCV, HBV, HAV, HAV vaccination, meningococcal, MMR, MCV, PPSV23, Td, Tdap, influenza, or other vaccine

Meningococcal

- Highly contagious gram-negative bacterial infection
  - Highest mortality in children aged <1 year
  - Increased risk for children aged 11 to 12 years, pre-college 'catch up'
    - Selective adult recommendation based on risk
- 3 Current vaccines: A, C, Y, W-135 (no type B vaccines)
  - MCV4: Polysaccharide vaccine (subcutaneous, 1 dose +1booster)
  - Available since 1978, fair efficacy, OK if conjugate not available
  - MCV4 (2 products): Conjugate vaccines (intramuscular, 1 dose)
  - Approved 2005, 2010
  - Preferred for primary vaccination
  - Booster may be given selectively after 5 years if high risk persists

Meningococcal Indications

- All children aged 11 to 12 years
- College freshmen who will live in a dormitory
- Who have not been vaccinated previously
- Asplenia (anatomic or functional)
- Terminal complement deficiencies
- HIV
- Best response if CD4 >200
- Travelers to 'at-risk areas': Sub-Saharan Africa, December through June
- Required for entry into Saudi Arabia/Mecca during Hajj
- Microbiologists with potential occupational meningococcal contact

HCV, hepatitis C virus; MMR, men who have sex with men; STD, sexually transmitted disease.

Special Populations

- Preoperative consult
  - Meningococcal, PPS23 (PCV13?) — pre-splenectomy
  - PPS23 (PCV13?) — pre-cochlear implant
- Hospitalized medical patients
  - Influenza (in season), pneumococcal year-round
  - Tdap and influenza prior to L&D discharge (family?)
- Immunocompromised
  - Prednisone 20 mg/d equivalent
  - HIV CD4 <200
  - Biologic immunomodulators
  - Maximal ‘non-live’ vaccination
  - No recommendation for live vaccines
- Travel [CDC Yellow Book +/- Travel Clinics]

Practical Strategies to Increase Immunization of Adults in Your Practice

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How Can We Improve Adult Vaccination Rates?

Why Do We Want to Improve Vaccination Rates?

- More adults living longer
  - In United States, 10,000 turn 65 years old every day*
- Help keep our patients healthy
  - Focus on prevention: heart disease, cancer screening, immunizations
  - Vaccination is quality-of-care issue that improves health outcomes and will be monitored by health insurers/government in future
- Reduce morbidity and mortality
- Offices that vaccinate adults receive reasonable compensation
- It’s the right thing to do


Vaccine Opportunities – Pertussis

Successful Vaccines: Polio

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Cases</th>
<th>%</th>
<th>Age Inc./100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>4516</td>
<td>10.6</td>
<td>113.0</td>
</tr>
<tr>
<td>1-6 years</td>
<td>7612</td>
<td>17.5</td>
<td>30.1</td>
</tr>
<tr>
<td>7-10 years</td>
<td>8349</td>
<td>19.9</td>
<td>51.2</td>
</tr>
<tr>
<td>11-19 years</td>
<td>12484</td>
<td>29.8</td>
<td>53.6</td>
</tr>
<tr>
<td>20+ years</td>
<td>8800</td>
<td>21.2</td>
<td>3.89</td>
</tr>
<tr>
<td>Unknown</td>
<td>329</td>
<td>0.80</td>
<td>N/A</td>
</tr>
<tr>
<td>Total</td>
<td>41880</td>
<td>100.0</td>
<td>13.3*</td>
</tr>
</tbody>
</table>

**Total age incidence per 100,000 calculated from 41,331 cases with age reported.
*Deaths reported through NNDSS to CDC. 11 of the 18 deaths were female.
Centers for Disease Control and Prevention. 2012 Provisional pertussis surveillance report.
So How Do We Improve Vaccination Rates in Our Practices?

- Know the rules
- Establish protocols/standing orders
- Make strong recommendations
- If your office cannot vaccinate, then refer
- You are captain of the immunization ship!

Protocols/Standing Orders

- Utilize EMR to your advantage
  - Use the automatic reminders
  - Some can run the daily patient list for immunizations that are due; have staff administer on arrival
- Get your staff involved
  - Have them ask about vaccination status when doing vital signs
  - They can provide vaccine information to patient
  - Establish standing orders for automatic administration of other vaccines, not just flu
- Free download of standing order forms at www.immunize.org/standing-orders

EMR, electronic medical records system.

Make Strong Recommendations

- Your recommendation is key
  - 88% of consumers said they were likely to get vaccinated if recommended by their doctor*
- Make education materials available—wall posters, vaccine information sheets
- Encourage dialogue, answer questions
- Personalize the vaccine experience
  - Would you take the vaccine yourself or give it to your parents? If so, let the patient know.


Know The Rules

Recommended Adult Immunization Schedule 2013

[Image: Recommended Adult Immunization Schedule 2013]

Accessed April 9, 2013.

[Accessed April 9, 2013]
If Your Office Cannot Vaccinate, Then Refer

- My office does not provide all services to all patients, either
  - I vaccinate, but refer when needed
    • Colonoscopy, etc, per guideline recommendations
  - If you are following guidelines for other diseases, you should follow immunization recommendations as well, whether through your office or through referral to others

Barriers

- "But I'm too busy after taking care of all the other diseases I have to address"
  - What makes immunizing your patient less important than other disease issues?
- Turn your office immunizations into a Cinderella story!
- You don't have to do it alone—engage the staff; have standing orders, refer to others

Barriers

- "But it's too costly to give or stock all these vaccines"
  - Reimbursement for adult vaccines better than for pediatric ones
  - Can bill $30-$96 above vaccine cost in addition to vaccine administration cost per vaccine
    • Example: administration of 21 zoster vaccines and 32 pneumococcal vaccines gained additional $4,487.65 in net practice revenue, annualized to ~ $27K net profit*
  - Many companies will provide vaccines up to 90 days before payment is due—can bill for them by then!!
  - Most companies will buy back outdated/damaged product or freezer failures

*Personal communication with practice manager in Kennett Square, Pennsylvania. March 2013.

If You Can’t Vaccinate, Then Refer

- Health centers, travel clinics, ID specialists all stock vaccines
- Growing number of pharmacies offer vaccinations
  - All states have some vaccinating pharmacies
  - Often better access with expanded evening and weekend hours
  - Patients visit their pharmacy more frequently than they do their doctor!

You can change the course of your patient's destiny...

Polio: Prevented Through Vaccination
Pertussis: Prevent or Modulate Disease Through Vaccination

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Cases</th>
<th>%</th>
<th>Age Range</th>
<th>Age Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>4516</td>
<td>18.8</td>
<td>103.0</td>
<td>Infants, aged 1-6 months: 11</td>
</tr>
<tr>
<td>1-5 years</td>
<td>1243</td>
<td>19.6</td>
<td>51.3</td>
<td>Infants, aged 1-5 months: 3</td>
</tr>
<tr>
<td>6-11 years</td>
<td>3056</td>
<td>26.8</td>
<td>53.6</td>
<td>Children: 2</td>
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<tr>
<td>&gt;11 years</td>
<td>7540</td>
<td>31.2</td>
<td>1.98</td>
<td>Adults: 2</td>
</tr>
<tr>
<td>Unknown</td>
<td>329</td>
<td>0.80</td>
<td>NA</td>
<td>Total: 14</td>
</tr>
<tr>
<td>Total</td>
<td>45898</td>
<td>100.0</td>
<td>12.2%</td>
<td></td>
</tr>
</tbody>
</table>

Make Immunizations a Priority: (What’s Not to Like?)

- Better patient care
- More patients into your office
- Primary prevention opportunity
  - Reduce morbidity and mortality
- More revenue for your practice

Final Thoughts

Give All Your Patients the Best Fighting Chance Against Vaccine-Preventable Diseases!
Outcomes Question 1
How would you rate your knowledge of the current ACIP recommendations for adult vaccines?

1. Expert
2. Very knowledgeable
3. Knowledgeable
4. Somewhat knowledgeable
5. Not at all knowledgeable

Outcomes Question 2
Moving forward, how frequently will you use standing orders for adult vaccines?

1. Never or rarely
2. Some of the time
3. Most of the time
4. Always

Outcomes Question 3
Moving forward, how frequently will you check the immunization status of your adult patients?

1. Never or rarely
2. Some of the time
3. Most of the time
4. At every visit
5. Only if they are 65 or older

Outcomes Question 4
Moving forward, how frequently will you discuss vaccines with your adult patients and recommend them whenever indicated?

1. Never or rarely
2. Some of the time
3. Most of the time
4. At every visit
5. Only if they are 65 or older

Question & Answer