Thank you for coming to our Los Angeles Workshop

THIS INITIATIVE IS BEING SUPPORTED BY A SPONSORSHIP FROM PFIZER
Session 1

THIS INITIATIVE IS BEING SUPPORTED BY
A SPONSORSHIP FROM PFIZER
Disclosure

The Immunization Action Coalition has been responsible for all aspects of content development for the enclosed presentation and all other assets supporting the Take a Stand™ program. Any questions should be directed to the Immunization Action Coalition.

Pfizer is supporting this initiative because it provides focus on the importance of adult immunization. Pfizer has had no role in the creation of content for this presentation or other assets supporting the Take a Stand™ program workshops and therefore accepts no responsibility for the content.
Session 1
Why Adult Immunization Matters

Slides from:
L.J. Tan, PhD
Gary S. Marshall, MD
Sharon G. Humiston, MD, MPH
Outline

1. Are vaccine-preventable diseases among adults still important?

2. Where do we stand with adult vaccination coverage?

3. What factors lead to low adult immunization coverage?

4. How can my office vaccinate more adults?
Are vaccine-preventable diseases among adults still important?
VPDs Among U.S. Adults

**Pertussis**

- In 2014, almost 33,000 cases; 8,723 in California
- 13 deaths, 2 in persons >55 years of age

VPDs Among U.S. Adults

*Invasive pneumococcal disease (IPD)*

- During 2011 in the United States:
  - >35,000 cases & >4,200 deaths from IPD (estimated)
  - >1/2 of these cases occurred in adults who had an indication for pneumococcal polysaccharide vaccine

- Case-fatality rates:
  - ~10% of all patients with IPD
  - higher for the elderly & patients with certain underlying illnesses

CDC. 2013 Active Bacterial Core Surveillance (www.cdc.gov/abcs/reports-findings/survreports/spneu13.pdf)

VPDs Among U.S. Adults

**Influenza**

- 3,000–49,000 deaths per year
- 80%–90% of deaths occur in adults ≥65 years of age

CDC. MMWR. 2010;59:1057 (data from 1976-2007)

VPDs Among U.S. Adults

*Herpes zoster*

- 1 million cases per year
- Post-herpetic neuralgia is common

*CDC. MMWR 2008;57(RR-5):1*

www.cdc.gov/mmwr/preview/mmwrhtml/rr57e0515a1.htm
VPDs Among U.S. Adults

**Hepatitis B**

- 3,050 acute cases reported
- 19,800 estimated cases

CDC. 2013 viral hepatitis surveillance: www.cdc.gov/hepatitis/statistics/2013surveillance/commentary.htm#hepatitisB

Patient information on jaundice: http://patient.info/doctor/jaundice-pro
## Estimated Human and Economic Burden Caused by 4 Major Adult VPDs in 2013, U.S.
(includes only adults ≥ 65 years of age)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cases</th>
<th>Cost (x $1,000,000)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Medical</td>
<td>Indirect</td>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td>4,019,759</td>
<td>7,503</td>
<td>810</td>
<td>8,313</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal disease</td>
<td>440,187</td>
<td>3,572</td>
<td>215</td>
<td>3,787</td>
<td></td>
</tr>
<tr>
<td>Herpes zoster</td>
<td>555,989</td>
<td>1,309</td>
<td>1,709</td>
<td>3,017</td>
<td></td>
</tr>
<tr>
<td>Pertussis</td>
<td>207,241</td>
<td>90</td>
<td>123</td>
<td>213</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,223,176</strong></td>
<td><strong>$12,474</strong></td>
<td><strong>$2,856</strong></td>
<td><strong>$15,330</strong></td>
<td></td>
</tr>
</tbody>
</table>
# Adult Schedule - by Age Group

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>AGE GROUP</th>
<th>19-21 years</th>
<th>22-26 years</th>
<th>27-49 years</th>
<th>50-59 years</th>
<th>60-64 years</th>
<th>≥ 65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (Td/Tdap)(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Female(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Male(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate (PCV13)(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV23)(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type b (Hib)(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have evidence of previous infection, zoster vaccine is recommended regardless of prior episode of zoster.

Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention’s (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the America College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM).

Report all clinically significant post-vaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.

www.cdc.gov/vaccines/schedules/hcp/adult.html
### Adult Schedule - by Condition

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Indication</th>
<th>Pregnancy</th>
<th>Immuno-compromising conditions (excluding human immunodeficiency virus [HIV])&lt;sup&gt;6,7,13&lt;/sup&gt;</th>
<th>HIV infection CD4+ T lymphocyte count&lt;sup&gt;4,8,13&lt;/sup&gt;</th>
<th>Men who have sex with men (MSM)</th>
<th>Kidney failure, end-stage renal disease, receipt of hemodialysis</th>
<th>Heart disease, chronic lung disease, chronic alcoholism</th>
<th>Asplenia (including elective splenectomy and persistent complement component deficiencies)&lt;sup&gt;8,12&lt;/sup&gt;</th>
<th>Chronic liver disease</th>
<th>Diabetes</th>
<th>Healthcare personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1 dose IIV annually</td>
<td>1 dose IIV annually</td>
<td>1 dose IIV annually</td>
<td>Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs</td>
<td>2 doses</td>
<td>3 doses through age 26 yrs</td>
<td>3 doses through age 26 yrs</td>
<td>1 dose</td>
<td>1 dose IIV or LAIV annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (Tdap)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Tdap each pregnancy</td>
<td>Contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Female&lt;sup&gt;3&lt;/sup&gt;</td>
<td>3 doses through age 26 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV) Male&lt;sup&gt;3&lt;/sup&gt;</td>
<td>3 doses through age 26 yrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zoster&lt;sup&gt;6&lt;/sup&gt;</td>
<td>Contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, rubella (MMR)&lt;sup&gt;7,12&lt;/sup&gt;</td>
<td>Contraindicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal 13-valent conjugate (PCV13)&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1 dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal polysaccharide (PPSV23)&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1 or 2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1 or more doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A&lt;sup&gt;3,10&lt;/sup&gt;</td>
<td>2 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B&lt;sup&gt;3,11&lt;/sup&gt;</td>
<td>3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b (Hib)&lt;sup&gt;12&lt;/sup&gt;</td>
<td>1 or 3 doses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster.

**Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)**

**No recommendation**
The vaccines are effective!
Efficacy or Effectiveness

Pertussis vaccine

CDC. MMWR 2006;55:RR-17:1

Efficacy or Effectiveness

PCV13

Bonten. NEJM 2015;372:1114
PCV13, vaccine-type infection
www.wisegeek.net/what-is-pneumococcal-pneumonia.htm
Efficacy or Effectiveness

*Influenza vaccine*

CDC. MMWR 2013;62(RR-7):1
Medically-attended disease with good vaccine match
http://www.mynyctdoctor.com/tests-for-influenza-a-b/
Efficacy or Effectiveness

Zoster vaccine

Oxman. NEJM 2005;352:2271

PHN, post-herpetic neuralgia
Efficacy or Effectiveness

Hepatitis B vaccine

Efficacy or effectiveness

Diabetic (age group, yr)

Overall <40 41-59 60-69 ≥70

Efficacy or effectiveness

CDC. MMWR 2011;60:1709
www.mcemcourses.org/caseoftheweek/case-9/
Pregnant Women

Two-for-one vaccination!

www.porticostory.org/content/BLOG/BLOG.asp
Objective #2

Where do we stand with adult vaccination coverage?
US Adult Vaccine Coverage, by year

- **Tetanus past 10 years, age ≥65**
  - 2013
  - 2012
  - 2011
  - 2010

- **Tetanus past 10 years, age 19-64**

- **Pneumococcal, age ≥65**

- **Pneumococcal, age 19-64, high risk**

- **Zoster, age ≥60**

Data from National Health Interview Survey
US Adult Coverage, by year (notice HPV)

- Pneumococcal ≥65
- Tetanus within 10 yr, 19-49
- Zoster
- HPV (≥1 dose,) females 19-26
- HPV (≥1 dose), males 19-21

CDC. MMWR 2006;55:RR-17:1
## US Adult Coverage

**Disparities by race**

<table>
<thead>
<tr>
<th>Vaccination, Group</th>
<th>Whites</th>
<th>Disparity from Coverage in Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Blacks</td>
</tr>
<tr>
<td>Tetanus, ≥65</td>
<td>59.6</td>
<td>-19.3</td>
</tr>
<tr>
<td>Tetanus, 19–49</td>
<td>69.0</td>
<td>-14.9</td>
</tr>
<tr>
<td>Pneumo, ≥65</td>
<td>63.6</td>
<td>-14.9</td>
</tr>
<tr>
<td>Zoster, ≥60 yrs</td>
<td>27.4</td>
<td>-16.7</td>
</tr>
<tr>
<td>HPV, females 19–26 yrs</td>
<td>41.7</td>
<td>-11.1</td>
</tr>
</tbody>
</table>
US Adult Coverage, by age (in yrs) and risk

Influenza vaccine

Age ≥18
Age 18-49
Age 18-49, high risk
Age 50-64
Age ≥65

% Vaccinated

www.cdc.gov/flu/fluvoxview/index.htm
US Adult Coverage, by year and patient age

HepB vaccination among diabetics

Data from National Health Interview Survey
What factors lead to low adult immunization coverage?

Objective #3

Patient Factors

Office Factors

System Factors
System factors (examples)

• Confusing insurance coverage for varicella vaccine
• Relatively low provider reimbursement for vaccination (compared to other procedures)
• Vaccines requiring maintenance of cold chain, annual administration, multi-dose series
• Few vaccination requirements for adults
• State regulations differ on who can vaccinate adults
Patient factors (examples)

- No primary care provider
- Lack of insurance, lack of awareness of what is covered
- Lack of transportation
- Competing social and economic demands
- Risk perception
Risk perception does not mirror actual risk risk

<table>
<thead>
<tr>
<th>What We’re Afraid Of</th>
<th>What The Real Risk Is</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shark attacks (28)</td>
<td>Dog bites (4.5 million)</td>
</tr>
<tr>
<td>Murder (14,180)</td>
<td>Suicide (33,289)</td>
</tr>
<tr>
<td>Death by peanut allergy (50)</td>
<td>Death by poisoning (27,531)</td>
</tr>
<tr>
<td>Death by plane crash (321)</td>
<td>Death by car crash (34,017)</td>
</tr>
</tbody>
</table>

Kalb. Newsweek. 2010;155(22)
Office factors (examples)

- Other health issues compete with preventive services
- Practice culture (“Vaccines are for kids!”)
- Hours are inconvenient for working adults
- Lack of effective vaccination prompts to providers
- Lack of provider recommendation to patients
Objective #4

How can my office vaccinate more adults?
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Status of Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider education when used alone</td>
<td>Insufficient evidence</td>
</tr>
<tr>
<td>Performance assessment &amp; feedback</td>
<td>Recommended (Strong evidence)</td>
</tr>
<tr>
<td>Provider reminder systems when used alone</td>
<td>Recommended (Strong evidence)</td>
</tr>
<tr>
<td>Standing orders</td>
<td>Recommended (Strong evidence)</td>
</tr>
<tr>
<td>Health care-based interventions implemented in combination</td>
<td>Recommended (Strong evidence)</td>
</tr>
</tbody>
</table>
What gets measured gets done!
Conclusions

1. **Vaccine-preventable diseases** among adults are still an important cause of morbidity, mortality and healthcare costs

2. **Adult vaccination coverage**
   - Middling for some vaccines
   - Poor for some vaccines, age groups, risk groups

3. **Factors** leading to low adult immunization coverage include office factors on which you can intervene

4. Your office can **vaccinate more adults** by using performance enhancing strategies!
Resources

• **Take A Stand™**
  – www.standingorders.org

• **Read IAC publications**
  – www.immunize.org/publications

• **Visit IAC websites**
  – www.immunize.org
  – www.vaccineinformation.org
  – www.izsummitpartners.org

• **Stay ahead of the game! Subscribe to IAC weekly updates**
  – www.immunize.org/subscribe
Questions?
ADDITIONAL SLIDES
### Meta-Analysis of Interventions to Increase Use of Adult Immunization

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Odds Ratio*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational change (e.g., standing orders, separate clinics devoted to prevention)</td>
<td>16.0</td>
</tr>
<tr>
<td>Provider reminder</td>
<td>3.8</td>
</tr>
<tr>
<td>Provider education</td>
<td>3.2</td>
</tr>
<tr>
<td>Patient financial incentive</td>
<td>3.4</td>
</tr>
<tr>
<td>Patient reminder</td>
<td>2.5</td>
</tr>
<tr>
<td>Patient education</td>
<td>1.3</td>
</tr>
</tbody>
</table>

*Compared to usual care or control group, adjusted for all remaining interventions