

Vaccine Recommendations for Health Care Personnel and Older Adults

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Objectives

- Discuss Tdap, Pneumococcal, and Influenza recommendations for adults
- Discuss strategies to increase adult vaccination rates
- Identify vaccines recommended for HCP

Figures 1 and 2 should be read with the footnotes that contain important general information and considerations for special populations.

Figure 1. Recommended immunization schedule for adults aged 19 years or older by age group, United States, 2017

Vaccine	19–21 years	22–26 years	27–59 years	60–64 years	≥ 65 years
Influenza ¹	1 dose annually				
Td/Tdap ²	Substitute Tdap for Td once, then Td booster every 10 yrs				
MMR ³	1 or 2 doses depending on indication				
VAR ⁴	2 doses				
HZV ⁵				1 dose	
HPV–Female ⁶	3 doses				
HPV–Male ⁶	3 doses				
PCV13 ⁷					1 dose
PPSV23 ⁷	1 or 2 doses depending on indication				1 dose
HepA ⁸	2 or 3 doses depending on vaccine				
HepB ⁹	3 doses				
MenACWY or MPSV4 ¹⁰	1 or more doses depending on indication				
MenB ¹⁰	2 or 3 doses depending on vaccine				
Hib ¹¹	1 or 3 doses depending on indication				



Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection



Recommended for adults with additional medical conditions or other indications



No recommendation

Figure 2. Recommended immunization schedule for adults aged 19 years or older by medical condition and other indications, United States, 2017

Vaccine	Pregnancy ^{1-6,9}	Immuno-compromised (excluding HIV infection) ^{3-7,11}	HIV infection CD4+ count (cells/ μ L) ^{3-7,9-11}		Asplenia, persistent complement deficiencies ^{7,10,11}	Kidney failure, end-stage renal disease, on hemodialysis ^{7,9}	Heart or lung disease, chronic alcoholism ⁷	Chronic liver disease ⁷⁻⁹	Diabetes ^{7,9}	Healthcare personnel ^{3,4,9}	Men who have sex with men ^{6,8,9}
			< 200	\geq 200							
Influenza ¹			1 dose annually								
Td/Tdap ²	1 dose Tdap each pregnancy		Substitute Tdap for Td once, then Td booster every 10 yrs								
MMR ³		contraindicated	1 or 2 doses depending on indication								
VAR ⁴		contraindicated	2 doses								
HZV ⁵		contraindicated		1 dose							
HPV-Female ⁶			3 doses through age 26 yrs								
HPV-Male ⁶			3 doses through age 26 yrs	3 doses through age 21 yrs							3 doses through age 26 yrs
PCV13 ⁷			1 dose								
PPSV23 ⁷			1, 2, or 3 doses depending on indication								
HepA ⁸			2 or 3 doses depending on vaccine								
HepB ⁹							3 doses				
MenACWY or MPSV4 ¹⁰			1 or more doses depending on indication								
MenB ¹⁰			2 or 3 doses depending on vaccine								
Hib ¹¹		3 doses post-HSCT recipients only		1 dose							



Recommended for adults who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection



Recommended for adults with additional medical conditions or other indications



Contraindicated



No recommendation



Adult Vaccinations Rates

- Remain extremely low
- Most adults are NOT aware that they need vaccines
- Recommendation from their healthcare professional is the strongest predictor of whether patients get vaccinated
- Many missed opportunities for vaccination because healthcare professionals don't routinely assess vaccination history



U.S. Adult Vaccination Coverage, NHIS 2015

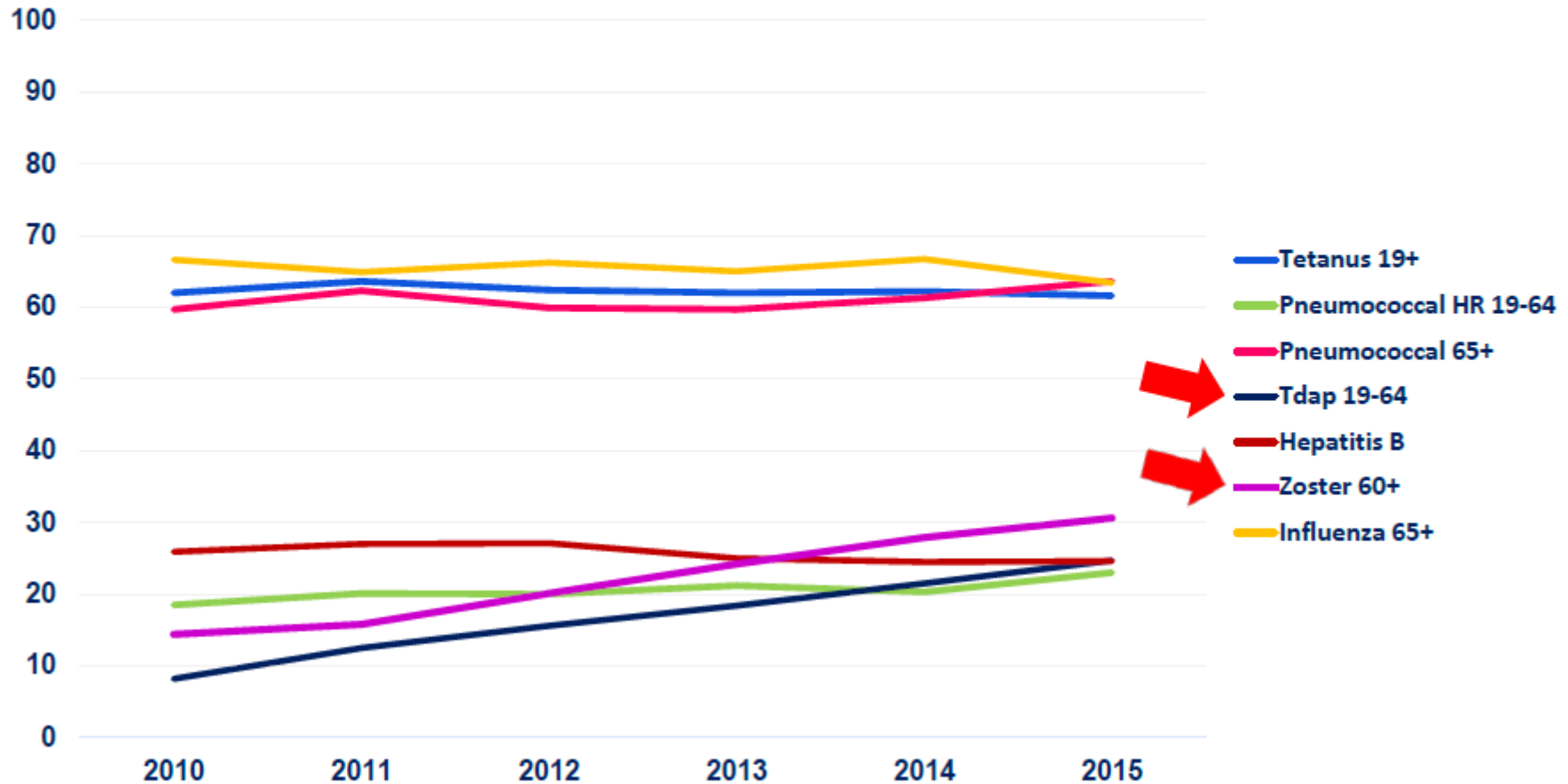
- Key findings Pneumococcal vaccination for 19–64y high risk: **23.0%** (↑2.8%)
- Tdap vaccination for ≥19y: 23.1% (↑3.1%); adults living with infants <1y: 41.9% (↑10.0%)
- Shingles vaccination for ≥60y: **30.6%** (↑2.7%)
 - Otherwise similar to 2014 estimates: Pneumococcal vaccination for ≥65y: **63.6%**
 - Hepatitis B vaccination for 19–59 years among persons with diabetes: **24.4%**
- Disparities by race and ethnicity, insurance (highest for private), education, and income

1. www.cdc.gov/vaccines/imz-managers/coverage/adultvaxview/coverage-estimates/2015.htm |

2. www.cdc.gov/flu/fluview/coverage-1516estimates.htm



Adult Vaccination Coverage for Selected Vaccines and Age Groups, NHIS 2010–2015 and BRFSS 2010–2016 Influenza Seasons



Standards for Adult Immunization Practice

Assess

- Review pt's IZ history
- Implement protocols and policies

Recommend

- Make a strong recommendation
- Address concerns
- Remind pt's that vaccines protect them and their family
- Explain risk of disease

Administer

- Administer all age – appropriate vaccines on hand
- Refer patients

Document

Use the registry to document doses administered



Screening for Pneumococcal Vaccine

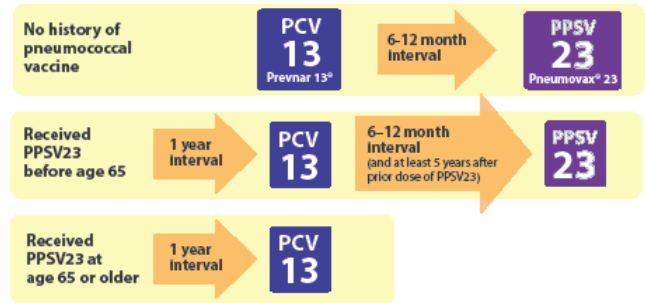
- Two vaccine
 - PCV
 - PPSV
- Both are recommended for persons ≥ 65 years
- Both are recommended for persons 19 – 64 years of age with certain conditions.
 - PCV – immunocompromised
 - PPSV – chronic illnesses



Pneumococcal Vaccine Timing

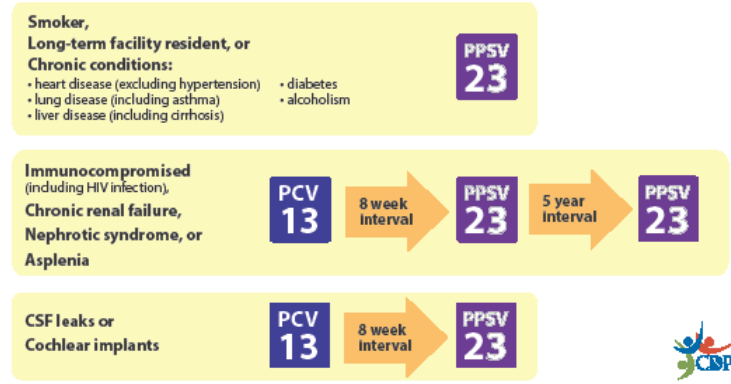
Age 65 Years or Older – Everyone

• If PCV13 was given before age 65 years, no additional PCV13 is needed.



Age 19-64 Years – Underlying Conditions

• Prior doses count towards doses recommended below and do not need to be repeated.
• If PPSV23 given previously – wait one year before giving PCV13
– when dose indicated, wait at least five years before giving a second dose of PPSV23.



• DO NOT administer PCV13 and PPSV23 at the same visit.

California Department of Public Health, Immunization Branch: www.EZIZ.org
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Influenza

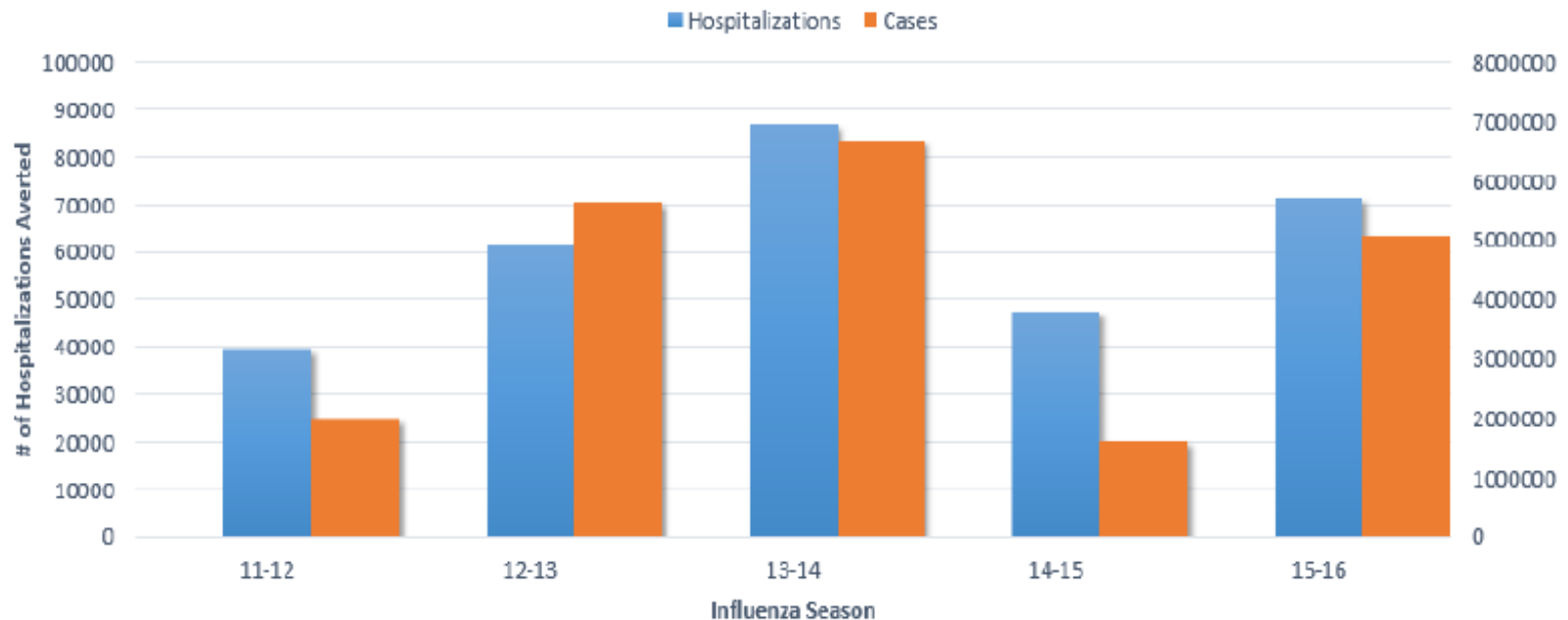
- Recommended every year, especially for high– risk patients
- High – dose flu vaccination recommended for adults ≥ 65 years
 - contains four times the amount of antigen (60ug) contained in regular flu shots
 - high-dose vaccine was 24.2% more effective in preventing flu in adults ≥ 65 years vs. standard-dose vaccine¹
 - high-dose vaccines may reduce the number of hospital admissions for people ≥ 65 years, especially those living in long-term care facilities²
- No preference in flu vaccine for older adults

1. DiazGranados, et. al. N Engl J Med 2014

2. Gravenstien, et. al. Lancet Resp Med 2017

Impact of Influenza Vaccination – Illnesses and Hospitalizations Prevented, 2011–2016

Cases and Hospitalizations Averted by Vaccination



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



Tdap (Tetanus, diphtheria, and acellular pertussis)

- Recommended for all adults, including adults ≥ 65 , who has never received a dose of Tdap
- This Tdap booster dose can replace one of the 10-year Td booster doses
- Administer Tdap regardless of interval since the last tetanus or diphtheria toxoid-containing vaccine
- Either Tdap vaccine (Boostrix or Adacel) can be used for adults ≥ 65



Shingles Vaccine

- Shingles is caused by reactivation of the varicella-zoster virus (VZV), the same virus that causes varicella (chickenpox).
- Zostavax is recommended for persons ≥ 60 year
- Recommended for persons who have had the disease
- Short – term protection; should not be given before age 60
- Risk for herpes zoster and it's complications are highest after age 60

1. www.cdc.gov/shingles/hcp/clinical-overview.html



Vaccine Recommendations for Health Care Personnel



Universal Vaccine Recommendations for HCP

- Adult tetanus-toxoid, reduced diphtheria-toxoid, acellular pertussis vaccine (Tdap sub. Td)
- Influenza vaccine (IIV)
- Varicella (Var) or Zoster vaccine (Zos)
- Measles-mumps-rubella vaccine (MMR)
- Hepatitis B vaccine (HepB)





Pertussis

- Uncontrolled VPD
- Respiratory transmission
- Can be fatal for young infants
- Evidence of transmission in health care settings

1. www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a2.htm



Tdap Vaccine for HCP

- Tdap is recommended for HCP who have not previously been vaccinated and who have direct patient contact
- Helps protect HCP against pertussis and help prevent them from spreading it to their patients
- If there is an increased risk of pertussis in a healthcare setting evidenced by documented or suspected healthcare-associated transmission of pertussis, revaccination of healthcare personnel with Tdap vaccine may be considered.
 - HCP should also receive antimicrobial therapy

1. www.cdc.gov/vaccines/vpd/pertussis/recs-summary.html

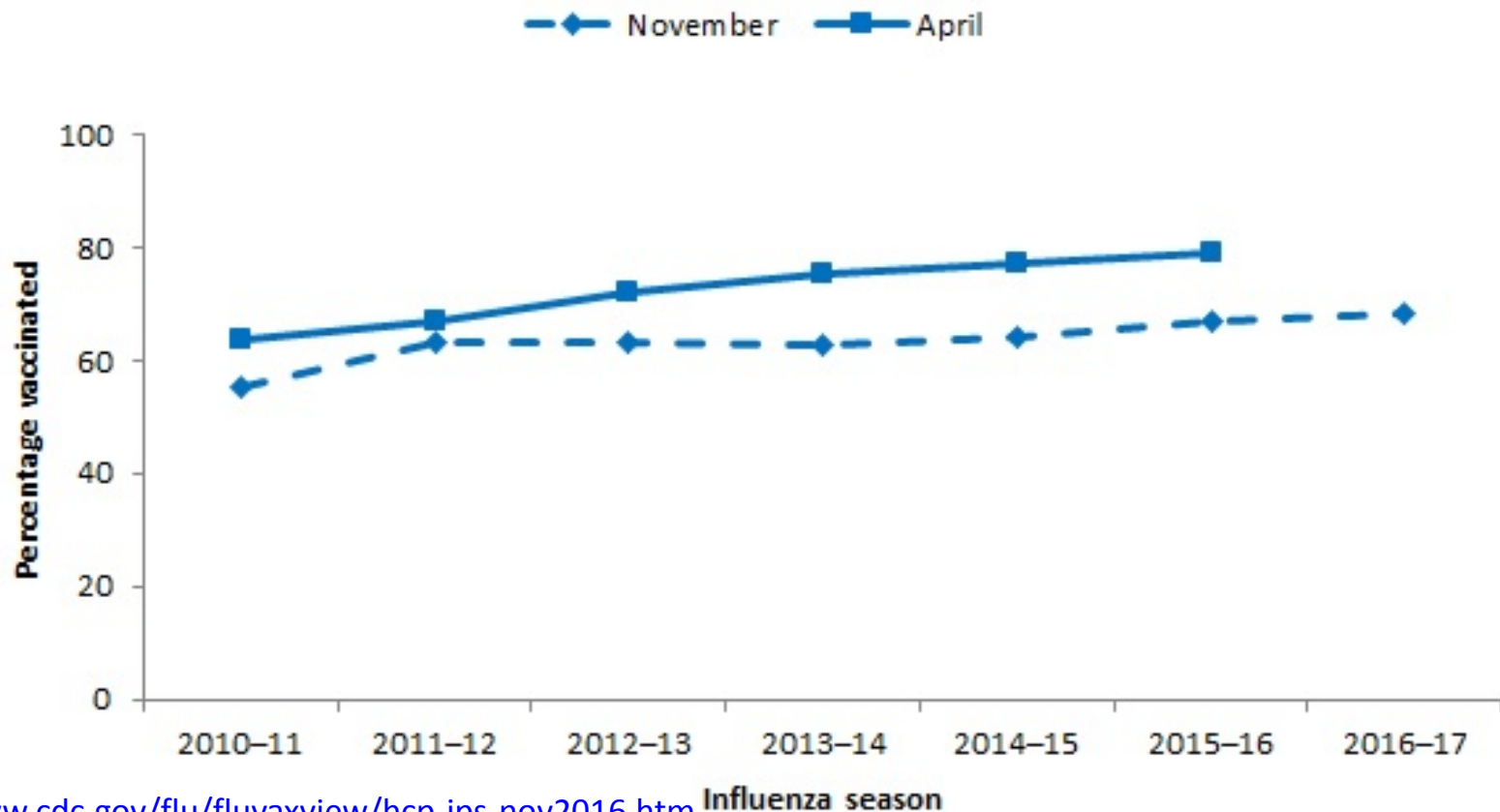
2. www.cdc.gov/vaccines/vpd/pertussis/tdap-revac-hcp.html



Influenza

- Recommended for ALL HCPs
- Risk of transmission to/from patients
- HCPs includes but is NOT limited to:
 - physicians, nurses, nursing assistants, therapists, technicians, EMS, dental, pharmacists, laboratory staff, maintenance, volunteers
 - hospitals, nursing homes, skilled nursing facilities, physician's offices, urgent care centers, outpatient clinics, home health care, EMS

Flu vaccination coverage among health care personnel vaccinated by November and by April for 2010–11 through 2015–16 flu seasons, and by November for 2016–17 flu season, Internet panel survey, United States



1. www.cdc.gov/flu/fluview/hcp-ips-nov2016.htm

2. www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives



Strategies to Increase Flu Vaccination Rates

- Provide flu vaccinations at work site
- Educate HCPs about the benefits of flu vaccine
- Monitor HCP flu vaccination rates
- Obtain signed declination forms
- Employee vaccination clinics
- Measure vaccine coverage levels for patient safety QI

1. <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm>



Barriers

- Scared of needles
- Fear of vaccine side effects
- Insufficient time or inconvenience
- Insufficient time or inconvenience
- Medical contraindication
- Perceived low likelihood of contracting influenza
- Reliance on treatment with homeopathic medications

Health Officer Order

- Hospitals
- Skilled nursing facilities
- Intermediate care facilities
- Nov 1st – March 30th
- Unvaccinated staff must wear a mask



1. NEJM Volume 5, Issue 9, 738 - 746
2. Lancet Volume 5, Issue 9, 738 - 746



Other Actions to Prevent Flu

- Wash your hands
- Avoid contact with someone who is sick
- Stay home if you're sick
- Cover your nose and mouth when you cough or sneeze
- Avoid touching your eyes, nose and mouth
- Practice good health habits

1. www.cdc.gov/flu/protect/habits.htm

Varicella (chickenpox)

- 2 doses recommended
 - 95% effective in preventing disease
- HCP who develop a vaccine-related rash after vaccination should avoid contact with persons without evidence of immunity to varicella who are at risk for severe disease and complications until all lesions resolve or no new lesions for 24 hours
- (IgG) testing for all HCP who state a history of disease
- Serologic testing after vaccination is not recommended
 - not sensitive enough to detect antibodies





Impact on Health Care Facilities

- Nosocomial VZV transmission has been reported in long-term-care facilities and a hospital-associated residential facility
 - Very rare
- Source – visitors, patients, and HCPs
- VZV exposures among patients and HCP can be disruptive to patient care, time-consuming, and costly



Verification of Immunity for HCP

- Documentation of age-appropriate vaccination (2 doses)
- Laboratory evidence of immunity or laboratory confirmation of disease
- HCP diagnosis of varicella or zoster



Measles

- Highly contagious disease spread by respiratory droplets
- HCP are at higher risk than the general population for becoming infected with measles
- Consider measles in any patient presenting with a febrile rash illness. Especially persons who:
 - recently traveled to a foreign country or had contact with foreign visitors
 - are unvaccinated
 - live in a community where measles is currently occurring

Is the MMR vaccine effective?

Not immunized



90 out of 100
people get sick

1 dose



2 out of 100
people get sick

2 doses



1 out of 100
people get sick

Evidence of Immunity

- Presumptive evidence of immunity to measles for persons who work in health-care facilities includes **any** of the following:
 - written documentation of vaccination with 2 doses of measles – containing vaccine, at least 4 weeks apart
 - laboratory evidence of immunity
 - laboratory confirmation of disease
 - birth before 1957
- IgG





Reporting Suspected Cases

- Report suspect measles cases immediately
 - Do not wait for lab results to report
- Collect specimens
 - Serum – IgM and IgG
 - Urine and NP swab for PCR
- Identify all exposed contacts, including employees, visitors, patients



Case Study

Date (2015)	Event
January 11	Contact with a lab-confirmed measles case associated with Disneyland
January 21	Developed a fever (103°F)
January 23	Experienced a cough and coryza
January 24	Developed a rash
January 26	Serum, nasopharyngeal swab, urine specimens collected
January 27	Measles infection diagnosed by PCR (NP swab and urine) and positive IgM and IgG (serum)

Over 70 HCW and 195 patients were exposed during the infectious period.

Post – exposure Prophylaxis

- Immune globulin
 - Must be administered w/in 6 days of exposure
 - May prevent or modify symptoms of measles
 - May also be given to persons who are immunocompromised, infants <12 months (may give MMR), and pregnant women
 - HCP cannot return to work after receiving IG; 5– 21 day after exposure
- MMR
 - Should be given within 72 hours of exposure



Mumps

- Viral infection
- Parotitis, orchitis (males), deafness, encephalitis
- Health-care–associated transmission of mumps is infrequent, it might be underreported because of the high percentage of infected persons who might be asymptomatic
- 2 doses are 80 – 90% effective



Evidence of Immunity

Presumptive evidence of immunity to mumps for HCPs include any of the following:

- Written documentation of vaccination with 2 doses of live mumps or MMR vaccine administered at least 28 days apart
- Laboratory evidence of immunity
- Laboratory confirmation of disease
- Birth before 1957



Rubella

- Viral disease characterized by rash, low-grade fever, lymphadenopathy, and malaise
- Effects on pregnant women:
 - Miscarriage
 - Stillbirths
 - Therapeutic abortion
 - Congenital rubella syndrome
- CRS - blindness, deafness, mental retardation, and congenital heart defects



Evidence of Immunity

- Documentation of at least 1 dose of live rubella – containing vaccine or MMR
- Laboratory evidence of immunity
- Laboratory confirmation of rubella infection or disease
- Birth before 1957 (except women of childbearing age)



Testing for Measles, Mumps and Rubella

- IgG only
- Routine testing (not testing related to an exposure), if HCP who have 2 documented doses of measles- or mumps-containing vaccine are inadvertently tested and have negative or equivocal titer results for measles or mumps, it is not recommended that they receive an additional dose of MMR vaccine
- Such persons are considered to have measles and mumps immunity and should not be revaccinated.



Hepatitis B

- Virus transmitted through percutaneous (i.e., breaks in the skin) or mucosal (i.e., direct contact with mucous membranes) exposure to infectious blood or body fluids.
- 3 – dose vaccination series
- HCPs who do not respond (anti-HBs < 10 mIU/mL) after a 3 dose series should be revaccinated
 - If still not immune, counsel HCP on the risk of contracting hepatitis B



Take Home Messages

- Ensure all HCPs (including volunteers) are fully protected against Hepatitis B, Varicella, Measles, Mumps, Rubella, Pertussis and Flu
- In the event of an case of vaccine – preventable diseases, have a system in place to identify susceptible HCPs
- Report disease outbreaks to DPH immediately





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