Immunization Recommendations for Employees Covered by the ATD Standard

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Which employees are covered by the ATD standard?

- Employees whose exposure from work activity or working conditions is reasonably anticipated to create an elevated risk of contracting any disease caused by aerosol-transmissible pathogens if protective measures are not in place
- "Elevated" risk means higher than what is considered ordinary for employees having direct contact with the general public outside of the facilities, service categories, and operations listed in the standard

http://www.dir.ca.gov/Title8/5199.html

Work settings covered by the ATD standard

- Applies in health care settings, such as:
  - Hospitals
  - Long Term Health Care Facilities
  - Primary Care
  - Emergency Medical
- Applies in other high risk environments
  - Corrections
  - Homeless shelters
  - Drug treatment programs
  - First receivers
  - Laboratories

Occupational Exposure

- In each included work setting covered by the standard, it is presumed that some employees have occupational exposure; for a particular employee it depends on tasks, activities, and the environment
- Includes having contact with, or being within exposure range of cases or suspected cases of aerosol-transmissible diseases
- Employers must identify employees with occupational exposure in order to take protective measures

Examples of Possible Occupational Exposures

- Intake or triage of patients
- Providing care to influenza patients
- Testing people for TB
- Taking a throat swab for strep
- Cleaning patient rooms
- Transporting patients

Where do U.S. immunization recommendations come from?

Advisory Committee on Immunization Practices (ACIP)

- 15 experts selected by the U.S. Secretary of HHS to provide advice and guidance to CDC on the control of vaccine preventable diseases; the only entity in the federal government that makes such recommendations
- Develops written recommendations for routine administration of vaccines to children and adults in the civilian population; recommendations include age for vaccine administration, number of doses/dosing intervals, and precautions and contraindications
- Recommends immunizations for healthcare personnel

ACIP Recommendations for Healthcare Personnel (HCP)

- Employer decisions about which ACIP recommended vaccines to include in HCP immunization programs have typically been made by considering the:
  - Likelihood of HCP exposure to vaccine preventable diseases and the potential consequences of not vaccinating HCP
  - Nature of employment (type of contact with patients/residents and their environment)
  - Characteristics of the patient/resident population within the organization

CDC Definition of HCP

- All paid and unpaid persons working in healthcare settings who have the potential for exposure to patients with influenza, infectious materials, including body substances, contaminated medical supplies and equipment, or contaminated environmental surfaces.
- HCP might include (but are not limited to):
  - physicians, nurses, nursing assistants, therapists, technicians, emergency medical service personnel, dental personnel, pharmacists, laboratory personnel, autopsy personnel, students and trainees, contractual staff not employed by the health-care facility, and persons (e.g., clerical, dietary, housekeeping, maintenance, and volunteers) not directly involved in patient care but potentially exposed to infectious agents that can be transmitted to and from HCP

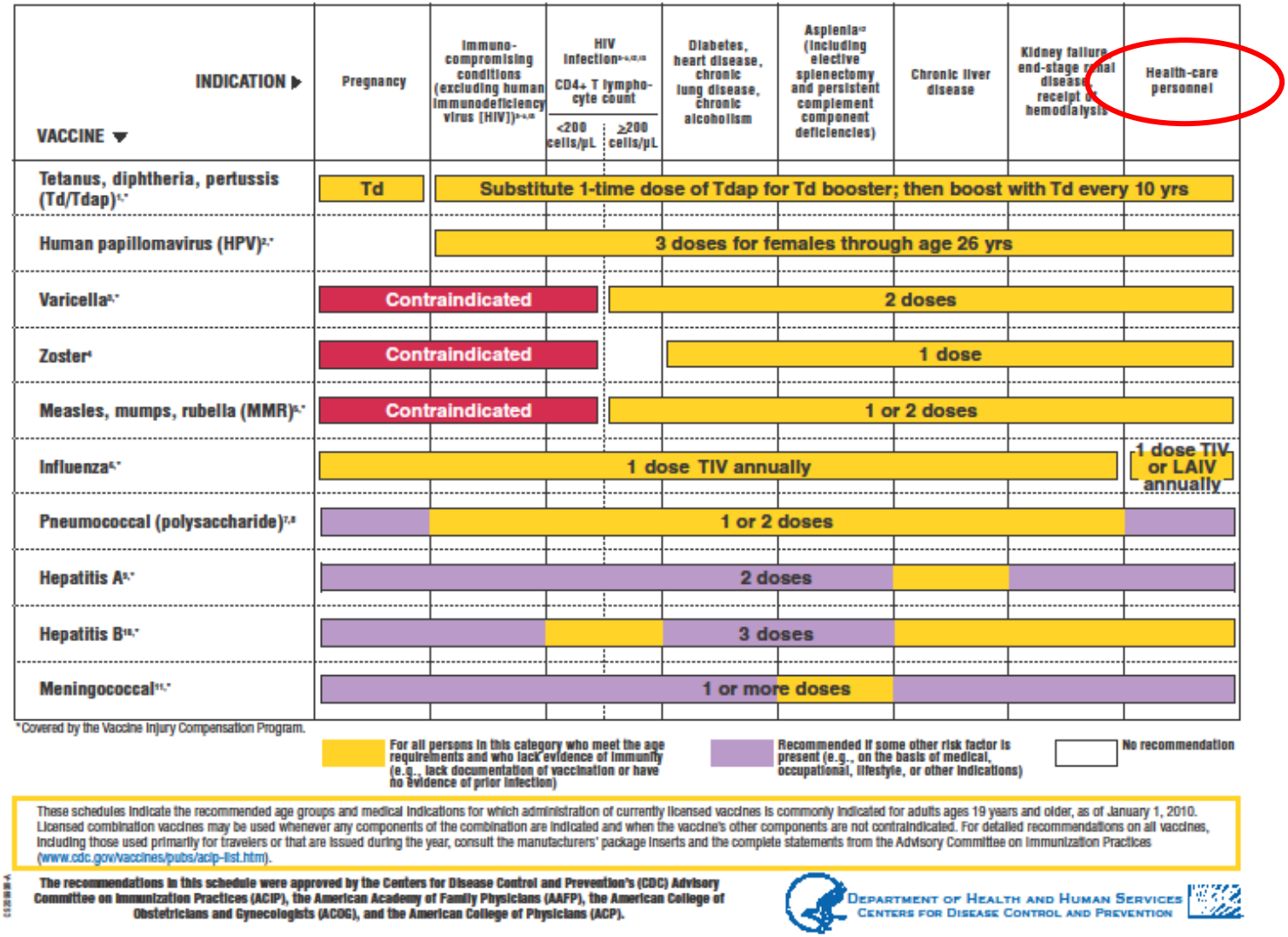
ACIP Recommended Immunizations for U.S. HCP

- All HCP who are not vaccinated:
  - Tdap (tetanus, diphtheria, and acelluar pertussis) vaccine
  - Hepatitis B vaccine
  - Influenza vaccine
- All HCP who are not immune:
  - MMR (measles, mumps, and rubella) vaccine
  - Varicella vaccine (two doses)

Required Immunizations for California HCP

- There are no federal or California state requirements for immunization or immunity to vaccine preventable diseases
- Some healthcare facilities require immunizations/immunity as a condition of employment

Figure 2. Vaccines that might be indicated for adults based on medical and other indications



2010 ACIP adult immunization recommendations

http://www.cdc.gov/vaccines/recs/schedules/downloads/adult/2010/adult-schedule.pdf

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

December 26, 1997 / Vol. 46 / No. RR-18

MMWR™

Recommendations and Reports

MORBIDITY AND MORTALITY WEEKLY REPORT

Immunization of Health-Care Workers

Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC)

Vaccine that is required to be offered* per the Cal/OSHA Bloodborne Pathogen standard

- Hepatitis B vaccine – three doses

* To all employees who are exposed to blood or other potentially infectious materials as part of their job duties. If vaccine is declined, a declination form must be signed.

Vaccines that are required to be offered* per the Cal/OSHA Aerosol Transmissible Disease (ATD) standard as of September 1, 2010

Vaccine	Schedule
• Influenza†	• One dose annually
• Measles	• Two doses
• Mumps	• Two doses
• Rubella	• One dose
• Tetanus, diphtheria, and acellular pertussis (Tdap)	• One dose, booster as recommended
• Varicella-zoster (VZV)	• Two doses

* To all susceptible employees who might be exposed.
If vaccine is declined, a declination form must be signed.
† Seasonal vaccine was required to be offered in 2009.

Diseases covered by the ATD standard

- Applies to diseases classified by CDC's Healthcare Infection Control Advisory Committee (HICPAC) as either droplet or airborne*
  - Novel or unknown pathogens considered airborne
  - Only "reportable diseases" under Title 17† require exposure investigation

* 2007 Guideline for Isolation Precautions:
Preventing Transmission of Infectious Agents in Healthcare Settings
http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html

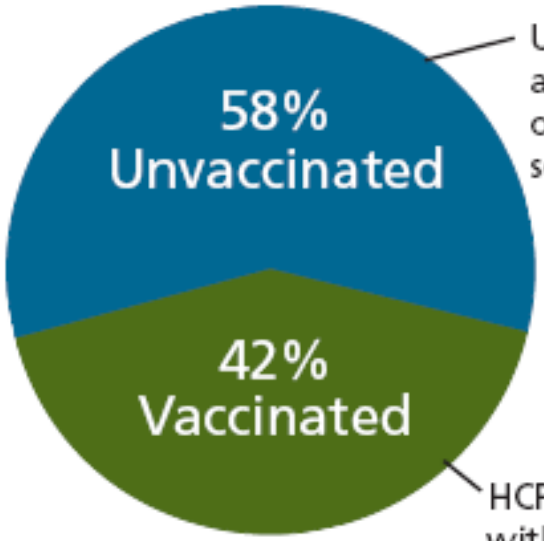
† http://www.cdph.ca.gov/HealthInfo/Documents/Reportable_Diseases_Conditions.pdf

Influenza Vaccine

Annual Influenza Vaccination

- Offer to all employees covered under the ATD standard at no cost
- Educate employees about vaccination benefits and consequences of influenza illness for themselves *and their patients*
- Obtain signed declination forms for those who choose to decline
- Monitor coverage including ward, unit, and specialty-specific coverage rates
- Years of efforts to increase uptake have not increased rates significantly in most facilities - **mandate vaccination?**

Average Annual Influenza Vaccination Rates in Health Care Personnel



Unvaccinated HCP can be a key cause of influenza outbreaks in health care settings

HCP vaccination is associated with reduced absenteeism and fewer patient deaths

Source: CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP), 2007. *MMWR*. 2007;56(RR-6):1-54.

- Healthy People 2010 Goal = 60%
- Voluntary rates are suboptimal despite years of efforts to increase them

Barriers to Influenza Vaccination

- Fear of vaccine side effects (particularly influenza-like illness symptoms)
- Perceived ineffectiveness of the vaccine
- Medical contraindication (not always valid)
- Perceived low likelihood of contracting influenza
- Fear of needles
- Insufficient time or inconvenience
- Similar barriers may apply to Tdap

Mandatory Influenza Vaccination

- Seattle: Virginia Mason – first U.S. hospital to mandate influenza vaccination or mask wearing during influenza season
- St. Louis: Barnes-Jewish – first U.S. hospital to mandate influenza vaccination and terminate noncompliant employees
- New York: 2009 emergency regulation (that was withdrawn) required seasonal and pandemic H1N1 vaccination of personnel in hospitals, home care, hospice, and diagnostic/treatment facilities
  - http://www.health.state.ny.us/diseases/communicable/influenza/seasonal/providers/2009-08-26_health_care_worker_mandatory_influenza_immunization.htm
- California: hospitals must offer vaccine at no cost to employees
  - Vaccination or written declination required per SB 739 and the ATD standard
  - Public reporting of vaccination rates via CDC's National Healthcare Safety Network (NHSN) required
  - Some hospitals mandated vaccination or mask wearing in 2009

National Organization Influenza Vaccination Recommendations

- IDSA 2009
  - Mandatory vaccination or mask wearing
- APIC 2008
  - Supports requiring influenza immunization for all HCP who have direct patient contact
  - Also recommends that healthcare facilities obtain informed statements acknowledging the risk to patients from employees who decline the vaccine for other than medical reasons
- ACIP 2007
  - Level of vaccination coverage among HCP to be one measure of a patient safety quality program
  - Implement policies to encourage HCP vaccination (e.g., obtaining signed statements from HCP who decline influenza vaccination)
- SHEA 2005
  - Vaccination or declination
- Most unions oppose mandatory vaccination

Joint Commission

Standard IC.02.04.01: The organization offers vaccination against influenza to licensed independent practitioners and staff.

1. The hospital establishes an annual influenza vaccination program that is offered to licensed independent practitioners and staff.
2. The hospital educates licensed independent practitioners and staff about, at a minimum, the influenza vaccine; non-vaccine control and prevention measures; and the diagnosis, transmission, and impact of influenza.
3. The hospital provides influenza vaccination at sites accessible to licensed independent practitioners and staff.
4. The hospital annually evaluates vaccination rates and the reasons given for declining the influenza vaccination.
5. The hospital takes steps to increase influenza vaccination rates.

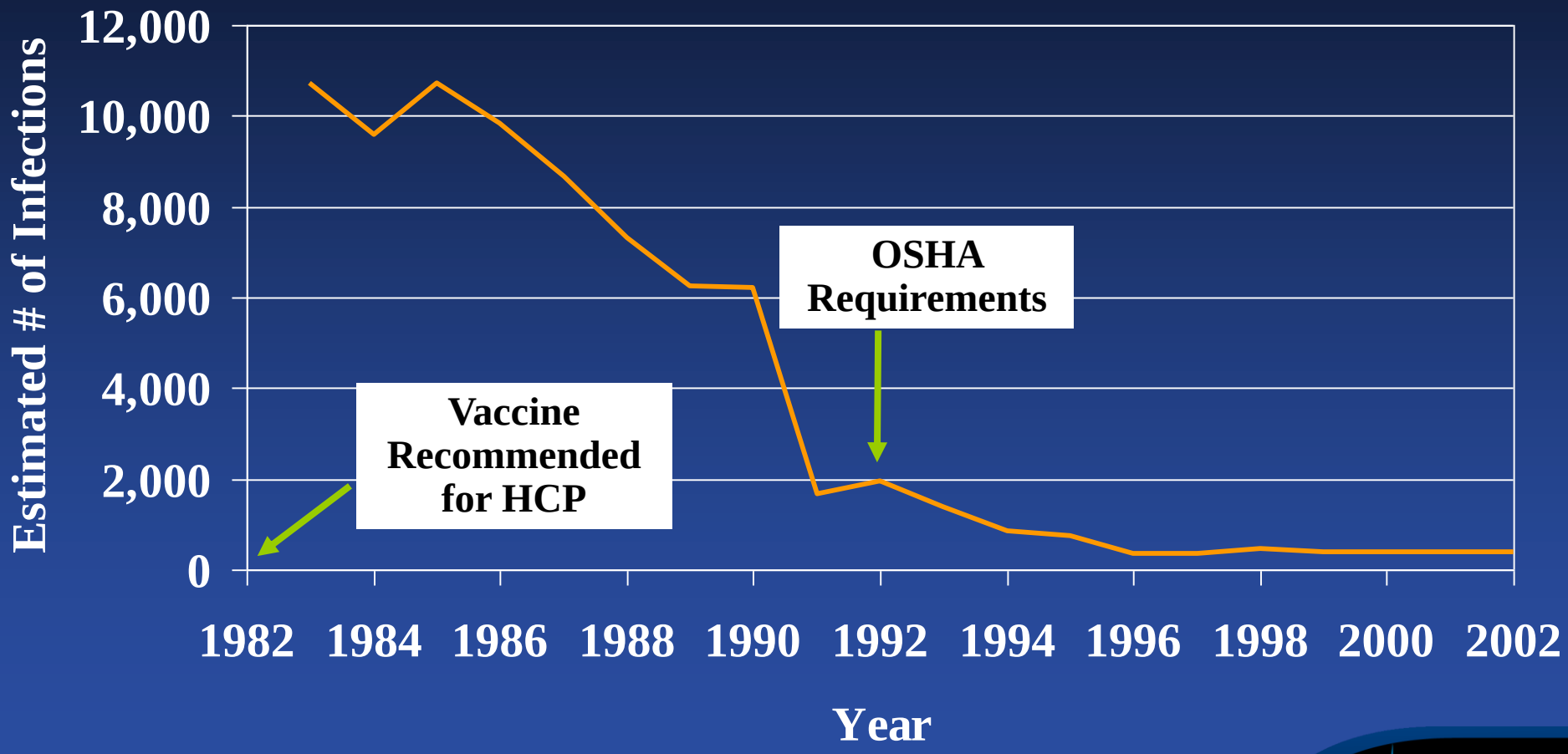
Hepatitis B

Hepatitis B Vaccination

- Any person who performs tasks involving contact with blood, blood contaminated body fluids, other body fluids, or sharps should be vaccinated against hepatitis B
  - Highly immunogenic – seroconversion ~95%
- Incidence of hepatitis B among HCP since mid-1990s is lower than general population due to vaccination and standard precautions

Updated U.S. P.H.S. Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Post-exposure Prophylaxis. MMWR 50 (RR11) - 6/29/01
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm

Estimated Number of Acute HBV Infections Due to Occupational Exposures, United States, 1983-2002



Hepatitis B

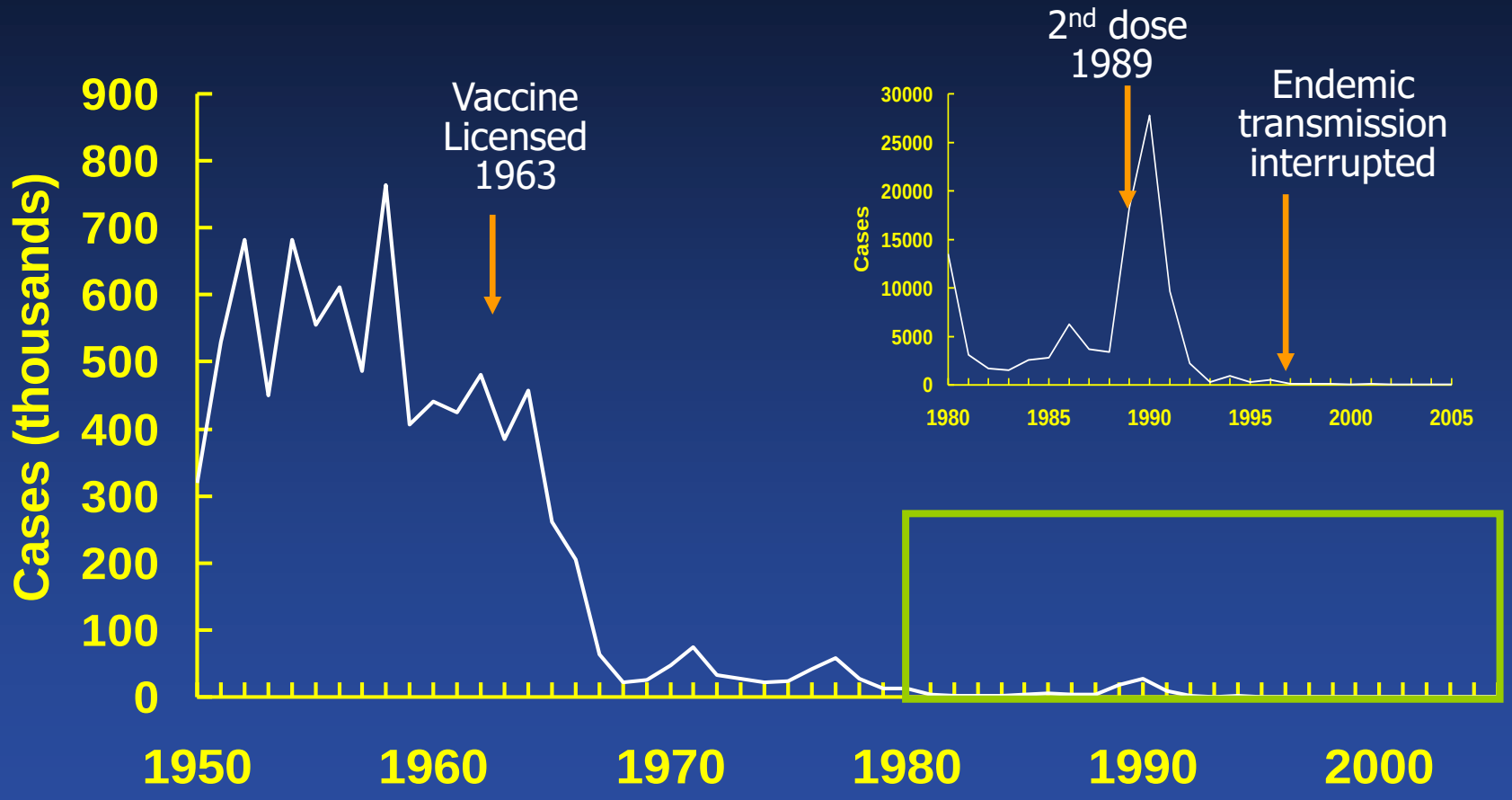
- Employees with potential for exposure to blood or body fluids should be immunized for hepatitis B with 3-dose vaccine series if they have not already received it
- Test newly immunized employees 1-2 months after the last dose of vaccine series to determine if immune
- Employees with written documentation of a complete vaccine series but without postvaccination testing do not need immunity testing unless they have an exposure to blood or body fluids
- Periodic titers or booster doses of vaccine not recommended - protection is long lasting

Measles

Measles

- Control and virtual elimination of measles in the U.S. is a public health success model for immunization programs in the developed world
- Last nationwide outbreak 1988-1991
- Introduction of 2nd dose of vaccine in 1989
  - 2000: "measles is no longer endemic in the U.S."
- Concern about measles being introduced into the U.S. via travelers from parts of the world where measles is not controlled

Measles—United States, 1950-2005



Measles Transmission

- Measles is transmitted via the airborne route and is thought to be the most infectious communicable disease
- Indigenous transmission of measles in the U.S. was declared eliminated in 2000; concern over recent imported cases
- Measles transmission has been documented in physician offices, emergency rooms, and hospital wards; HCP have been infected in recent outbreaks
- Good documentation and high levels of immunity minimize the amount of follow-up that needs to be done in the event of an exposure
  - Record review for hundreds to thousands staff
  - Serologic testing and vaccination

Presumptive Evidence of Immunity to Measles

- Documented administration of two doses of live measles virus vaccine on or after the first birthday and at least 28 days apart; *or*
- Laboratory evidence of immunity or laboratory confirmation of disease; *or*
- Birth before 1957*

Documentation of physician-diagnosed measles is no longer acceptable evidence of immunity

* Since ~ 5% of people born before 1957 are susceptible to measles, CDPH recommends that immunity be assessed if such HCP are exposed to measles. During an outbreak, 2 doses of MMR are recommended for unvaccinated HCP without evidence of immunity.

MMR Vaccination for HCP Born Before 1957

- HCP born before 1957 are generally presumed to be immune to measles, mumps, and rubella, but not all are
- Consider recommending 2 doses of MMR vaccine routinely for unvaccinated HCP born before 1957 who lack laboratory evidence of measles, mumps or rubella immunity or laboratory confirmation of disease
- During an outbreak of measles or mumps, two doses of MMR vaccine are recommended for unvaccinated HCP born before 1957 who lack laboratory evidence of immunity or laboratory confirmation of disease; one dose of MMR recommended during rubella outbreaks

Mumps

Presumptive Evidence of Immunity to Mumps

- Documented administration of two doses of live mumps virus vaccine; *or*
- Laboratory evidence of immunity or laboratory confirmation of disease; *or*
- Born before 1957

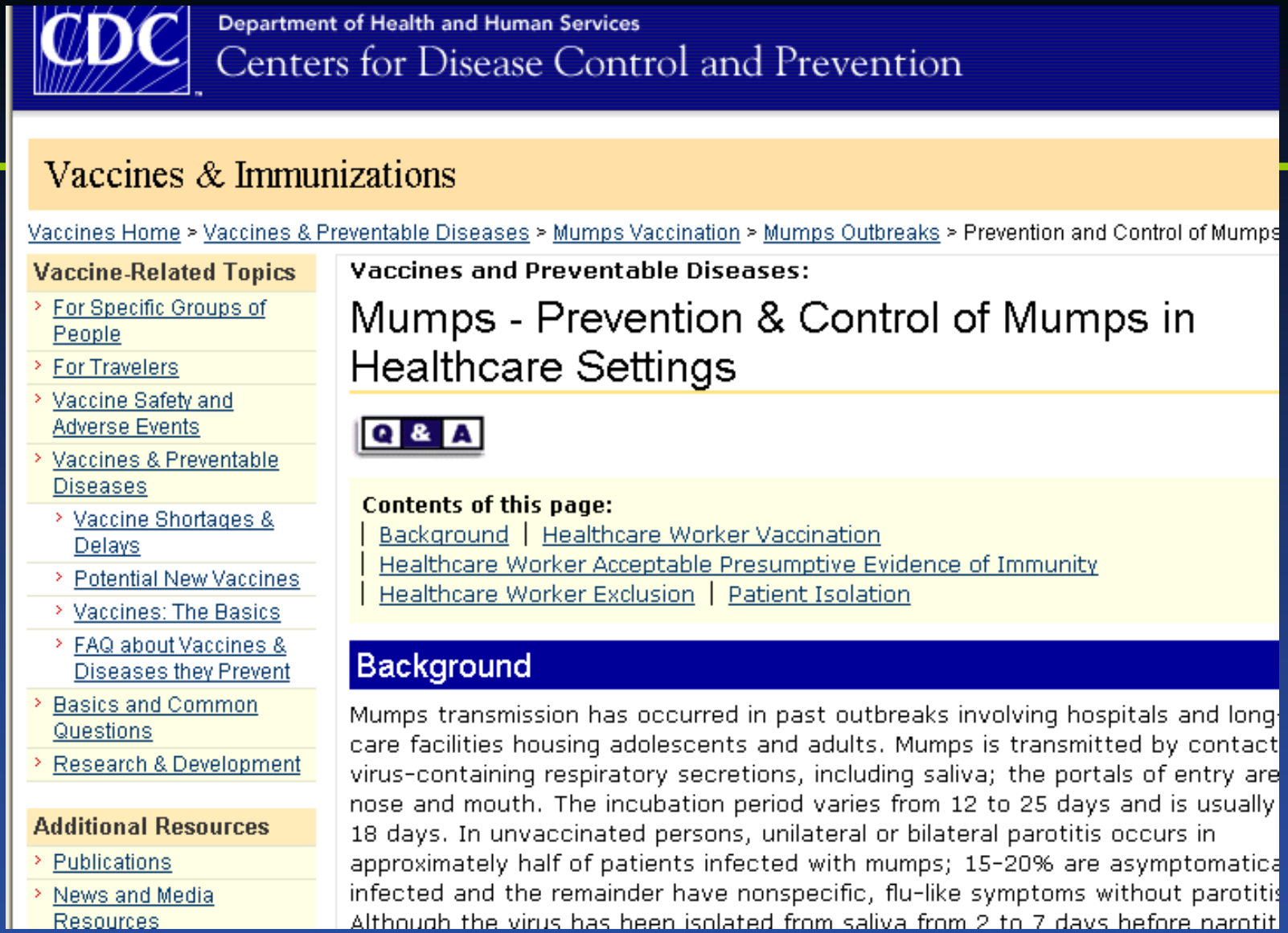
Documentation of physician-diagnosed mumps is no longer acceptable evidence of immunity

Mumps Vaccination

- All persons who work in healthcare facilities should be immune to mumps
  - HCP born during or after 1957 → 2 doses
  - No vaccination/immunity → 2 doses (≥28 days apart)
  - Only 1 dose previously → second dose
  - Birth before 1957 only presumptive evidence of immunity; consider 1 dose for unvaccinated workers without laboratory evidence of immunity
  - During an outbreak, 2 doses of vaccine recommended for workers born before 1957 who do not have evidence of immunity

Nosocomial Transmission of Measles and Mumps in Healthcare Facilities

- During 2001-8, 27 reported measles cases were transmitted in healthcare settings, accounting for 5% of all reported U.S. measles cases (*CDC, unpublished data)*
  - In 2008, 11% of cases; considerable economic cost and public health effort to contain (~$100,000 to $400,000)
- In Arizona in 2008, the largest nosocomial U.S. measles outbreak (14 cases) occurred in 20 years
  - At 3 hospitals, almost 8000 HCP were exposed; 25% had no documentation of immunity so were serologically tested
    - 30% were born before 1957 (5% susceptible)
    - 70% born >1957 (11% susceptible)
- In Tennessee in 1986-87, nosocomial transmission of mumps occurred in 2 hospital ERs infecting 6 HCP and in 2 long-term care facilities infecting 9 patients



Department of Health and Human Services
Centers for Disease Control and Prevention

Vaccines & Immunizations

Vaccines Home > Vaccines & Preventable Diseases > Mumps Vaccination > Mumps Outbreaks > Prevention and Control of Mumps

Vaccine-Related Topics

- For Specific Groups of People
- For Travelers
- Vaccine Safety and Adverse Events
- Vaccines & Preventable Diseases
  - Vaccine Shortages & Delays
  - Potential New Vaccines
  - Vaccines: The Basics
  - FAQ about Vaccines & Diseases they Prevent
- Basics and Common Questions
- Research & Development

Additional Resources

- Publications
- News and Media Resources

Vaccines and Preventable Diseases:

Mumps - Prevention & Control of Mumps in Healthcare Settings

Q & A

Contents of this page:

Background

Mumps transmission has occurred in past outbreaks involving hospitals and long-
care facilities housing adolescents and adults. Mumps is transmitted by contact
virus-containing respiratory secretions, including saliva; the portals of entry are
nose and mouth. The incubation period varies from 12 to 25 days and is usually
18 days. In unvaccinated persons, unilateral or bilateral parotitis occurs in
approximately half of patients infected with mumps; 15-20% are asymptomatica
infected and the remainder have nonspecific, flu-like symptoms without parotitis
Although the virus has been isolated from saliva from 2 to 7 days before parotit

www.cdc.gov/vaccines/vpd-vac/mumps/outbreak/control-hcw.htm

Rubella

Presumptive Evidence of Immunity to Rubella

- Documented administration of one dose of live rubella virus vaccine; *or*
- Laboratory evidence of immunity or laboratory confirmation of disease; *or*
- Born before 1957 (except premenopausal women who could become pregnant)

  HCP who can provide documentation of serological evidence of rubella immunity (e.g., via prenatal testing) do not need to be retested and should be presumed to be immune

Varicella

Varicella Among HCP

- Nosocomial transmission of is varicella (chickenpox) is well-recognized
- Sources
  - Patients, hospital staff, and visitors with varicella or herpes zoster (shingles)
- Airborne transmission of varicella has been demonstrated
  - Varicella has occurred in susceptible persons who had no direct contact with index case-patient
  - Virus detected in air
  - Herpes zoster may also be airborne

Evidence of Immunity to Varicella in HCP

- Documentation of two doses of vaccine
- Laboratory evidence of immunity or laboratory confirmation of disease
- Diagnosis or verification of history of varicella disease by a healthcare provider
- Diagnosis or verification of a history of herpes zoster (shingles) by a healthcare provider

2007 ACIP Recommendations

- Serologic screening before vaccination
  - Testing unvaccinated HCP with a negative or uncertain history of varicella is likely to be cost-effective; or
  - Test all HCP, because small proportion with positive history of disease might be susceptible
- Routine testing after 2 doses of vaccine is not recommended
  - Available commercial assays not sensitive enough
  - In sensitive tests, 99% of adults develop antibodies after 2nd dose

  http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf

MMWR™

Morbidity and Mortality Weekly Report

Recommendations and Reports June 22, 2007 / Vol. 56 / No. RR-4

Prevention of Varicella

Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Health-Care Personnel

Nosocomial transmission of VZV is well-recognized (*131,164–173*), and guidelines for the prevention of nosocomial VZV infection and for infection control in HCP have been published (*174,175*). Sources of nosocomial exposure have included patients, hospital staff, and visitors (e.g., the

Pertussis

Pertussis in the United States

- Least well controlled vaccine preventable disease
- It is cyclical; 2005 was the last nationwide peak year and 2010 is a peak year in California
- Most severe disease occurs among infants <6 months of age; almost all deaths in infants <3 months of age
- Studies have shown that ~ half of the infants with pertussis were infected by a household member, most often their mother
- Immunity via vaccine or disease wanes over time; most children last vaccinated at kindergarten are susceptible again by middle school
- Almost all adults are susceptible; only ~6% of adults have received Tdap, which was licensed in 2005

Pertussis Among HCP

- Nosocomial spread of pertussis documented
  - Hospitals and EDs (pediatric and adult), clinics, LTCFs
- Sources
  - Patients, HCP with hospital- or community-acquired pertussis, visitors or family members; up to 80 infections per index case
- Incidence in HCP currently ~7% per year
- 90% of pediatric hospitals reported HCP exposures over 5-year period; 11% reported infected physicians

Tdap Vaccine

- In 2005, a vaccine containing tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap) was licensed in the U.S. for persons aged 11-64 years (ADACEL®)
- In 2006, ACIP recommended that HCP in hospitals or ambulatory care settings with direct patient contact receive a single dose of Tdap as soon as feasible if they have not previously received it
- HCP who have direct contact with infants <12 months of age or pregnant women should be strongly encouraged to be vaccinated
- An interval as short as 2 years from the last dose of Td is recommended for the Tdap dose – this interval may be waived in the setting of a community outbreak
- Almost all adults are susceptible to pertussis; ~ 6% have received Tdap

Costs of Controlling Pertussis in Healthcare Facilities

- $74,870-$174,327 per outbreak
- $42,000-$98,000/year for pertussis exposures
  - Costs include identifying contacts among HCP and patients, providing postexposure prophylaxis for asymptomatic close contacts, and evaluating, treating, and placing symptomatic HCP on administrative leave until they have received effective treatment

MMWR December 15, 2006;55(RR17)
http://www.cdc.gov/mmwr/PDF/rr/rr5517.pdf

Implementing Hospital Tdap Programs

- Infrastructure for vaccination exists in most hospitals
  - New personnel screened and vaccinated on employment
  - Can be given at same time as influenza vaccine
  - A booster dose is likely to be recommended in the future
- **Birth hospitals are encouraged to promote postpartum Tdap vaccination of new mothers**

California Pertussis Cases – 2010

- As of 6/30/2010, **1,337** cases of pertussis have been reported in 2010 for a state rate of **3.4 cases/100,000,** a **5-fold increase** from the number of reported cases during the same time period in 2009 when **258** cases were reported (700 cases other possible cases are under investigation)
- In the first six months of 2005 there were 1,261 pertussis cases; suggesting that the disease burden is at or above 2005 levels - if current trends continue, California will have more cases of pertussis than in over 50 years
- Other states are reporting 2010 increases to CDC, but none are reporting increases similar to those in California; there may be possible differences in states with and without middle school Tdap vaccination requirement

California Pertussis Cases – 2010, continued

- **5 deaths** have been reported in 2010, all in infants <2 months of age at time of disease onset; none had received any doses of pertussis-containing vaccine - the majority of infant cases in 2010 have occurred in infants <3 months of age
- Rates are highest in infants <6 months of age (69.6/100,000), in children aged 7-9 years (10.2/100,000) and adolescents aged 10-18 years (9.3/100,000)
- Overall rates by race/ethnicity are highest in whites (3.3/100,000), however age-specific rates indicate that the highest rates are seen in Hispanic infants <6 months of age (94.2/100,000); disproportionately high rates are also observed in whites aged 7-18 years

Most Recent ACIP Recommendations

Healthcare workers, 1997 (update in 2010?)
http://www.cdc.gov/mmwr/preview/mmwrhtml/00050577.htm

Hepatitis B, 2006
http://www.cdc.gov/mmwr/PDF/rr/rr5516.pdf

Influenza, 2009
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr58e0724a1.htm

Influenza healthcare workers, 2006
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm

Diphtheria, tetanus, pertussis, 2006
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5517a1.htm

Measles, mumps, rubella, 1998 and 2009 update
http://www.cdc.gov/mmwr/preview/mmwrhtml/00053391.htm
http://www.cdc.gov/vaccines/recs/provisional/downloads/mmr-evidence-immunity-Aug2009-508.pdf

Mumps, 2006
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5522a4.htm

Varicella, 2007
http://www.cdc.gov/mmwr/pdf/rr/rr5604.pdf