Vaccination Recommendations

for

Health Care Workers

Based on documented evidence of nosocomial transmission, health care workers are at significant risk for acquiring and transmitting measles, mumps, rubella, hepatitis B, varicella and influenza. Vaccination is strongly recommended to safeguard the health of workers and to protect patients from becoming infected. Facilities that provide direct patient care are encouraged to formulate a comprehensive immunization policy for all health workers.

An immunization record should be maintained for all employees reflecting documented proof of immunity to the diseases for which health care workers are most at risk. The immunization record should include all vaccinations administered, the date of administration , and the agency providing the vaccination. At each immunization encounter, records should be updated and health care workers encouraged to maintain personal copies of their immunization record. Other acceptable means of acquired immunity should also be documented on employee immunization records.

MEASLES

All health care workers* born on or after 01/01/57 must provide adequate proof of immunity to measles with one of the following:

A. History of physician-diagnosed measles.
B. Serologic evidence of immunity.
C. Documentation of adequate vaccination.

MUMPS

All health care workers* born on or after 01/01/57 must provide adequate proof of immunity to mumps with one of the following:

A. History of physician-diagnosed mumps.
B. Serologic evidence of immunity.
C. Documentation of adequate vaccination.

RUBELLA

All health care workers* born on or after 01/01/57 must provide adequate proof of immunity to rubella with one of the following:

A. Serologic evidence of immunity.
B. Documentation of adequate vaccination.

• Adequate Vaccination

Adequate vaccination includes receipt of 2 doses of live Measles-Mumps-Rubella (MMR) vaccine at least 1 month apart on or after 12 months of age.

• Special Considerations

Adults born before 1957 can be considered immune to measles, mumps, and rubella.** However, since measles cases and related outbreaks have occurred in health care workers in this age group, health facilities should consider offering at least one dose of measles-containing vaccine to such workers who lack proof of immunity to measles.

• Serologic Screening

Serologic screening need not be done before vaccinating against measles and rubella unless the health care facility considers it cost effective. Serologic testing is not necessary for persons who have documentation of appropriate vaccination or other acceptable evidence of immunity. Testing before vaccination is appropriate only if tested persons identified as nonimmune are subsequently vaccinated in a timely manner, and should **not** be done if the return and timely vaccination of those screened cannot be ensured.

• Contraindications to Vaccination

Severe allergic reaction to a prior dose or a vaccine component
Pregnancy
Immunosuppression***
Moderate or severe acute illness
Receipt of an antibody-containing blood product

*All health-care workers (i.e., medical or non-medical, paid or volunteer, full time or part time, student or non-student, with or without patient-care responsibilities) who work in health care institutions (e.g., inpatient and outpatient, public and private) should be immune to measles and rubella.

**Birth before 1957 is not acceptable evidence of rubella immunity for women who can become pregnant because rubella can occur in some unvaccinated persons born before 1957 and because congenital rubella syndrome (CRS) can occur in offspring of women infected with rubella during pregnancy.

***MMR vaccination should be considered for asymptomatic HIV patients.

9/01

HEPATITIS B

The risk for acquiring hepatitis B infection from occupational exposures is dependent on the frequency of percutaneous and permucosal exposures to blood or body fluids containing blood. Any health care worker may be at high risk for hepatitis B infection depending on the tasks performed. Employees performing tasks involving exposure to blood, blood-contaminated body fluids, other body fluids, or sharps should be vaccinated. The Occupational Safety and Health Act (OSHA) Federal Standard mandates that hepatitis B

vaccine be made available to all occupationally exposed health care workers.

• **Vaccination**

Adequate vaccination for adults includes receipt of 3 doses of hepatitis B vaccine with at least 1 month between the first and second dose, at least 2 months between the second and third dose, and at least 4 months between the first and third dose.

• **Prevaccination Serologic Screening**

Prevaccination serologic screening for previous infection is not indicated for persons being vaccinated because of occupational risk unless the health care facility considers it cost effective. The vaccine produces neither therapeutic nor adverse effects on infected persons.

• **Postvaccination Serologic Screening**

Testing for immunity 1-2 months after completion of the vaccine series is advised for persons whose subsequent management depends on knowing their immune status, such as health care workers with blood or body fluid contact. Health care workers who do not respond to an initial vaccine series should receive an additional 3-dose series of hepatitis B vaccine with retesting performed 1-2 months after completion of the second series. If the health care worker does not respond to the second series of hepatitis B vaccine further revaccination is not indicated.

• **Duration of Immunity**

Vaccine-induced antibodies to the hepatitis B virus decline gradually over time. Persons who initially respond to vaccination will lose detectable antibodies over a 12 year period, however studies indicate that immunity continues to prevent clinical disease. Booster doses of hepatitis B vaccine are not considered necessary, and periodic testing to monitor antibody concentrations is not recommended.

• **Contraindications to Vaccination**

Severe allergic reaction to a prior dose or a vaccine component
Moderate or severe acute illness

Postexposure Prophylaxis

Source of Contact Y Exposed Person \	HBsAg* Positive	HBsAg* Negative	Source not tested or unknown
Unvaccinated	HBIGC x 1 and initiate vaccine series	Initiate vaccine series	Initiate vaccine series
Vaccinated-known responder	No Treatment	No Treatment	No Treatment
Vaccinated-known nonresponder	HBIGC x 2 OR HBIGC x 1 and initiate revaccination	No Treatment	If know high-risk source, may treat as if source were HBsAg* positive
Vaccinated-response unknown	Test exposed person for anti-HBs:? 1. If adequate-no TX 2. If inadequate- HBIGC x 1 and booster	No Treatment	Test exposed person for anti-HBs:? 1. If adequate-no TX 2. If inadequate-initiate revaccination

*HBsAg (Hepatitis B surface antigen)
CHBIG (Hepatitis B immune globulin)
?anti-HBs (Antibody to hepatitis B surface antigen)

9/01

VARICELLA

All health care workers* should be immune to varicella. Vaccination is strongly recommended for susceptible employees who have close contact with patients at high risk for serious complications from varicella infection.** Only immune personnel should care for patients suspected of having varicella. A reliable history of chickenpox is a valid measure of immunity to varicella.

• **Vaccination**

Adequate vaccination for individuals 13 years of age and older includes receipt of 2 doses of varicella

vaccine at least 1 month apart on or after 12 months of age.

- **Prevaccination Serologic Screening**

  Serologic screening of personnel who have a negative or uncertain history of varicella is likely to be cost effective.

- **Postvaccination Serologic Screening**

  Routine serologic screening after vaccination with 2 doses of varicella vaccine is not considered necessary because 99% of persons become seropositive after the second dose.

- **Postexposure Vaccination**

  Vaccination should be considered for unvaccinated health care workers who are exposed to varicella and whose immunity is not documented. The protective effects of postexposure vaccination has been documented. Data indicates that varicella vaccine is effective in preventing illness or modifying varicella severity if used within 3 days and possibly up to 5 days of exposure. Workers vaccinated after an exposure should be managed in the manner recommended for unvaccinated persons.

- **Postexposure Management**

  Susceptible workers exposed to varicella are potentially infective 10-21 days after exposure. They should be relieved from direct patient contact during this period and may need to be furloughed. If workers develop chickenpox, varicella lesions must be crusted before they return to direct patient contact. Receipt of varicella zoster immune globulin (VZIG) after exposure can be costly, does not necessarily prevent varicella, and may prolong the incubation period by a week or more. The period of removal from direct patient contact should be extended by one week or more if an employee receives VZIG.

- **Breakthrough Infection in Health-Care Workers**

  Vaccination and subsequent seroconversion does not always result in full protection against disease. Breakthrough infections have occurred in vacinees after exposure to natural varicella virus. However, vacinees who develop varicella generally experience a milder form of disease. If a vaccinated health care worker is exposed to varicella, the following measures are recommended:

  a) serologic testing for varicella antibody immediately after exposure
  b) retesting 5-6 days later to determine if an anamnestic response is present
  c) possible furlough or reassignment of personnel without detectable antibody

- **Vaccine Virus**

  The risk of transmission of vaccine virus from a vaccinated person to a susceptible contact is very low. The benefits of vaccinating susceptible health care workers clearly outweigh the potential risks. Transmission of vaccine virus occurs primarily when vacinees develop a vaccine-associated rash. Employees who develop a rash following vaccination should avoid contact with patients at high risk of serious complications from varicella infection.**

- **Contraindications to Vaccination**

  Severe allergic reaction to a prior dose or a vaccine component
  Pregnancy
  Immunosuppression
  Moderate or severe acute illness
  Receipt of an antibody-containing blood product

*All health care workers (i.e., medical or nonmedical, paid or volunteer, full time or part time, student or non-student, with or without patient care responsibilities) who work in health care institutions (e.g., inpatient and outpatient, public and private) should be immune to varicella.
** Pregnant women, premature infants born to susceptible mothers, infants born at <28 weeks' gestation or who weigh ≤1000 grams regardless of maternal immune status, and persons immunocompromised because of immune deficiency diseases, HIV infection, leukemia, lymphoma or generalized malignancy, or immunosuppressed as a result of therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation.

9/01

INFLUENZA

Nosocomial transmission of influenza disease, including transmission from health care workers to patients, may occur during community influenza outbreaks. The transmission of influenza among health care workers often causes absenteeism and considerable disruption of health care. Influenza outbreaks may result in morbidity and mortality in patients, particularly those who reside in long-term care facilities. To reduce the spread of influenza among workers and patients, the following health care workers should be vaccinated in the fall of each year:

A. Employees who attend patients at high risk of complications* from influenza disease, whether the care is provided at home or in a health-care facility.
B. Employees aged ≥65 years of age.
C. Employees with certain chronic medical conditions (e.g., persons who have chronic disorders

of the cardiovascular or pulmonary systems; persons who required medical follow-up or hospitalization within the preceding year because of chronic metabolic disease [including diabetes], renal dysfunction, hemoglobinopathies, or immuno- suppression [including HIV infection]).

D. Pregnant employees** who will be in the second or third trimester of pregnancy during influenza season.

• Vaccination

Adequate vaccination for individuals 9 years of age and older is receipt of 1 dose of influenza vaccine annually. The optimal time for vaccination is October to mid-November to correspond with the peak activity period (late December to early March) for influenza. However, vaccine may be given anytime during the influenza season.

• Duration of Immunity

Immunity following influenza vaccination rarely exceeds 1 year.

• Vaccine Efficacy

Vaccine efficacy varies depending on the circulating strain and the age and underlying illnesses of the vaccine recipient. If the vaccine strain is similar to the circulating strain, 90% of healthy young adults will be protected from illness. Vaccine is only 30% to 40% effective in preventing illness among chronically-ill elderly persons. However, the vaccine is 50% to 60% effective in preventing hospitalization and 80% effective in preventing death in the elderly.

• Contraindications to Vaccination

Severe allergic reaction to a prior dose or a vaccine component***
Moderate or severe acute illness

*Patients at high-risk of complications include persons aged ≥65 years of age; residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions; adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including children with asthma; adults and children who have required regular medical follow-up or hospitalization during the preceding year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications); children and adolescents (aged 6 months to 18 years of age) who are receiving long-term aspirin therapy and therefore might be at risk for developing Reye's syndrome after influenza; and women who will be in the second or third trimester of pregnancy during the influenza season.

** Studies suggest that pregnant women may be at increased risk for serious medical complications of influenza. Vaccination is recommended for women who will be in at least the 14th week of gestation during influenza season, generally women who become pregnant between the first of March and the first of September. No evidence exists of risk to mother or fetus when the vaccine is administered to a pregnant woman with an underlying high-risk condition.

***A history of anaphylactic hypersensitivity to egg ingestion is a contraindication to vaccination.

9/01

DEFINITIONS OF ABBREVIATIONS

ACIP: Advisory Committee on Immunization Practices

Anti-HBs: Antibody to hepatitis B surface antigen

CDC: Centers for Disease Control and Prevention

CRS: Congenital rubella syndrome

DT: Diphtheria and tetanus toxoids (pediatric)

DTaP: Diphtheria and tetanus toxoids and acellular pertussis vaccine, (pediatric)

DTP: Diphtheria and tetanus toxoids and pertussis vaccine, (pediatric)

HAV: Hepatitis A virus

HB: Hepatitis B

HbCV: Haemophilus influenzae type b conjugate vaccine

HBIG: Hepatitis B immune globulin

HBsAg: Hepatitis B surface antigen

HBV: Hepatitis B virus

Hib: Haemophilus influenzae type b

HIV: Human immunodeficiency virus

EIPV: Inactivated poliovirus vaccine

KDHE: Kansas Department of Health and Environment

OPV: Oral poliovirus vaccine

MMR: Measles, mumps, and rubella vaccine

MMWR: Morbidity and Mortality Weekly Report

Td: Tetanus and diphtheria toxoids (adult)

References

1. Centers for Disease Control and Prevention. Immunization of Health-Care Workers. Recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity

and Mortality Weekly Report. 1997;46(RR-18): 1-42.

2. Centers for Disease Control and Prevention. Prevention of Varicella Updated. Recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity and Mortality Weekly Report. May 28, 1999/48(RR06): 1-5.

3. Centers for Disease Control and Prevention. Hepatitis B Virus. Recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity and Mortality Weekly Report. 1991;40(RR-13): 1-17.

4. Centers for Disease Control and Prevention. Prevention and Control of Influenza. Recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity and Mortality Weekly Report. 1998;47(RR-6): 1-26.

5. Centers for Disease Control and Prevention. Measles, Mumps, and Rubella Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps. Recommendations of the Advisory Committee on Immunization Practices (ACIP). Morbidity and Mortality Weekly Report. 1998;47(RR-8).