2003

CDRC

Communicable Disease Reporting Collaborative
Cincinnati - Hamilton County

Hamilton County Communicable Disease Public Health Report

HAMILTON COUNTY
GENERAL HEALTH DISTRICT
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HEALTH COMMISSIONER'S LETTER

One of the primary concerns of public health is preventing communicable diseases from occurring. We make every effort to do this by ensuring sanitary conditions in food establishments, providing immunizations for vaccine-preventable diseases, and educating the public about the causes and symptoms of communicable diseases. When a communicable disease does occur, it is the responsibility of public health to identify the cause and take appropriate steps to prevent it from spreading.

The Hamilton County Communicable Disease Public Health Report 2003 provides data regarding the incidence and types of communicable diseases present in the county and, to some extent, when these diseases are most likely to occur and the age groups most affected.

Local health departments in Hamilton County are working together to prevent the spread of communicable diseases through the following efforts:

- Receive reports and analyze statistics on the incidence of communicable/ infectious diseases.
- Follow up to confirm cases of communicable disease as reported and as meeting case definitions.
- Identify the source, route of transmission, and common links among affected persons.
- Identify contacts to the person reported to have the communicable disease.
- Provide or assure treatment of cases and contacts as appropriate.
- Provide affected persons and the public with information about the disease including: symptoms, how diagnosis is confirmed, how the disease is spread, and how it can be prevented.

We hope you find this report informative and helpful. Working together we can dramatically reduce the incidence and spread of communicable disease and continue to make Hamilton County a great place to live and work.

Timothy Ingram Health Commissioner - **Hamilton County General Health District**
Judith Daniels, MD Acting Health Commissioner - **Cinicnnati Health Department**
William Rooney Health Commissioner - **Indian Hill Health Department**
Donna Laake Health Commissioner - **Norwood Health Department**
Jonathon Singer, MD Health Commissioner - **St. Bernard Health Department**
Michael Brune Health Commissioner - **Sharonville Health Department**
Cammie Mitrione Health Commissioner - **Springdale Health Department**

ACKNOWLEDGMENTS

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Special credit must be given to:
Health District staff: Cynthia Yund, Ph.D., RN, Epidemiologist, Project Coordinator and Data Analyst; and Paula Smith, Editor and Designer.

And thanks to our collaborative partners:
Cincinnati Health Department, Village of Indian Hill Health Department, Norwood City Health Department, St. Bernard City Health Department, Sharonville City Health Department, and Springdale City Health Department.

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Assistant Health Commissioner
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TABLES AND FIGURES

INTRODUCTION

This is the third report of Class A notifiable infectious diseases for Hamilton County, Ohio. Data are from the Ohio Department of Health and include **only** confirmed cases of the disease as defined for national Centers for Disease Control and Prevention (CDC) reporting purposes. Requirements for reporting diseases vary from state to state, therefore the CDC provides uniform criteria for reporting cases. The strict case definitions are defined in "Case Definitions for Infectious Conditions Under Public Health Surveillance" (http://www.cdc.gov/epo/dphsi/casedef/). For the list of CDC notifiable diseases, visit http://www.cdc.gov/epo/dphsi/phs/infdis2005.htm. Cases are counted nationally only if they meet the standards set forth in this publication.

Communicable diseases are reported to local health departments for evaluation and follow-up according to The Ohio Administrative Code (3701-3-02 and 3701-3-05), http://www.odh.ohio.gov/Resources/publications/IDCManual/ID_Intro.htm. All suspected cases are reported to the local health department by physician offices or laboratories. Public health nurses follow-up with the individual and their contacts to obtain information, provide education, and if necesary, recommend referrals. Information is then sent to the Ohio Department of Health where cases are identified according to the CDC's strict case definition. Many probable cases are thus eliminated for reporting purposes.

Table 1 shows the number of CDC-confirmed Class A reportable diseases as reported for Hamilton County, Ohio residents by the Ohio Department of Health for the years 1999-2003.

Table 2 shows the classification of specific diseases into the type category.

OVERVIEW

Table 1. Ohio Department of Health Cases of Class A Reportable Diseases*, by Year— Hamilton County, Ohio, 1999-2003

Disease	1999	2000	2001	2002	2003
AIDS	55	31	52	40	32
Amebiasis	1	3	1	2	3
Anthrax	0	0	0	0	0
Botulism, infant	0	2	1	0	0
Brucellosis	0	0	0	0	0
Campylobacteriosis	98	95	99	112	108
Chancroid	0	0	0	0	0
Chlamydia	4019	4626	4697	4607	4395
Cholera	0	0	0	0	0
Creutzfeld-Jacob Disease	0	0	0	0	0
Cryptosporidiosis	9	6	4	1	6
Cyclosporiasis	0	0	0	0	0
Cytomegalovirus (congenital)	0	0	1	1	0
Dengue fever	0	0	0	0	0
Diphtheria	0	0	0	0	0
E.coli O157:H7	42	29	30	8	6
E.coli not O157:H7	NR	NR	1	2	1
Ehrlichiosis	0	0	1	0	0
Encephalitis,arboviral	NR	NR	0	30	4
Encephalitis, primary	3	2	4	7	2
Giardiasis	103	81	84	62	70
Gonorrhea	2900	3148	3236	3472	3311
Granuloma inguinale	0	0	0	0	0
Haemophilus influenza	6	6	5	4	2
Hantavirus	0	0	4	0	0
Hemolytic Uremic Snydrome	NR	NR	1	1	0
Hepatitis A	29	12	22	12	4
Hepatitis B, acute	14	13	18	7	21
Hepatitis, acute viral	1	1	0	0	1
Hepatitis C, chronic	NR	NR	NR	NR	641
Herpes, congenital	0	5	0	0	1
Kawasaki disease	8	7	13	6	7
Legionellosis	3	3	4	8	9
Leprosy	0	1	0	0	0
Leptospirosis	0	0	0	0	0
Listeriosis	1	0	0	0	1
Lyme disease	1	5	0	3	7
Malaria	5	4	3	3	1
Measles	0	0	1	0	0
Meningitis, aseptic	62	125	141	93	143
Meningitis, bacterial	5	4	8	4	4
Meningococcal disease	6	8	8	5	4
Mumps	0	0	0	0	0
Pertussis	40	58	91	94	26
Plague	0	0	0	0	0
Poliomyelitis	0	0	0	0	0
Psittacosis	0	0	0	0	0
Q fever	0	0	0	0	0
Reye syndrome	0	0	0	0	0
Rheumatic fever	0	0	0	0	0
Rocky mountain spotted fever	1	1	0	0	0
Rubella, acute, congenital	0	0	0	0	0
Salmonellosis	106	135	102	76	74
Shigellosis	10	12	1904	74	49
Smallpox	0	0	0	0	0
Streptococcal toxic shock syndrome	2	10	2	0	3
Streptococcal, Group A, invasive	16	27	24	21	24
Streptococcal, Group B, newborn	13	9	5	7	10
Streptococcus pneumoniae, invasive disease	199	201	115	79	14**
Syphilis	11	14	21	17	2
Tetanus	0	0	0	0	0
Toxic shock syndrome	1	0	0	1	4
Toxoplasmosis	0	0	0	1	0
Trichinosis	0	0	0	0	0
Tuberculosis	29	28	24	17	20
Tularemia	0	0	0	0	0
Typhoid fever	0	5	1	2	0
Typhus fever	0	0	0	0	0
Vibriosis	0	0	0	0	0
Yellow fever	0	0	0	0	0
Yersiniosis	3	7	8	4	3
Total	**7802**	**8724**	**10733**	**8883**	**9030**

**Excludes data from the City of Springdale.* *NR = Not a reportable disease*

**Includes only drug resistant cases or those cases in children under the age of 5 years old. The decrease in numbers since 2000 is attributed to the new pneumococcal conjugate vaccine. See http://www.cdc.gov/ncidod/dbmd/diseaseinfo/drugresisstreppneum_t.htm for further details.

Table 2. Classification of Common Class A Notifiable Diseases into Disease Type

Blood-Borne (Excludes HIV/AIDS)
- Hepatitis B
- Hepatitis C

Enteric/Food-Borne
- Campylobacterosis
- Cryptosporidiosis
- Giardiasis
- E. coli O157:H7
- Listeriosis
- Salmonellosis
- Shigellosis
- Yersiniosis

Vaccine Preventable
- Hepatitis A
- Measles
- Mumps
- Pertussis

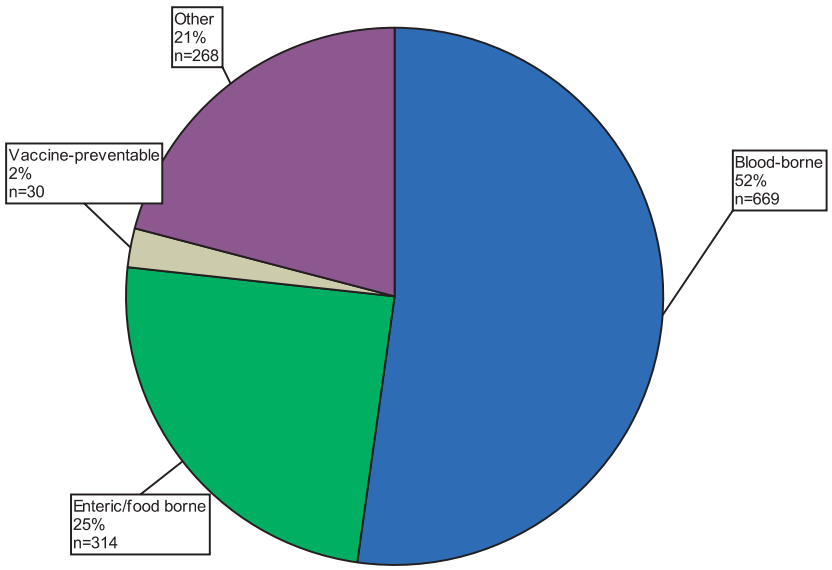
Sexually Transmitted
- AIDS
- Chlamydia
- Gonorrhea
- Syphilis (primary, secondary, latent, congenital)

Other
- Aseptic meningitis
- Meningococcal disease
- H. influenza
- Tuberculosis
- Legionellosis
- Streptococcal, Group A, invasive

WHAT

- Blood-borne diseases were the most frequently reported - 52 percent.
- 641 of the 669 blood-borne diseases were Chronic Hepatitis C.
- Of the 314 enteric diseases, 108 cases were Campylobacterosis.
- Of the 30 vaccine preventable diseases, 26 were Pertussis.
- The most common 'other' disease was Aseptic meningitis, 143 cases.

Figure 1. Reported Cases of Selected Class A Diseases (n=1,281*), by Type - Hamilton County, Ohio, 2003

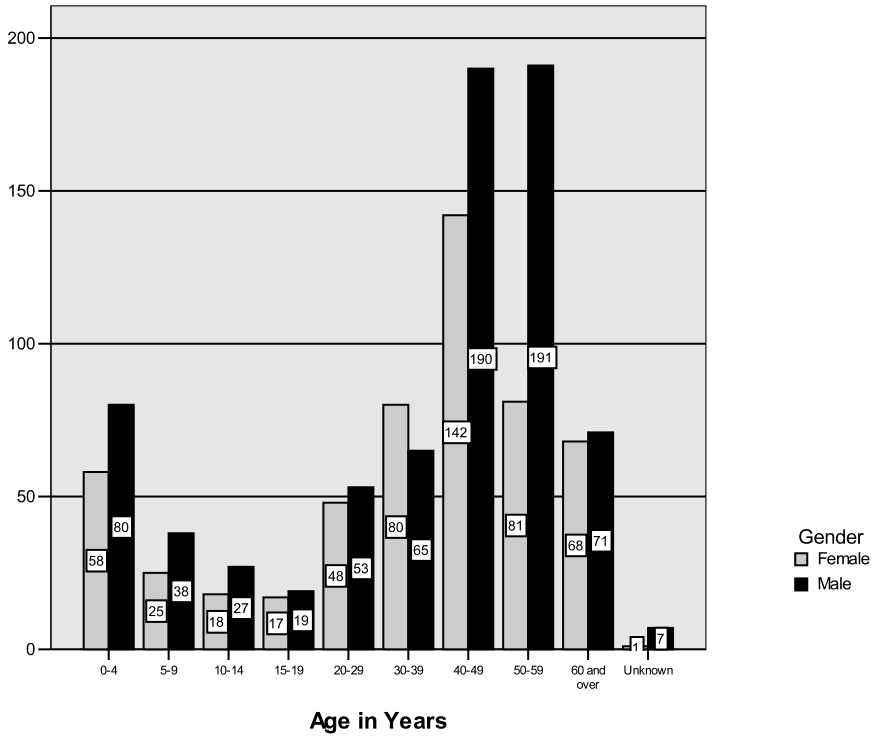


*Excludes data from the City of Springdale

Figure 2. Selected Cases of Class A Communicable Disease*, excluding STD's, by Age Group, by Gender - Hamilton County, Ohio, 2003**

WHO

- Adults aged 40-59 had the highest number of communicable diseases reported. This was due to the number of chronic Hepatitis C cases, which are described elsewhere.
- Aseptic meningitis was the most common ailment in children under the age of 4 years.

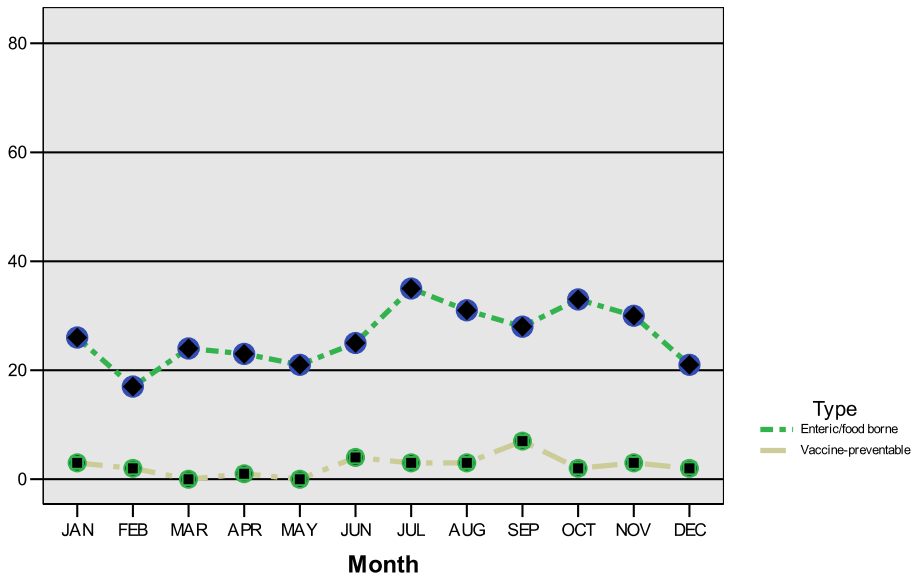


*Excludes data from the City of Springdale
**Two cases are not shown for the 0-4 age group as gender was not known

Figure 3. Reported Cases of Selected Class A Diseases*, by Month, by Type - Hamilton County, Ohio, 2003

WHEN

- Summer months have the highest incidence of enteric food-borne illness, most likely due to improper food handling practices.
- For proper food handling procedures go to: http://www.foodsafety.gov/.
- Pertussis was the most commonly reported vaccine-preventable illness, with a peak of six cases in September.

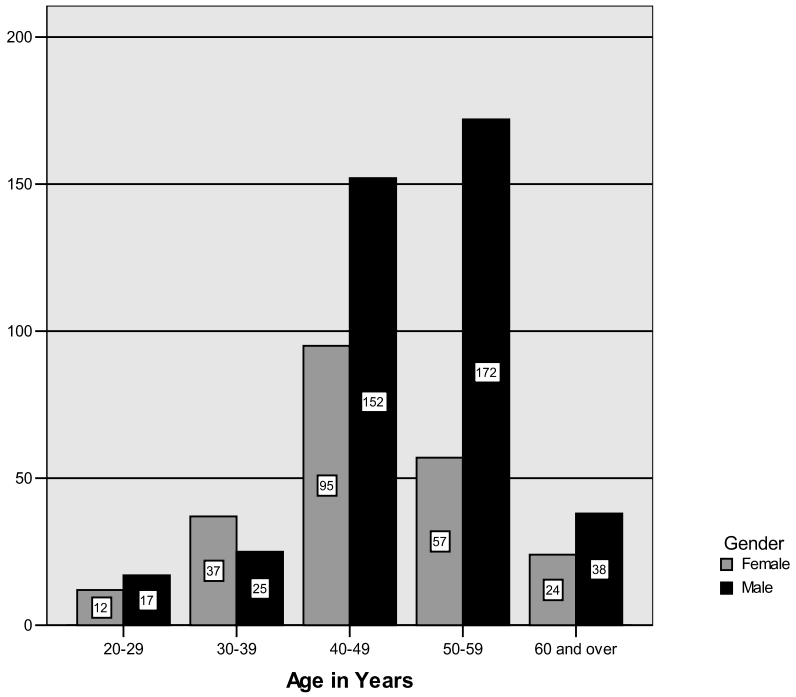


*Excludes data from the City of Springdale
Month is calculated based on report date, not date of illness onset, which is missing in many cases

CHRONIC HEPATITIS C

Hepatitis C is a major public health problem in the United States. Although the incidence of new infections declined substantially in the past decade, approximately 25,000 persons are infected each year. In total, an estimated 2.7 million Americans have Chronic Hepatitis C Virus (HCV) infection and are at risk for HCV-related chronic liver disease and hepatocellular carcinoma (HCC). Chronic Hepatitis C became a CDC reportable disease in 2003. For more information, http://www.cdc.gov/ncidod/EID/vol10no11/04-0624_04.htm.

Figure 4. Reported Cases of Chronic Hepatitis C*, by Age Group, by Gender - Hamilton County, Ohio, 2003**



*Excludes cases from the City of Springdale
**Excludes ages 0-19 years and unknown

The most common exposure associated with HCV infection is use of injectable drugs. Other less commonly identified risk factors include sexual contact; transfusions before blood screening was implemented; and occupational, nosocomial and perinatal exposures. The large number of identified cases in Hamilton County reflect routine screening of the blood supply.

As seen in Figure 4, adults age 40-59 years old have the highest number of cases among Hamilton County residents. As with the trend in the United States, 64 percent of cases are in males. Although sources of HCV infection are the same for men and women, the difference, according to Bell et al. (Bell 2004) is likely related to the lower prevalence of injection-drug use among women.

Here are some facts from the Centers for Disease Control and Prevention about Hepatitis C. For more detailed information, visit the Web site: http://www.cdc.gov/ncidod/diseases/hepatitis/c/faq.htm#1a.

What is Hepatitis C?

Hepatitis C is a liver disease caused by the Hepatitis C Virus (HCV), which is found in the blood of persons who have this disease. HCV is spread by contact with the blood of an infected person.

Who should get tested for Hepatitis C?

- Persons who ever injected illegal drugs.
- Persons who were treated for clotting problems with a blood product made before 1987.
- Persons who received a blood transfusion or solid organ transplant before July 1992 when better testing of blood donors became available.
- Persons who have signs or symptoms of liver disease (e.g., jaundice- yellowing of the skin and eyes).
- Children born to HCV-positive women.

CHRONIC HEPATITIS C CONT.

What can persons with HCV infection do to protect their liver?

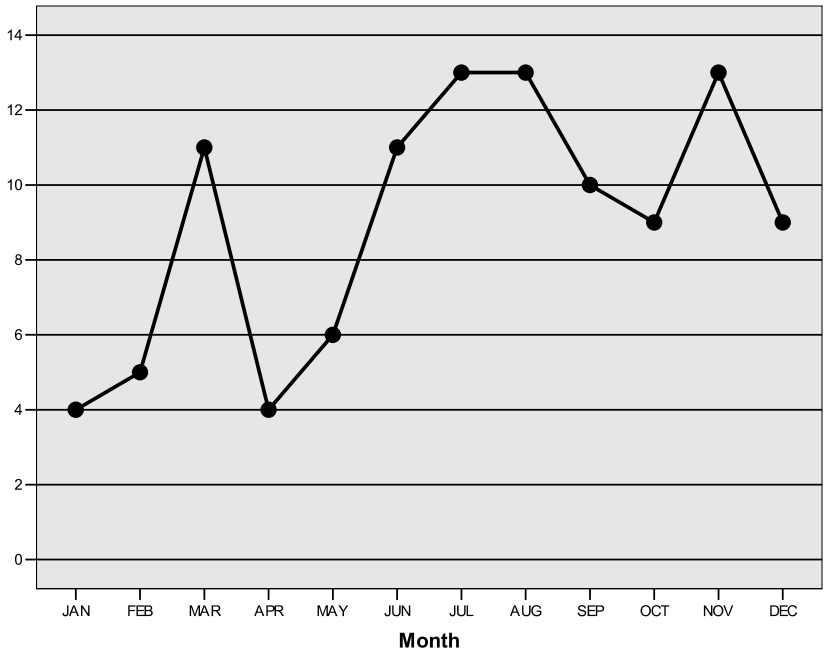
- Stop drinking alcohol.
- See your doctor regularly.
- Don't start any new medicines or use over-the-counter, herbal, or other medicines without a physician's knowledge.
- Get vaccinated against Hepatitis A if liver damage is present.

What other information should patients with Hepatitis C be aware of?

HCV is not spread by sneezing; hugging; coughing; food or water; sharing eating utensils or drinking glasses; or through casual contact. Persons should not be excluded from work, school, play, child-care or other settings on the basis of their HCV infection status. Involvement with a support group may help patients cope with Hepatitis C.

CAMPYLOBACTERIOSIS

Figure 5. Reported Cases of Campylobacterosis*, by Month - Hamilton County, Ohio, 2003



*Excludes cases from the City of Springdale

Enteric, or food-borne, diseases are caused by consuming contaminated foods or beverages. Because many different disease-causing microbes, or pathogens, can contaminate foods, there are many kinds of food-borne infections. Most people think symptoms from a food-borne illness occur within a day of eating a food, but this is not the case. Each microbe presents with its own pattern of illness – some within one hour (Staphylococcus aureus), others up to four weeks (Giardia lambia).

Campylobacter, a bacteria that causes fever, diarrhea, and abdominal cramps, is the most common food-borne illness in the world. Symptoms usually occur two to five days after ingestion, with a duration of illness from two to 10 days. For complete information on Campylobacterosis, visit the CDC's Web site at http://www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm.

Because the natural habitat of Campylobacter bacteria is in healthy birds, most raw poultry meat will have the bacteria in it. Eating undercooked chicken, or other foods that have been contaminated with raw chicken juice, is the most frequent source of this infection.

As seen in Figure 5, cases of Campylobacterosis are most likely to occur in the summer months when people are grilling meals outdoors, and around the Thanksgiving holiday when people are preparing turkeys for family dinners. Improperly prepared food in the home is the primary reason people become ill.

CAMPYLOBACTERIOSIS CONT.

How is Campylobacter detected?

Campylobacter bacteria is detected by stool culture. Antibiotic treatment is only prescribed for severe cases.

How can I prevent Campylobacterosis?

Practicing safe food handling and preparation techniques can prevent Campylobacterosis. This includes avoiding cross contamination of raw meat juices with non-cooked items such as vegetables or salads; proper cleaning of utensils and food-prep surfaces; and cooking meats and poultry to the proper temperature (use of a meat thermometer is recommended).

For tips on safe food handling practices, see:

- http://www.hamiltoncountyhealth.org/pdfs/factsheets/envhlth/PicnicSafety.pdf
- http://www.hamiltoncountyhealth.org/pdfs/factsheets/envhlth/holidayfoodsafety.pdf

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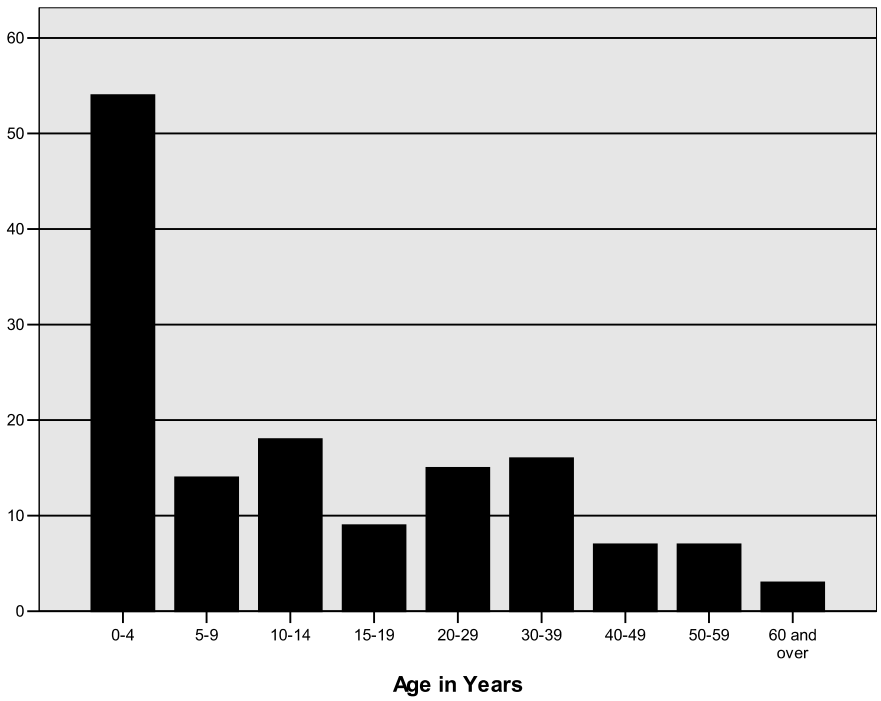
ASEPTIC MENINGITIS AND WEST NILE VIRUS

Meningitis is an illness in which there is inflammation of the tissues that cover the brain and spinal cord. Viral or aseptic meningitis, which is the most common type, is caused by an infection with one of several types of viruses. Viral (aseptic) meningitis is a serious but rarely fatal infection in persons with normal immune systems. Usually, the symptoms last from seven to 10 days and the patient recovers completely. In sharp contrast, bacterial meningitis is a serious infection that requires immediate medical attention.

Though symptoms of meningitis may vary from person to person, the more common symptoms include fever, severe headache, stiff neck, sensitivity to bright lights, drowsiness or confusion, and nausea and vomiting. Often, the symptoms of viral meningitis and bacterial meningitis are the same. For this reason, if you think you or your child has meningitis, see your doctor as soon as possible.

Figure 6. Reported Cases of Aseptic Meninigitis*, by Age Group - Hamilton County, Ohio, 2003



* Excludes cases from the City of Springdale

Figure 6 shows that cases of aseptic meningitis are most common in children under the age of 4. Thirty two percent (45) of all cases were in infants. In infants, symptoms are more difficult to identify. They may include fever, fretfulness or irritability, difficulty in awakening the baby, or refusal to eat.

The viruses that cause aseptic meningitis are more common during summer and fall months. It is during these months that children have increased contact with new persons because of recreational or school-related activities.

ASEPTIC MENINGITIS CONT.

How is the virus spread?

Enteroviruses and arboviruses can spread viral meningitis. Enteroviruses, the most common cause of viral meningitis, are most often spread through direct contact with respiratory secretions (e.g., saliva, sputum, or nasal mucus) of an infected person. This usually happens by shaking hands with an infected person or touching something they have handled, and then rubbing your own nose or mouth. The incubation period for enteroviruses is usually three to seven days from the time you are infected until you develop symptoms. You can usually spread the virus to someone else beginning about three days after you are infected until about 10 days after you develop symptoms.

Arthropod-borne viruses, or arboviruses, are viruses maintained in nature through transmission of the virus between hosts (human or animal). The virus is spread when a blood-feeding arthropod (mosquitoes and/or ticks) takes a meal from an infected host.

WEST NILE VIRUS

The West Nile virus (WNV) is one arbovirus that has received much media attention in the last few years. It was first detected in the Western Hemisphere in 1999 and has since spread rapidly across the United States.

Statistically, a person's risk of contracting West Nile virus is low, and less than 1 percent of those infected will develop serious illness. Those at highest risk for serious illness are the elderly and those with lowered immune systems. However, people of all ages can develop serious illness, so it is important for everyone to protect themselves from mosquito bites to minimize the risk of infection.

Has Hamilton County had any human cases of West Nile virus?

Yes, the first positive human cases of WNV in Hamilton County, including the first death attributed to WNV in the county, occurred in 2002.

In Hamilton County in 2003, there were four cases of WNV encephalitis (the severe form of the disease) reported to the CDC. The cases were in all age groups. A review of the cases for the United States can be accessed on the CDC's Web site at http://www.cdc.gov/ncidod/dvbid/westnile/surv&control03Maps.htm.

How is Hamilton County monitoring and preventing West Nile virus?

The Health District collaborates with area hospitals and physicians to monitor for suspected cases of WNV. A reported case is considered probable until the test samples have been reviewed by the Centers for Disease Control and Prevention.

For more information about West Nile Virus and mosquitoes in Hamilton County, visit http://www.hamiltoncountyhealth.org/geninfo/divisions/envhlth/wnv.htm#top.

CHLAMYDIA AND GONORRHEA*

Chlamydia

- Chlamydia is an under-reported disease, as more than half of all people infected do not have symptoms.
- It is the most frequently reported sexually transmitted disease in the United States.
- More women than men are screened for the diesease, and sex partners are treated without being diagnosed, thus explaining the higher incidence in females.
- For more information about Ohio cases see: http://www.odh.ohio.gov/Data/Inf_Dis/STD/CT2q04.pdf.
- For more information on the disease see: http://www.engenderhealth.org/wh/inf/dchl.html.

Total cases for Chlamydia for 2003 **4,395**

- Rate per 100,000 persons in Hamilton County 527
- Rate per 100,000 persons in Ohio 371

Gonorrhea

- The CDC reports that only about half of all new gonorrheal infections are reported each year.
- People who have received treatment may get infected again.
- Symptoms may be mild in both men and women and can include a burning sensation while urinating and/or discharge from the vagina or penis.
- Diagnosis of gonorrhea requires a sample from the body part that is likely to be infected.
- For more information on this data see: http://www.odh.ohio.gov/Data/Inf_Dis/STD/GC2q04.pdf.
- For more information on the disease see: http://www.engenderhealth.org/wh/inf/dgon.html.

Total cases for Gonorrhea 2003 **3,311**

- Rate per 100,000 persons in Hamilton County 397
- Rate per 100,000 persons in Ohio 198

Table 3. Incidence of Chlamydia Among Hamilton County, Ohio Residents, 2003

Age in Years	Number of Cases
0-14	174
15-24	3291
25-44	791
45-64	28
65+	4
Unknown/Missing	107
Gender	
Male	853
Female	3,501
Unknown/Missing	41
Race	
White	603
Black	2,473
Other	94
Unknown/Missing	1,225

Table 4. Incidence of Gonorrhea Among Hamilton County, Ohio Residents, 2003

Age in Years	Number of Cases
0-14	86
15-24	2073
25-44	992
45-64	97
65+	10
Unknown/Missing	53
Gender	
Male	1,443
Female	1,842
Unknown/Missing	26
Race	
White	316
Black	2273
Other	33
Unknown/Missing	672

*Data are from the Ohio Department of Health's Data warehouse: http://dwhouse.odh.ohio.gov/datawarehousev2.htm. Select Report/Health Indicators-Diseases/STD/Options/County/Hamilton

HIV/AIDS

- HIV (human immunodeficiency virus) is the virus that causes acquired immune deficiency syndrome (AIDS).
- Most persons that are HIV positive will develop AIDS.
- Table 5 shows the number of Hamilton County residents currently living with HIV infection.
- Table 6 shows the number of newly diagnosed cases of HIV or AIDS for 2002 and 2003.
- For more information on HIV/AIDS, see: http://www.cdc.gov/hiv/general.htm.

Table 5. Persons Living with HIV/AIDS (n=1,723) in Hamilton County, Ohio, 2003*

Age in Years	Number of Cases
<19	14
20-29	150
30-39	535
40-49	713
50+	311
Gender	
Male	1412
Female	311
Unknown/Missing	0
Race	
White	776
Black	866
Other	34
Unknown/Missing	47

Table 6. Reported *New* Cases of HIV or AIDS Diagnosis in Hamilton County, Ohio, 2002-2003*

Age in Years	Cases of HIV 2002	Cases of AIDS 2002	Cases of HIV 2003	Cases of AIDS 2003
<19	2	0	2	0
20-29	17	9	18	2
30-39	19	22	19	12
40-49	19	9	19	14
50+	2	6	7	4
Gender				
Male	48	40	47	25
Female	11	6	18	7
Unknown/Missing	0	0	0	0
Race				
White	25	17	23	11
Black	29	28	37	20
Other	1	1	1	1
Unknown/Missing	4	0	4	0

*Data are from the Ohio Department of Health HIV/AIDS Surveillance Division

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APPENDIX A - Methodology

Definition of Reportable Diseases

The Ohio Administrative Code 3701-3-02, 3701-5-05, and 3701-3-12 requires by law that communicable diseases be reported to local health districts. See Appendix B for a list of Ohio's reportable communicable diseases. The reporting requirements are as follows:

Class A:

1) Diseases of major public health concern because of the severity of disease or potential for epidemic spread. Report by telephone immediately upon recognition that the case, suspected case, or positive laboratory result exists.
2) Diseases of public health concern needing timely response because of potential for epidemic spread. Report by the end of next business day upon existence of a case, suspected case, or positive laboratory result.
3) Diseases of significant public health concern. Report by the close of each working week after existence of a case, suspected case, or positive laboratory result.

Class B:

The number of cases is to be reported by the close of each working week.

Class C:

Report an outbreak, unusual incidence, or epidemic of these diseases by the end of each working week.

For a complete list of reportable diseases in Ohio, you may access the Web site: http://www.odh.ohio.gov/Resources/publications/IDCManual/ID_Intro.htm.

For reporting purposes, diseases are classified into four categories: enteric/food/water-borne (food-borne), blood-borne, vaccine-preventable, and "other." Food-borne illnesses are those caused by consuming contaminated food or liquid. Blood-borne illnesses are transmitted through contaminated needles, blood transfusions or sexual contact. The vaccine-preventable category includes conditions for which both mandated and voluntary immunization is available. The other category includes diseases caused by a variety of bacterial or viral agents.

Data Sources

The sources of data are individual case and culture confirmed laboratory reports submitted to the Ohio Department of Health by health departments, clinicians and laboratories.

Case Criteria

The case criteria used are those provided in "Case Definitions for Infectious Conditions Under Public Health Surveillance," MMWR (Morbidity and Mortality Weekly Report) 1997; 46 (no.RR-10), and the Ohio Department of Health Disease Control Manual. Data in this report reflect disease incidence for Hamilton County residents living outside the city of Springdale.

Questions

Questions or comments regarding this summary should be directed to the Hamilton County General Health District epidemiologist at (513) 946-7809.

APPENDIX B

Know your ABCs: a quick guide to Reportable Infectious Diseases in Ohio

Ohio Administrative Code 3701-3-02 revised April 2003; 3701-3-13 revised October 2002; 3701-3-12 revised June 2002 and 3701-3-05

Class A Diseases

(1) diseases of major public health concern because of the severity of disease or potential for epidemic spread-- report by telephone immediately upon recognition that a case, a suspected case, or a positive laboratory result exists

- Anthrax
- Botulism, food borne
- Cholera
- Diphtheria
- Measles
- Meningococcal disease
- Plague
- Rabies, human
- Rubella (not congenital)
- Smallpox
- Viral Hemorrhagic Fever (VHF)
- Yellow Fever

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard or act of bioterrorism.

(2) diseases of public health concern needing timely response because of potential for epidemic spread-- report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known

- Chancroid
- Cyclosporiasis
- Dengue
- *E. coli* O157:H7 and other enterohemorrhagic (Shiga toxin-producing) *E. coli*
- Encephalitis, Eastern equine
- Encephalitis, LaCrosse (California group)
- Encephalitis, St. Louis
- Encephalitis, West Nile
- Encephalitis, including other arthropod-borne
- Foodborne disease outbreaks
- Granuloma inguinale
- *Haemophilus influenzae* (invasive disease)
- Hantavirus
- Hemolytic uremic syndrome (HUS)
- Hepatitis A
- Legionnaires' disease
- Listeriosis
- Lymphogranuloma venereum
- Malaria
- Meningitis, aseptic, including viral meningoencephalitis
- Mumps
- Pertussis
- Poliomyelitis (including vaccine-associated cases)
- Psittacosis
- Q fever
- Rubella (congenital)
- Salmonellosis
- Shigellosis
- *Staphylococcus aureus*, with intermediate resistance or resistance to Vancomycin (VISA, VRSA)
- Syphilis
- Tetanus
- Tuberculosis, including multi-drug resistant tuberculosis (MDR-TB)
- Tularemia
- Typhoid fever
- Waterborne disease outbreaks

(3) diseases of significant public health concern -- report by the end of the work week after the existence of a case, a suspected case, or a positive laboratory result is known

- Amebiasis
- Botulism, wound
- Botulism, infant
- Brucellosis
- Campylobacteriosis
- Chlamydia infections (urethritis, epididymitis, cervicitis, pelvic inflammatory disease, neonatal conjunctivitis and pneumonia)
- Creutzfeldt-Jakob disease (CJD)
- Cryptosporidiosis
- Cytomegalovirus (CMV) (congenital)
- Ehrlichiosis
- Encephalitis, other viral
- Encephalitis, post-infection
- Giardiasis
- Gonococcal infections (urethritis, cervicitis, pelvic inflammatory disease, pharyngitis, arthritis, endocarditis, meningitis and neonatal conjunctivitis)
- Hepatitis B
- Hepatitis C
- Hepatitis D (delta hepatitis)
- Hepatitis E
- Hepatitis, acute viral, undeterminable etiology
- Herpes (congenital)
- Kawasaki disease (mucocutaneous lymph node syndrome)
- Leprosy (Hansen Disease)
- Leptospirosis
- Lyme disease
- Meningitis, including other bacterial
- Mycobacterial disease, other than tuberculosis
- Pelvic inflammatory disease (PID)
- Reye syndrome
- Rheumatic fever
- Rocky Mountain spotted fever (RMSF)
- Streptococcal disease, group A, invasive (IGAS)
- Streptococcal disease, group B, in newborn
- Streptococcal toxic shock syndrome (STSS)
- *Streptococcus pneumoniae*, invasive disease (ISP)
- Toxic shock syndrome (TSS)
- Toxoplasmosis (congenital)
- Trichinosis
- Typhus fever
- Varicella (deaths only)
- Vibriosis
- Yersiniosis

Class B Diseases B *the number of cases is to be reported by the close of each working week*

- Chickenpox
- Herpes (genital)
- Influenza

Class C Diseases - *report an outbreak, unusual incidence, or epidemic by the end of the next working day*

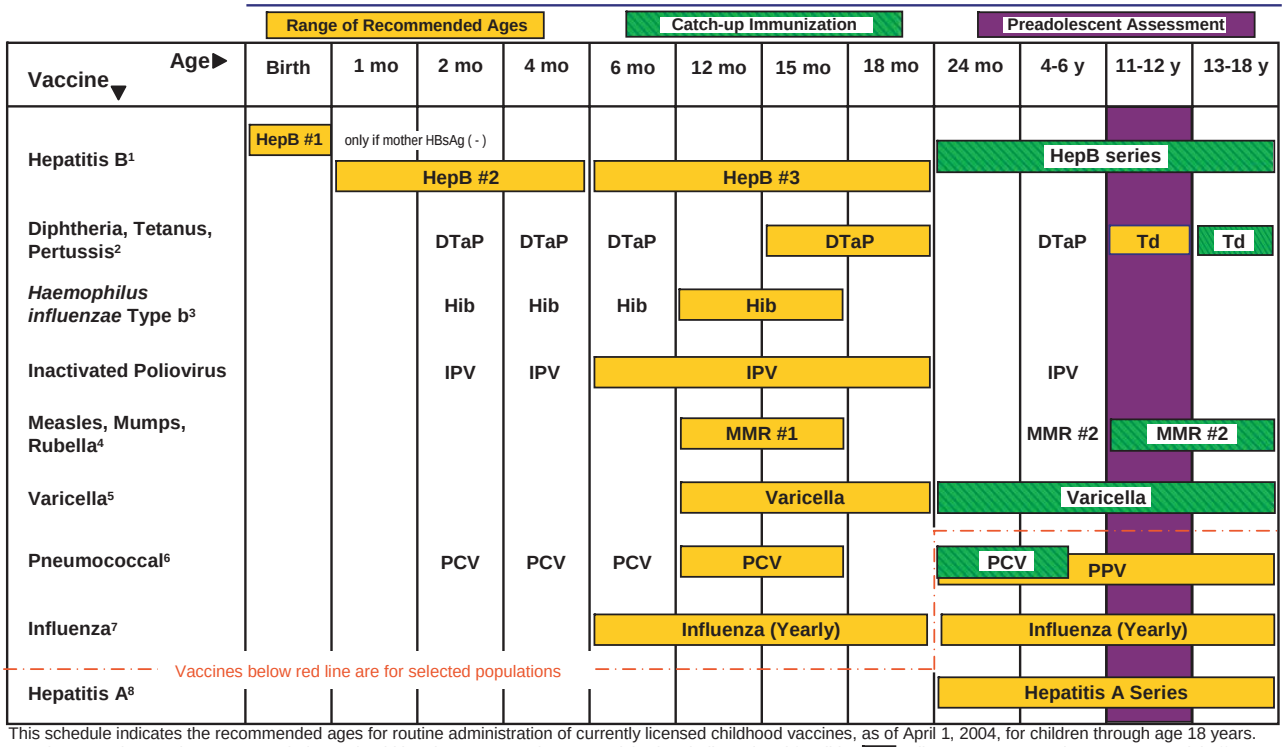
- Blastomycosis
- Conjunctivitis, acute
- Histoplasmosis
- Nosocomial infections of any type
- Pediculosis
- Scabies
- Sporotrichosis
- Staphylococcal skin infections
- Toxoplasmosis
- Outbreak, unusual incidence, or epidemic of other infectious diseases of known etiology not categorized as Class A, Class B or Class C

Except as otherwise required for the Class A(1) diseases, reports of cases and suspect cases and positive laboratory results shall be in writing, and shall include the name and address of the case, suspect case, or person from whom the specimen was taken. A Board of Health may accept verbal reports by telephone or other electronic systems approved by the Director within the same time limitations. Reports shall include supplementary information relevant to the case or laboratory reports as needed to complete official surveillance forms provided or approved by the Director.

Cases of AIDS (acquired immune deficiency syndrome), AIDS-related conditions, HIV (human immunodeficiency virus) infection, perinatal exposure to HIV, and CD4 T-lymphocytes counts <200 or 14% must be reported on forms and in a manner prescribed by the Director.

APPENDIX C

Recommended Childhood and Adolescent Immunization Schedule United States · July–December 2004



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of April 1, 2004, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: www.vaers.org or by calling 800-822-7967.

1. Hepatitis B (HepB) vaccine. All infants should receive the first dose of hepatitis B vaccine soon after birth and before hospital discharge; the first dose may also be given by age 2 months if the infant's mother is hepatitis B surface antigen (HBsAg) negative. Only monovalent HepB can be used for the birth dose. Monovalent or combination vaccine containing HepB may be used to complete the series. Four doses of vaccine may be administered when a birth dose is given. The second dose should be given at least 4 weeks after the first dose, except for combination vaccines which cannot be administered before age 6 weeks. The third dose should be given at least 16 weeks after the first dose and at least 8 weeks after the second dose. The last dose in the vaccination series (third or fourth dose) should not be administered before age 24 weeks.

Infants born to HBsAg-positive mothers should receive HepB and 0.5 mL of Hepatitis B Immune Globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1–2 months. The last dose in the immunization series should not be administered before age 24 weeks. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9–15 months.

Infants born to mothers whose HBsAg status is unknown should receive the first dose of the HepB series within 12 hours of birth. Maternal blood should be drawn as soon as possible to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). The second dose is recommended at age 1–2 months. The last dose in the immunization series should not be administered before age 24 weeks.

2. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. The final dose in the series should be given at age ≥4 years. **Tetanus and diphtheria toxoids (Td)** is recommended at age 11–12 years if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine. Subsequent routine Td boosters are recommended every 10 years.

3. *Haemophilus influenzae* type b (Hib) conjugate vaccine. Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB or ComVax [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months but can be used as boosters following any Hib vaccine. The final dose in the series should be given at age ≥12 months.

4. Measles, mumps, and rubella vaccine (MMR). The second dose of MMR is recommended routinely at age 4–6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered beginning at or after age 12 months. Those who have not previously received the second dose should complete the schedule by the visit at age 11–12 years.

5. Varicella vaccine. Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons age ≥13 years should receive 2 doses, given at least 4 weeks apart.

6. Pneumococcal vaccine. The heptavalent **pneumococcal conjugate vaccine (PCV)** is recommended for all children age 2–23 months. It is also recommended for certain children age 24–59 months. The final dose in the series should be given at age >12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49(RR-9):1-35.

7. Influenza vaccine. Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors (including but not limited to asthma, cardiac disease, sickle cell disease, HIV, and diabetes), healthcare workers, and other persons (including household members) in close contact with persons in groups at high risk (see *MMWR* 2004;53;[RR-6]:1-40) and can be administered to all others wishing to obtain immunity. In addition, healthy children aged 6–23 months and close contacts of healthy children aged 0–23 months are recommended to receive influenza vaccine, because children in this age group are at substantially increased risk for influenza-related hospitalizations. For healthy persons aged 5–49 years, the intranasally administered live, attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2004;53;[RR-6]:1-40. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if 6–35 months or 0.5 mL if ≥3 years). Children aged ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).

8. Hepatitis A vaccine. Hepatitis A vaccine is recommended for children and adolescents in selected states and regions and for certain high-risk groups; consult your local public health authority. Children and adolescents in these states, regions, and high-risk groups who have not been immunized against hepatitis A can begin the hepatitis A immunization series during any visit. The 2 doses in the series should be administered at least 6 months apart. See *MMWR* 1999;48(RR-12):1-37.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip/ or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

Approved by the Advisory Committee on Immunization Practices (www.cdc.gov/nip/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

APPENDIX D

For Children and Adolescents Who Start Late or Who Are >1 Month Behind

The tables below give catch-up schedules and minimum intervals between doses for children who have delayed immunizations. There is no need to restart a vaccine series regardless of the time that has elapsed between doses. Use the chart appropriate for the child's age.

Catch-up schedule for children age 4 months through 6 years

Dose 1 (Minimum Age)	Minimum Interval Between Doses			
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
DTaP (6 wk)	**4 wk**	**4 wk**	**6 mo**	**6 mo**[1]
IPV (6 wk)	**4 wk**	**4 wk**	**4 wk**[2]	
HepB[3] (birth)	**4 wk**	**8 wk** (and 16 wk after first dose)		
MMR (12 mo)	**4 wk**[4]			
Varicella (12 mo)				
Hib[5] (6 wk)	**4 wk:** if first dose given at age <12 mo **8 wk (as final dose):** if first dose given at age 12-14 mo **No further doses needed:** if first dose given at age ≥15 mo	**4 wk**[6]**:** if current age <12 mo **8 wk (as final dose)**[6]**:** if current age ≥12 mo and second dose given at age <15 mo **No further doses needed:** if previous dose given at age ≥15 mo	**8 wk (as final dose):** this dose only necessary for children age 12 mo–5 y who received 3 doses before age 12 mo	
PCV[7]**:** (6 wk)	**4 wk:** if first dose given at age <12 mo and current age <24 mo **8 wk (as final dose):** if first dose given at age ≥12 mo or current age 24-59 mo **No further doses needed:** for healthy children if first dose given at age ≥24 mo	**4 wk:** if current age <12 mo **8 wk (as final dose):** if current age ≥12 mo **No further doses needed:** for healthy children if previous dose given at age ≥24 mo	**8 wk (as final dose):** this dose only necessary for children age 12 mo–5 y who received 3 doses before age 12 mo	

Catch-up schedule for children age 7 through 18 years

Minimum Interval Between Doses		
Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Booster Dose
Td: 4 wk	**Td:** 6 mo	**Td**[8]**:** **6 mo:** if first dose given at age <12 mo and current age <11 y **5 y:** if first dose given at age ≥12 mo and third dose given at age <7 y and current age ≥11 y **10 y:** if third dose given at age ≥7 y
IPV[9]**:** 4 wk	**IPV**[9]**:** 4 wk	**IPV**[2,9]
HepB: 4 wk	**HepB:** 8 wk (and 16 wk after first dose)	
MMR: 4 wk		
Varicella[10]**:** 4 wk		

1. **DTaP:** The fifth dose is not necessary if the fourth dose was given after the fourth birthday.
2. **IPV:** For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was given at age ≥4 years. If both OPV and IPV were given as part of a series, a total of 4 doses should be given, regardless of the child's current age.
3. **HepB:** All children and adolescents who have not been immunized against hepatitis B should begin the HepB immunization series during any visit. Providers should make special efforts to immunize children who were born in, or whose parents were born in, areas of the world where hepatitis B virus infection is moderately or highly endemic.
4. **MMR:** The second dose of MMR is recommended routinely at age 4 to 6 years but may be given earlier if desired.
5. **Hib:** Vaccine is not generally recommended for children age ≥5 years.
6. **Hib:** If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB or ComVax [Merck]), the third (and final) dose should be given at age 12 to 15 months and at least 8 weeks after the second dose.
7. **PCV:** Vaccine is not generally recommended for children age ≥5 years.
8. **Td:** For children age 7 to 10 years, the interval between the third and booster dose is determined by the age when the first dose was given. For adolescents age 11 to 18 years, the interval is determined by the age when the third dose was given.
9. **IPV:** Vaccine is not generally recommended for persons age ≥18 years.
10. **Varicella:** Give 2-dose series to all susceptible adolescents age ≥13 years.

Reporting Adverse Reactions
Report adverse reactions to vaccines through the federal Vaccine Adverse Event Reporting System. For information on reporting reactions following immunization, please visit www.vaers.org or call the 24-hour national toll-free information line (800) 822-7967.

Disease Reporting
Report suspected cases of vaccine-preventable diseases to your state or local health department.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

Recommended Adult Immunization Schedule by Vaccine and Age Group

UNITED STATES · OCTOBER 2004–SEPTEMBER 2005

Age group (yrs) ▶ / Vaccine ▼	19–49	50–64	≥65
Tetanus, Diphtheria (Td)*	1 dose booster every 10 years[1]		
Influenza	1 dose annually[2]		1 dose annually
Pneumococcal (polysaccharide)	1 dose[3,4]		1 dose[3,4]
Hepatitis B*	3 doses (0, 1–2, 4–6 months)[5]		
Hepatitis A*	2 doses (0, 6–12 months)[6]		
Measles, Mumps, Rubella (MMR)*	1 or 2 doses[7]		
Varicella*	2 doses (0, 4–8 weeks)[8]		
Meningococcal (polysaccharide)	1 dose[9]		

*Covered by the Vaccine Injury Compensation Program.
See Footnotes for Recommended Adult Immunization Schedule on back cover.

For all persons in this group

For persons lacking documentation of vaccination or evidence of disease

For persons at risk (i.e., with medical/exposure indications)

The Recommended Adult Immunization Schedule is Approved by the Advisory Committee on Immunization Practices (ACIP), the American College of Obstetricians and Gynecologists (ACOG), and the American Academy of Family Physicians (AAFP)

This schedule indicates the recommended age groups for routine administration of currently licensed vaccines for persons aged ≥19 years. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. Providers should consult manufacturers' package inserts for detailed recommendations.

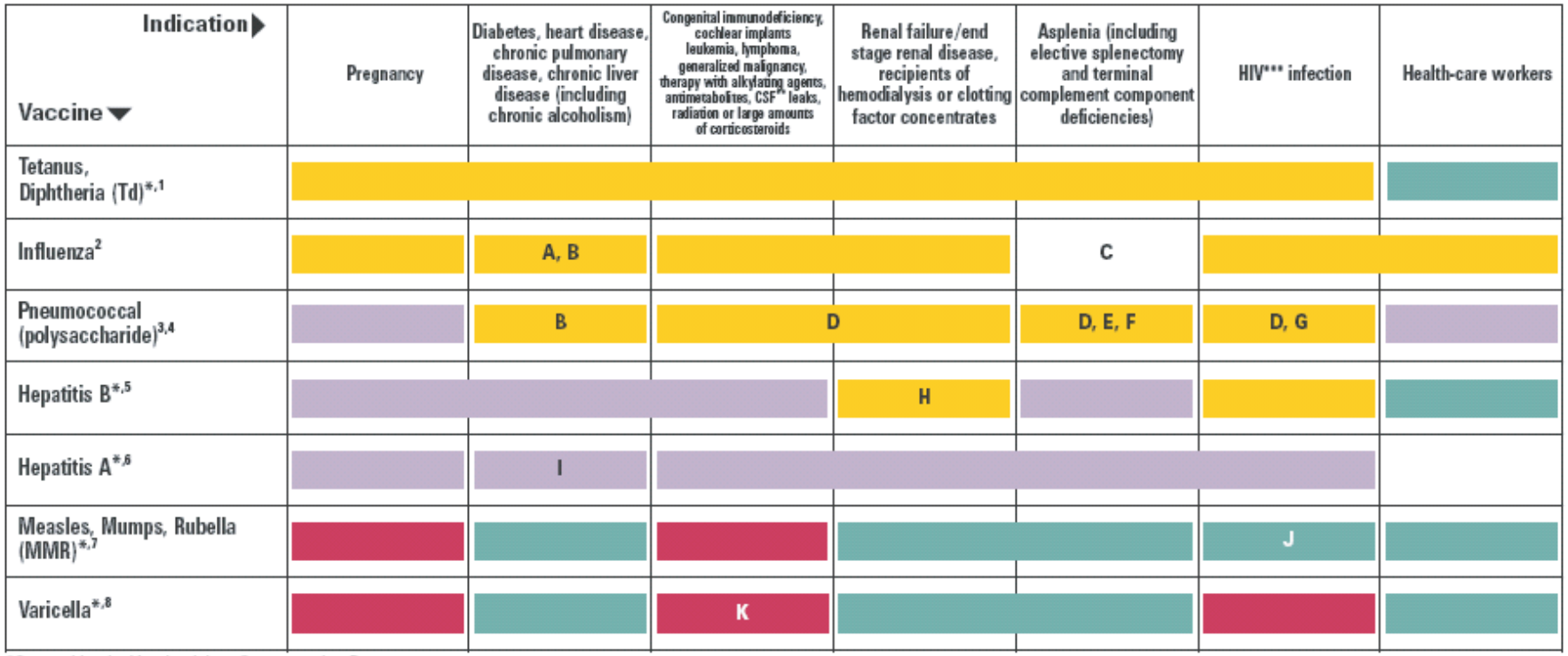
Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available by telephone, 800-822-7967, or from the VAERS website at http://www.vaers.org.

Information on how to file a Vaccine Injury Compensation Program claim is available at http://www.hrsa.gov/osp/vicp 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, DC 20005, telephone 202-219-9657.

Additional information about the vaccines listed above and contraindications for immunization is available at http://www.cdc.gov/nip or from the National Immunization Hotline, 800-232-2522 (English) or 800-232-0233 (Spanish).

Recommended Adult Immunization Schedule by Vaccine and Medical and Other Indications

UNITED STATES · OCTOBER 2004–SEPTEMBER 2005



*Covered by the Vaccine Injury Compensation Program.
**Cerebrospinal fluid.
***Human immunodeficiency virus.
See Special Notes for Medical and Other Indications below. Also see Footnotes for Recommended Adult Immunization Schedule on back cover.

For all persons in this group

For persons lacking documentation of vaccination or evidence of disease

For persons at risk (i.e., with medical/exposure indications)

Contraindicated

Special Notes for Medical and Other Indications

A. Although chronic liver disease and alcoholism are not indications for influenza vaccination, administer 1 dose annually if the patient is aged ≥50 years, has other indications for influenza vaccine, or requests vaccination.

B. Asthma is an indication for influenza vaccination but not for pneumococcal vaccination.

C. No data exist specifically on the risk for severe or complicated influenza infections among persons with asplenia. However, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia.

D. For persons aged <65 years, revaccinate once after ≥5 years have elapsed since initial vaccination.

E. Administer meningococcal vaccine and consider *Haemophilus influenzae* type b vaccine.

F. For persons undergoing elective splenectomy, vaccinate ≥2 weeks before surgery.

G. Vaccinate as soon after diagnosis as possible.

H. For hemodialysis patients, use special formulation of vaccine (40 μg/mL) or two 20 μg/mL doses administered at one body site. Vaccinate early in the course of renal disease. Assess antibody titers to hepatitis B surface antigen (anti-HB) levels annually. Administer additional doses if anti-HB levels decline to <10 mIU/mL.

I. For all persons with chronic liver disease.

J. Withhold MMR or other measles-containing vaccines from HIV-infected persons with evidence of severe immunosuppression (see *MMWR* 1998;47 [No. RR-8]:21–2 and *MMWR* 2002;51 [No. RR-2]:22–4).

K. Persons with impaired humoral immunity but intact cellular immunity may be vaccinated (see *MMWR* 1999;48[No. RR-6]).

Footnotes

Recommended Adult Immunization Schedule · UNITED STATES · OCTOBER 2004–SEPTEMBER 2005

1. **Tetanus and diphtheria (Td).** Adults, including pregnant women with uncertain history of a complete primary vaccination series, should receive a primary series of Td. A primary series for adults is 3 doses; administer the first 2 doses at least 4 weeks apart and the 3rd dose 6–12 months after the second. Administer 1 dose if the person received the primary series and if the last vaccination was received ≥10 years previously. Consult recommendations for administering Td as prophylaxis in wound management (see *MMWR* 1991;40[No. RR-10]). The American College of Physicians Task Force on Adult Immunization supports a second option for Td use in adults: a single Td booster at age 50 years for persons who have completed the full pediatric series, including the teenage/young adult booster.

2. **Influenza vaccination.** The Advisory Committee on Immunization Practices (ACIP) recommends inactivated influenza vaccination for the following indications, when vaccine is available. *Medical indications:* chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases, including diabetes mellitus, renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or by human immunodeficiency virus [HIV]); and pregnancy during the influenza season. *Occupational indications:* health-care workers and employees of long-term–care and assisted living facilities. *Other indications:* residents of nursing homes and other long-term–care facilities; persons likely to transmit influenza to persons at high risk (i.e., in-home caregivers to persons with medical indications, household/close contacts and out-of-home caregivers of children aged 0–23 months, household members and caregivers of elderly persons and adults with high-risk conditions); and anyone who wishes to be vaccinated. For healthy persons aged 5–49 years without high-risk conditions who are not contacts of severely immunocompromised persons in special care units, either the inactivated vaccine or the intranasally administered influenza vaccine (FluMist®) may be administered (see *MMWR* 2004;53[No. RR-6]).
   Note: Because of the vaccine shortage for the 2004–05 influenza season, CDC has recommended that vaccination be restricted to the following priority groups, which are considered to be of equal importance: all children aged 6–23 months; adults aged ≥65 years; persons aged 2–64 years with underlying chronic medical conditions; all women who will be pregnant during the influenza season; residents of nursing homes and long-term–care facilities; children aged 6 months–18 years on chronic aspirin therapy; health-care workers involved in direct patient care; and out-of-home caregivers and household contacts of children aged <6 months. For the 2004–05 season, intranasally administered, live, attenuated influenza vaccine, if available, should be encouraged for healthy persons who are aged 5–49 years and are not pregnant, including health-care workers (except those who care for severely immunocompromised patients in special care units) and persons caring for children aged <6 months (see *MMWR* 2004;53:923–4).

3. **Pneumococcal polysaccharide vaccination.** *Medical indications:* chronic disorders of the pulmonary system (excluding asthma); cardiovascular diseases; diabetes mellitus; chronic liver diseases, including liver disease as a result of alcohol abuse (e.g., cirrhosis); chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkins disease, generalized malignancy, or organ or bone marrow transplantation); chemotherapy with alkylating agents, antimetabolites, or long-term systemic corticosteroids; or cochlear implants. *Geographic/other indications:* Alaska Natives and certain American Indian populations. *Other indications:* residents of nursing homes and other long-term–care facilities (see *MMWR* 1997;46[No. RR-8] and *MMWR* 2003;52:739–40).

4. **Revaccination with pneumococcal polysaccharide vaccine.** One-time revaccination after 5 years for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); immunosuppressive conditions (e.g., congenital immunodeficiency, HIV infection, leukemia, lymphoma, multiple myeloma, Hodgkins disease, generalized malignancy, or organ or bone marrow transplantation); or chemotherapy with alkylating agents, antimetabolites, or long-term systemic corticosteroids. For persons aged ≥65 years, one-time revaccination if they were vaccinated ≥5 years previously and were aged <65 years at the time of primary vaccination (see *MMWR* 1997;46[No. RR-8]).

5. **Hepatitis B vaccination.** *Medical indications:* hemodialysis patients or patients who receive clotting factor concentrates. *Occupational indications:* health-care workers and public-safety workers who have exposure to blood in the workplace; and persons in training in schools of medicine, dentistry, nursing, laboratory technology, and other allied health professions. *Behavioral indications:* injection-drug users; persons with more than one sex partner during the previous 6 months; persons with a recently acquired sexually transmitted disease (STD); all clients in STD clinics; and men who have sex with men. *Other indications:* household contacts and sex partners of persons with chronic hepatitis B virus (HBV) infection; clients and staff members of institutions for the developmentally disabled; inmates of correctional facilities; or international travelers who will be in countries with high or intermediate prevalence of chronic HBV infection for >6 months (http://www.cdc.gov/travel/diseases/hbv.htm) (see *MMWR* 1991;40[No. RR-13]).

6. **Hepatitis A vaccination.** *Medical indications:* persons with clotting factor disorders or chronic liver disease. *Behavioral indications:* men who have sex with men or users of illegal drugs. *Occupational indications:* persons working with hepatitis A virus (HAV)-infected primates or with HAV in a research laboratory setting. *Other indications:* persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A. If the combined Hepatitis A and Hepatitis B vaccine is used, administer 3 doses at 0, 1, and 6 months (http://www.cdc.gov/travel/diseases/hav.htm) (see MMWR 1999;48[No. RR-12]).

7. **Measles, mumps, rubella (MMR) vaccination.** *Measles component:* adults born before 1957 can be considered immune to measles. Adults born during or after 1957 should receive ≥1 dose of MMR unless they have a medical contraindication, documentation of ≥1 dose, or other acceptable evidence of immunity. A second dose of MMR is recommended for adults who 1) were recently exposed to measles or in an outbreak setting, 2) were previously vaccinated with killed measles vaccine, 3) were vaccinated with an unknown vaccine during 1963–1967, 4) are students in postsecondary educational institutions, 5) work in health-care facilities, or 6) plan to travel internationally. *Mumps component:* 1 dose of MMR vaccine should be adequate for protection. *Rubella component:* Administer 1 dose of MMR vaccine to women whose rubella vaccination history is unreliable and counsel women to avoid becoming pregnant for 4 weeks after vaccination. For women of childbearing age, regardless of birth year, routinely determine rubella immunity and counsel women regarding congenital rubella syndrome. Do not vaccinate pregnant women or those planning to become pregnant during the next 4 weeks. For women who are pregnant and susceptible, vaccinate as early in the postpartum period as possible (see *MMWR* 1998;47[No. RR-8] and *MMWR* 2001;50:1117).

8. **Varicella vaccination.** Recommended for all persons lacking a reliable clinical history of varicella infection or serologic evidence of varicella zoster virus (VZV) infection who might be at high risk for exposure or transmission. This includes health-care workers and family contacts of immuno-compromised persons; persons who live or work in environments where transmission is likely (e.g., teachers of young children, child care employees, and residents and staff members in institutional settings); persons who live or work in environments where VZV transmission can occur (e.g., college students, inmates, and staff members of correctional institutions, and military personnel); adolescents aged 11–18 years and adults living in households with children; women who are not pregnant but who might become pregnant; and international travelers who are not immune to infection.
   Note: Approximately 95% of U.S.-born adults are immune to VZV. Do not vaccinate pregnant women or those planning to become pregnant during the next 4 weeks. For women who are pregnant and susceptible, vaccinate as early in the postpartum period as possible (see *MMWR* 1999;48[No. RR-6]).

9. **Meningococcal vaccine (quadrivalent polysaccharide for serogroups A, C, Y, and W 135).** *Medical indications:* adults with terminal complement component deficiencies or those with anatomic or functional asplenia. *Other indications:* travelers to countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of sub-Saharan Africa and Mecca, Saudi Arabia). Revaccination after 3–5 years might be indicated for persons at high risk for infection (e.g., persons residing in areas where disease is epidemic). Counsel college freshmen, especially those who live in dormitories, regarding meningococcal disease and availability of the vaccine to enable them to make an educated decision about receiving the vaccination (see *MMWR* 2000;49[No. RR-7]). The American Academy of Family Physicians recommends that colleges should take the lead on providing education on meningococcal infection and availability of vaccination and offer it to students who are interested. Physicians need not initiate discussion of meningococcal quadrivalent polysaccharide vaccine as part of routine medical care.