2010 DISEASE SURVEILLANCE SUMMARY

SELECTED NOTIFIABLE DISEASES AND OTHER KEY CONDITIONS OF PUBLIC HEALTH INTEREST IN JEFFERSON COUNTY, ALABAMA

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Introduction

This report updates all previously published Jefferson County Morbidity and Disease Surveillance Summaries with data currently available for 2010 on the incidence of selected notifiable diseases within Jefferson County, Alabama, as well as other conditions of public health importance. ***Disease Surveillance Summary - Selected Notifiable Diseases and Other Key Conditions of Public Health Interest in Jefferson County, Alabama 2010*** documents trends in various diseases and conditions to identify areas requiring intervention. Additionally, this update provides public health officials and the medical community information useful in designing, implementing, and evaluating disease control programs and interventions to decrease disease morbidity and mortality. This report focuses on trending over time to provide a context for past, present, and future disease incidence and prevalence. The Special Topic Chapter about the concerning infectious disease outbreaks in the Donaldson Correctional Facility, a topic chosen by the Disease Control staff, highlights one of the many critical activities of the Division of Disease Control during 2010.

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Technical Notes

Disease and Mortality Rate Calculations

Rates are calculated using ***population estimates*** generated annually by the U. S. Census Bureau. These estimates are made for the mid-year (July 1) population and calculated based on the number of births and deaths occurring in the year for which the estimate is made. Since these data typically are not available until the third quarter of the following year, the populations used for the rate denominators are derived from the previous year.

Once the population estimates for the current year become available, these will be entered into the databases generating the charts supporting this report, and all charts will be automatically updated in subsequent reports.

Incidence refers to new cases diagnosed within the calendar year.

Prevalence refers to all cases in the population at a given time, regardless of when the case was diagnosed.

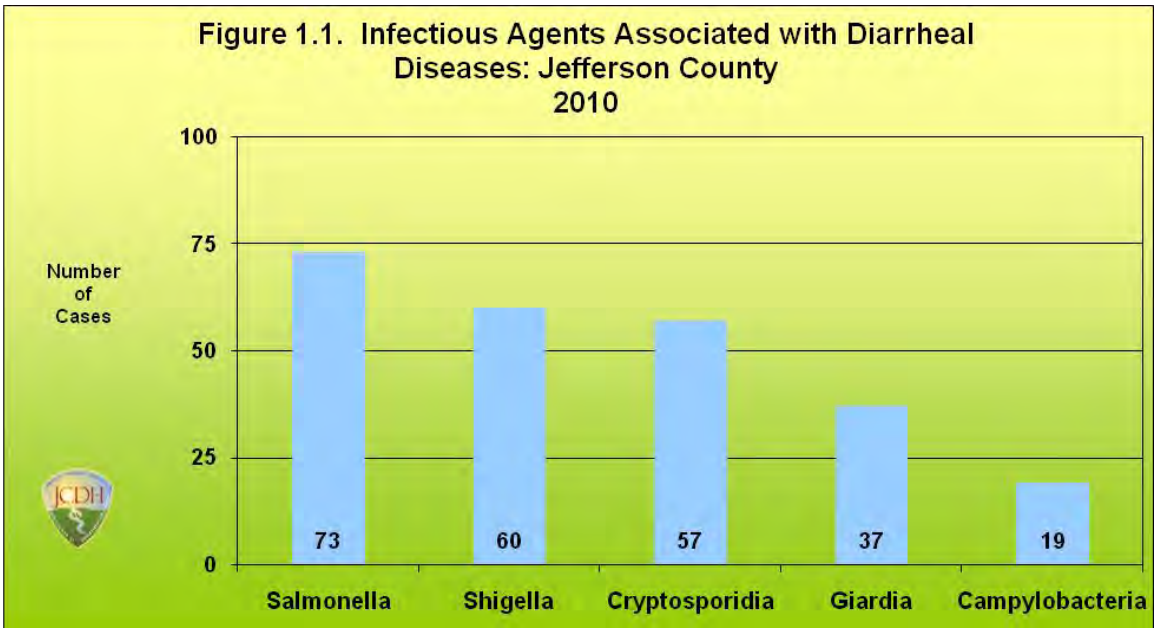
Race and Ethnicity

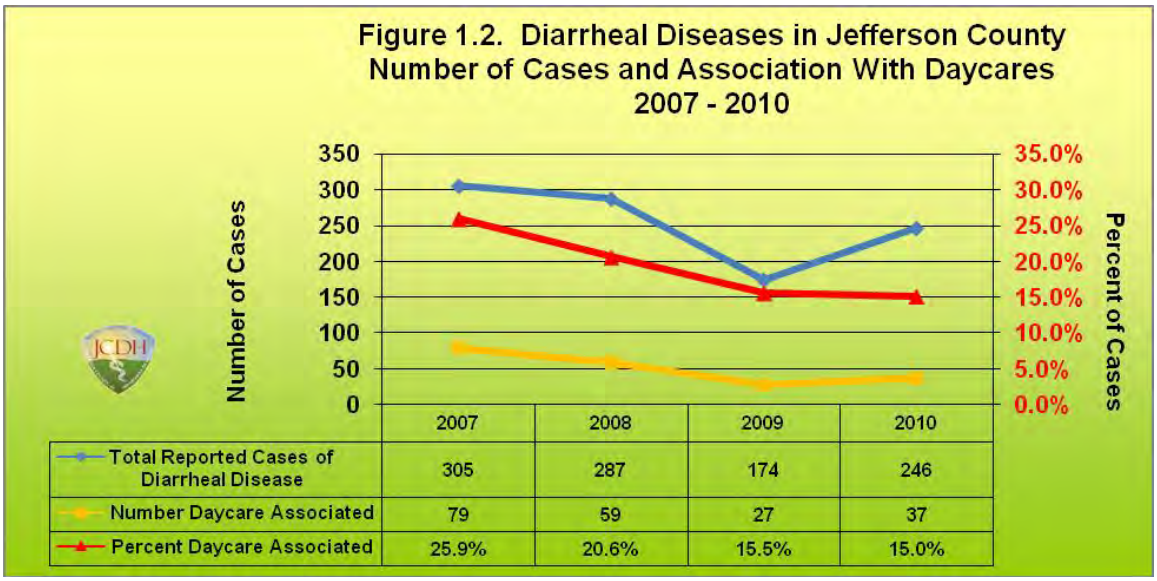
Disease and mortality rates are often reported by ***race*** and ***ethnicity*** in order to demonstrate disparities in disease burden. Often, these terms are used interchangeably when, in fact, they are not the same. These characteristics can, however, be combined to provide a clearer picture. The ***race*** characteristic is generally reported as White, Black, Asian, Multiracial, or Other. ***Ethnicity***, in the United States, generally refers to the categorization of an individual as either Hispanic/Latino or non-Hispanic/Latino, although in countries outside the United States, other groups may be designated as ~~"e~~thnic" groups. Regardless of racial category, an individual may be defined as being of either Hispanic or non-Hispanic ethnicity. Based upon the country of origin for the overwhelming majority Jefferson County's Hispanic the race of the majority of the Hispanic population is either White or Indian. Unless specifically reported as White-Hispanic or Hispanic/non-Hispanic, data from individuals defining themselves as Hispanic are included in the cases and rates for the White population. In general, rates are not calculated for the Hispanic ethnicity category due to the uncertainty of the population estimates used for calculation of the rate's denominator.

CHAPTER
1

Diarrheal Diseases

Every year, an estimated 76 million cases of diarrheal illness and 5,000 associated deaths occur in the United States. In 2010, a total of 246 cases of diarrheal disease were reported in Jefferson County, Alabama to the Jefferson County Department of Health (Figure 1.1). None of these cases resulted in death. Thirty-seven cases (15.0%) were daycare-associated (Figure 1.2). The most common infectious agent identified among all cases of diarrhea was *Salmonella* with 73 cases (29.7%).



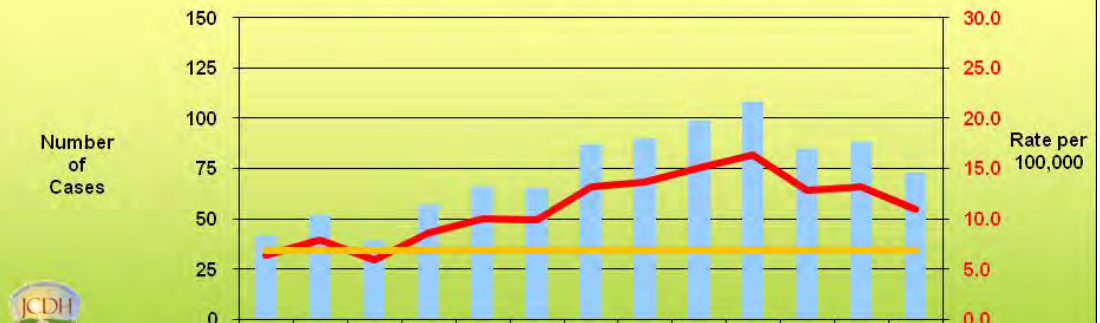


As milder cases of diarrhea are frequently undiagnosed or unreported, the actual number of infections in Jefferson County may be twenty times greater than presented in this report.[1] One measure of diarrheal disease activity is the number of outbreaks in a given year. An outbreak is defined as three or more cases of diarrheal disease associated with the same incident or event. Of the 73 Salmonellosis cases reported, none was outbreak associated; each case was a separate event. However, among the 60 cases of diarrheal disease caused by *Shigella*, 23 cases were associated with two individual outbreaks occurring in daycare settings. The remaining Shigellosis cases were all unrelated individual events. During 2010, a large increase in the number of cases of Cryptosporidiosis, from 6 in 2009 to 57, was reported. While there were two outbreaks of Cryptosporidiosis, both associated with water parks in Jefferson County, these outbreaks only accounted for 9 cases. The remaining cases of Cryptosporidiosis were individual, sporadic, and with no identified source of exposure. The increase in cases of Cryptosporidiosis greatly impacted the overall increase of reported cases of diarrheal disease in Jefferson County in 2010.

Salmonellosis

The number of cases of Salmonellosis (Figure 1.3) had been steadily rising since 1997 and peaked at 108 cases in 2007. The vast majority of reported *Salmonella* infections were individual cases. The number of cases (73) and the incidence rate for Jefferson County (11.0/100,000) in 2010 greatly exceeds the 2010 national target of 6.8 cases per 100,000 population. It is suspected that the actual Salmonella rates in Jefferson County have remained relatively stable over the past three years and that some portion of the increase observed in 2007 reflected an increased number of stool cultures performed in response to Shigella outbreaks. The decrease in the number of stool samples cultured since 2008 may also contribute to in the number of cases identified.

Figure 1.3. Salmonellosis Cases and Rates: Jefferson County 1998 - 2010

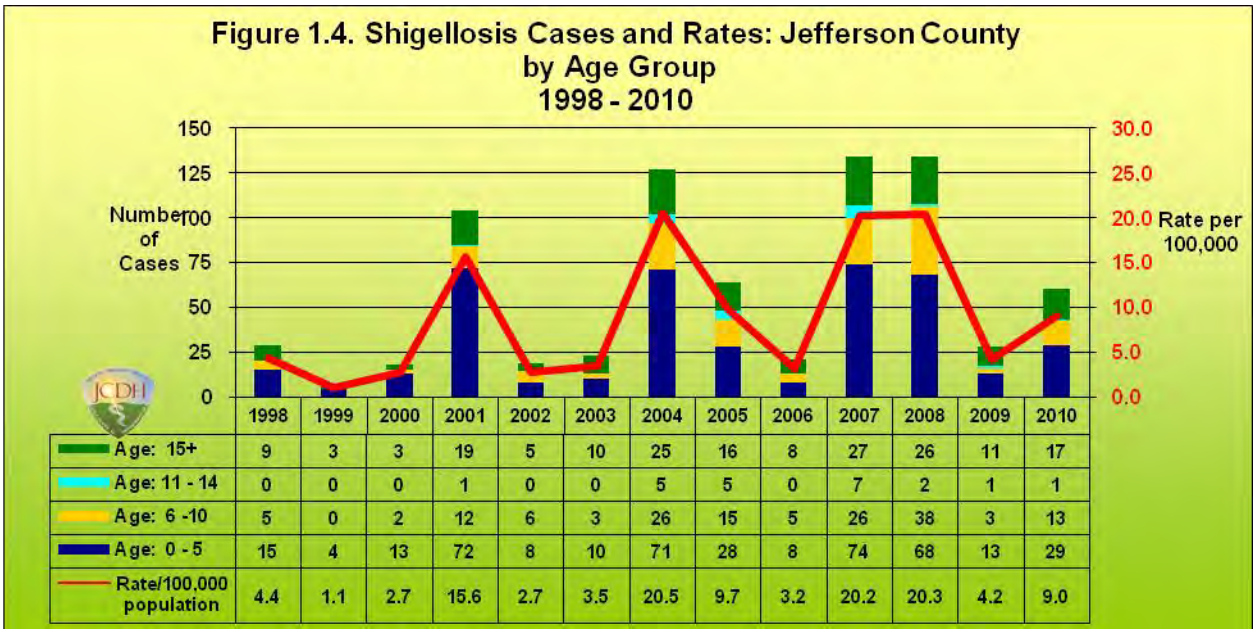


	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of Cases	42	52	39	57	66	65	87	90	99	108	85	88	73
Rate/100,000 population	6.3	7.9	5.9	8.6	10.0	9.9	13.2	13.7	15.1	16.4	12.9	13.2	11.0
2010 Target Rate	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8

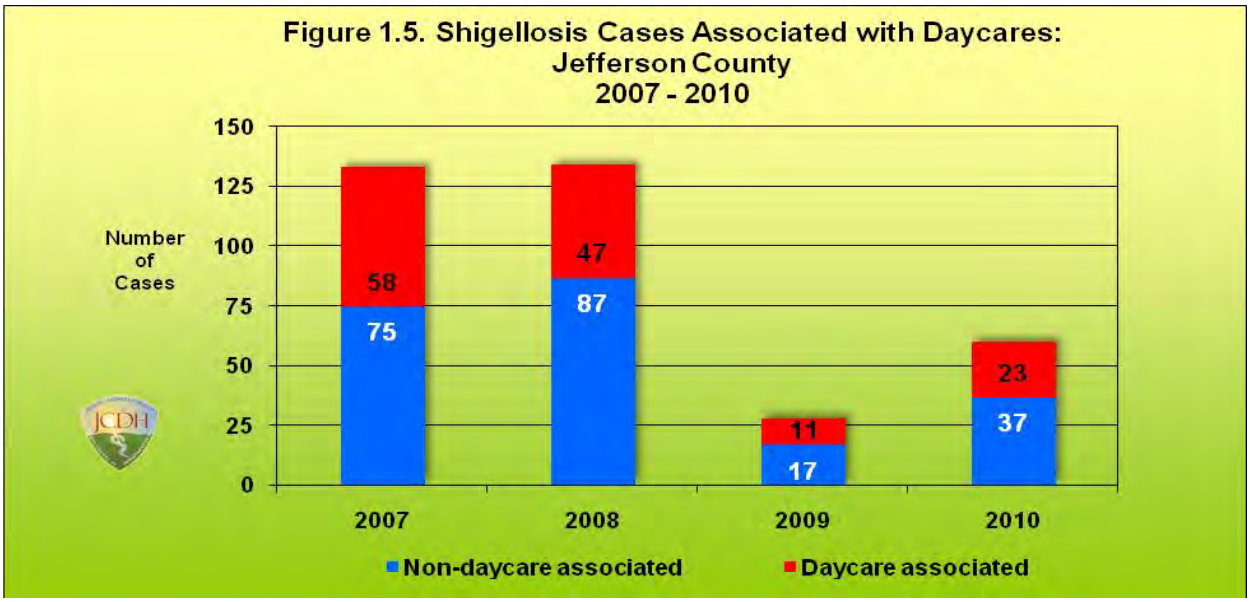
[1] Centers for Disease Control and Prevention: Division of Bacterial and Mycotic Diseases; Food Borne Illness; http://www.cdc.gov/ncidod/diseases/food/index.htm

Shigellosis

The large increases in the number of cases and resulting rates of Shigellosis in 2001, 2004, 2007 and 2008 reflect outbreaks in childcare facilities (Figures 1.4, 1.5). In each of these years, several childcare facility-related outbreaks were documented throughout Jefferson County. Although the number of daycare associated outbreaks decreased from 11 in 2007 to 2 in 2010, the average number of children affected per outbreak rose from 5 to 12 within the same timeframe.



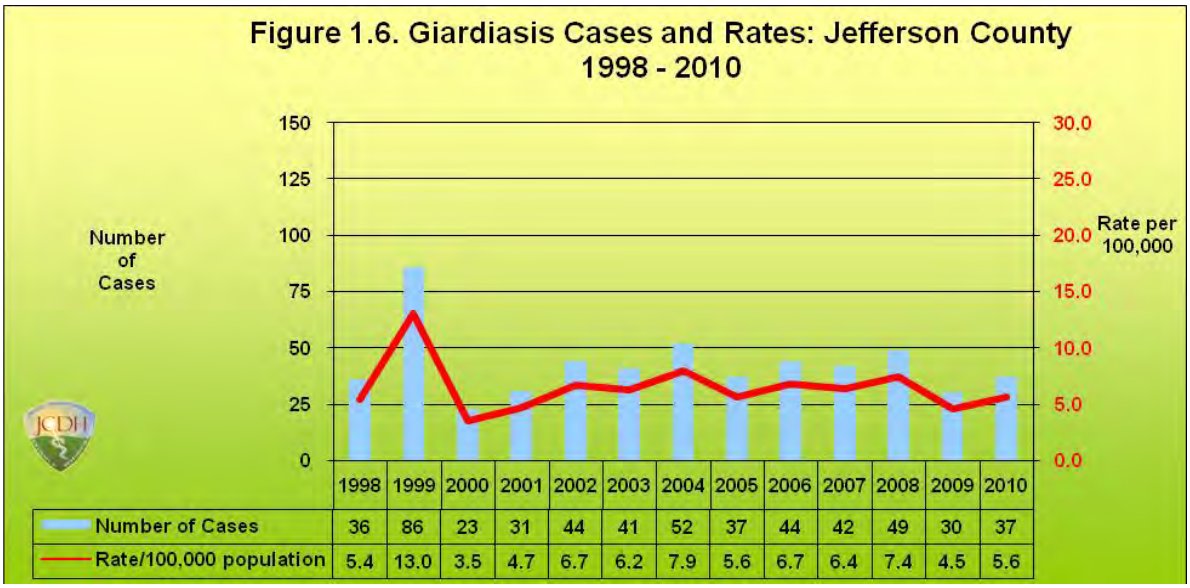
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Age: 15+	9	3	3	19	5	10	25	16	8	27	26	11	17
Age: 11 - 14	0	0	0	1	0	0	5	5	0	7	2	1	1
Age: 6 -10	5	0	2	12	6	3	26	15	5	26	38	3	13
Age: 0 - 5	15	4	13	72	8	10	71	28	8	74	68	13	29
Rate/100,000 population	4.4	1.1	2.7	15.6	2.7	3.5	20.5	9.7	3.2	20.2	20.3	4.2	9.0



Among the 131 cases of Shigellosis in 2008 with sensitivity data, 7.6% (10) of the cases were resistant to Bactrim, and 57.3% (75) were resistant to Ampicillin. In 2009, none of the 28 isolates (0.0%) of *Shigella* were resistant to Bactrim, the antibiotic treatment of choice; however, 15 (53.6%) of these same 28 isolates were resistant to Ampicillin, the second choice antibiotic for this illness. In 2010, 40 (78.4%) of the 51 isolates were resistant to Bactrim while only 7 (13.7%) were resistant to Ampicillin.

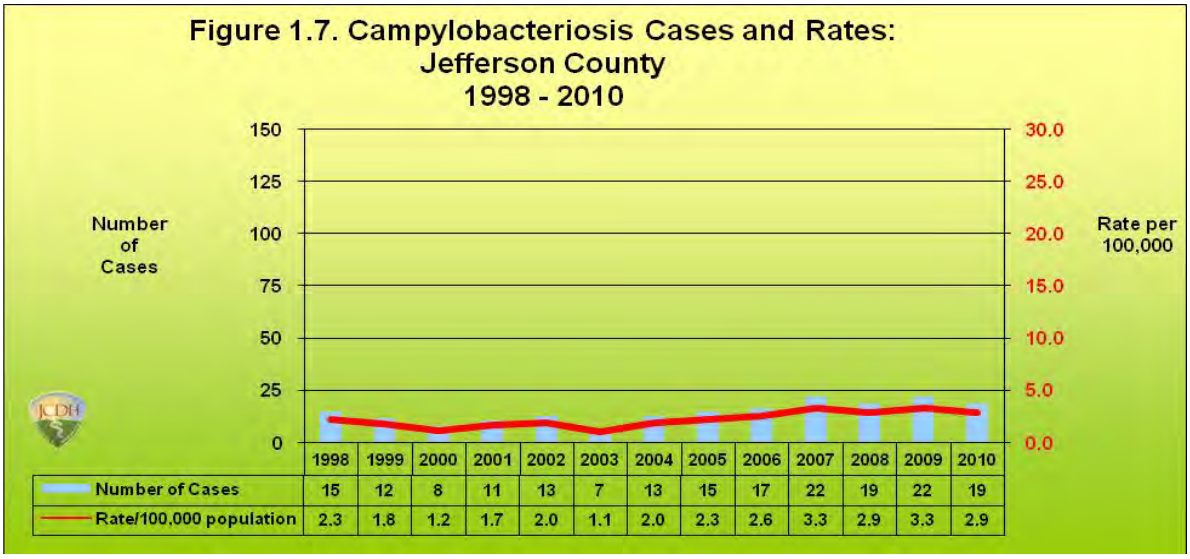
Giardiasis

The number of cases of Giardiasis remained relatively stable from 2002 through 2010. (Figure 1.6).



Campylobacteriosis

From 1998 through 2005, the number of cases of Campylobacteriosis remained fairly stable. There was a slight increase from 2005 through 2007, from which point the rates have again stabilized at a slightly higher rate (Figure 1.7).



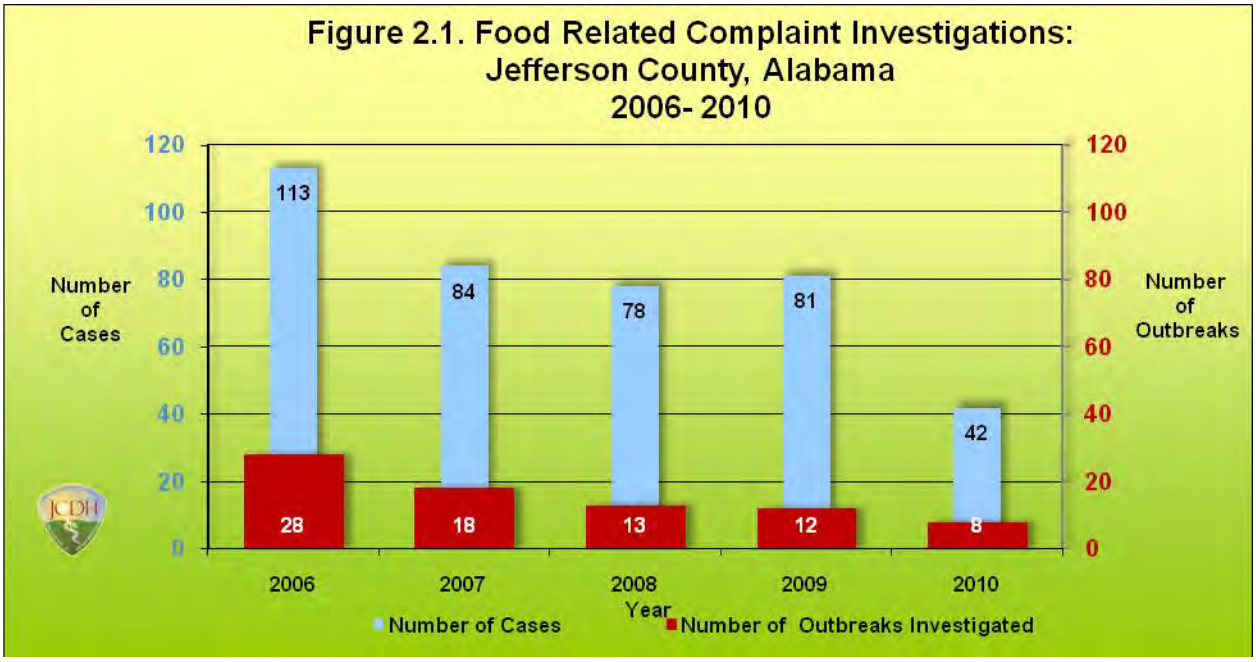
For information about preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food, please see MMWR April 10, 2009/58(13);333-337. (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5813a2.htm)

Food-Related Complaint Investigations

CHAPTER 2

Food-related complaints are investigated by the Jefferson County Department of Health when two or more persons report developing an acute illness characterized by nausea, vomiting, diarrhea, and other related symptoms, and it is determined that the illnesses potentially share a common exposure. The exposure may be a common meal, or obtaining food from the same source, such as a restaurant, grocery store, or community event. The number of food-related investigations has varied by year (Figure 2.1), but there has been a gradual decline since 2005 in reported events.

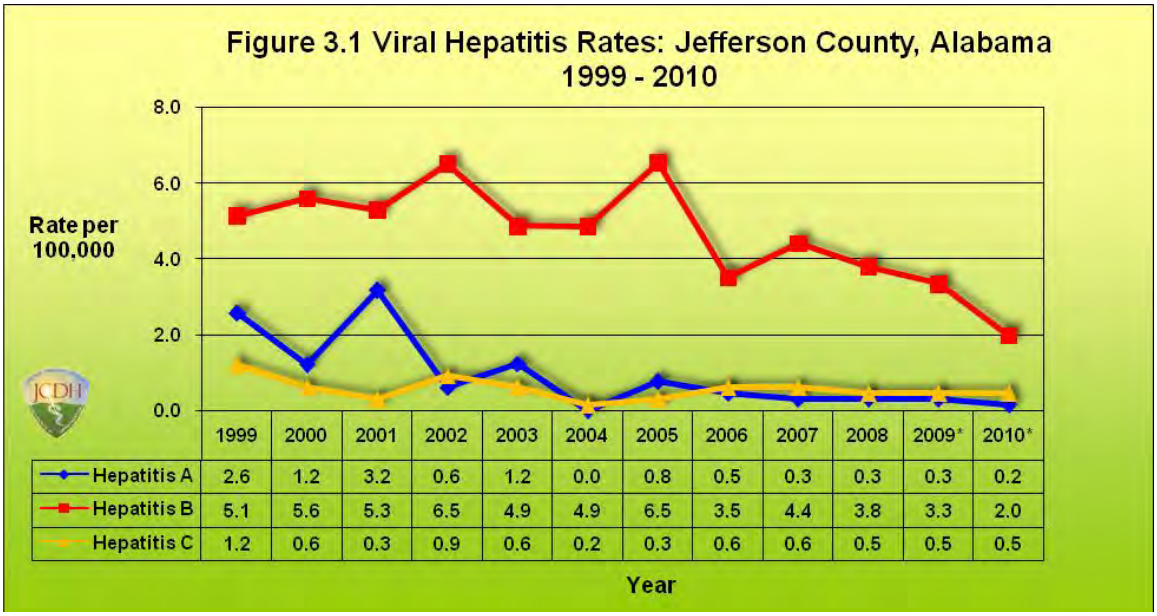
In 2010, eight food-related complaint investigations were conducted. These investigations involved forty-two persons who reported an illness, with an average of five people reporting an illness per investigation. Although each outbreak was thoroughly investigated, the identification of the causative agent and the specific source of the exposure (food, water, contact) were frequently indeterminate due such limitations as delays in illness reporting, unavailability of the actual food/drink items questioned, and the inability to obtain stool cultures from complainants. In 2010, the causative agent was identified for only one (12.5%) of the outbreaks.



Hepatitis

CHAPTER 3

Several distinct infections are grouped as the viral hepatitides, including hepatitis A, B and C. Among these, hepatitis A had the highest rate of infection in the United States for over three decades; however, in 2004, the highest rate shifted to hepatitis B.[2] In Jefferson County, hepatitis B has had the highest incident rate among these three types of viral hepatitis since 1999 (Figure 3.1).



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*	2010*
Hepatitis A	2.6	1.2	3.2	0.6	1.2	0.0	0.8	0.5	0.3	0.3	0.3	0.2
Hepatitis B	5.1	5.6	5.3	6.5	4.9	4.9	6.5	3.5	4.4	3.8	3.3	2.0
Hepatitis C	1.2	0.6	0.3	0.9	0.6	0.2	0.3	0.6	0.6	0.5	0.5	0.5

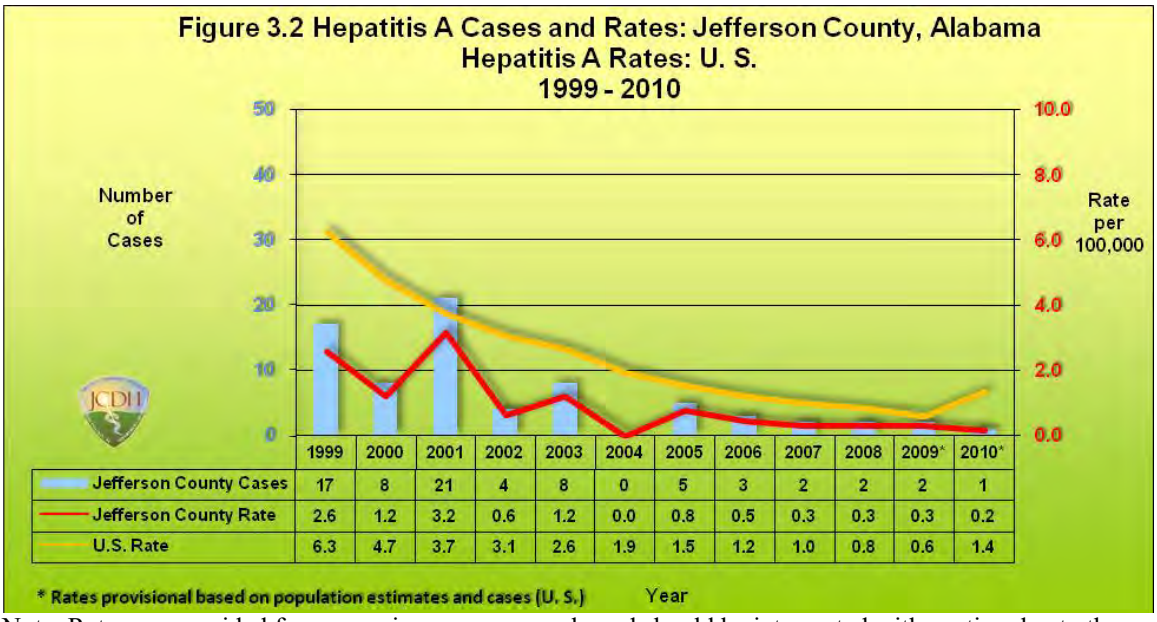
Note: Rates are provided for comparison purposes only and should be interpreted with caution for hepatitis A and C due to the small number of cases.

Hepatitis A (HAV)

Although the national incidence rate of hepatitis A declined steadily between 1995 and 2009 (Figure 3.2); the national rate increased in 2010. Following a peak in 2001, HAV reached its lowest rate in Jefferson County with no cases reported in 2004 (Figure 3.2). Since 2004, the incidence of hepatitis A in Jefferson County has persisted at very low levels.

Prior to 2006, vaccination against hepatitis A was only required for individuals traveling outside the United States to areas where the disease was endemic. In 2006 the vaccine for hepatitis A was added to the infant vaccination schedule as a recommended vaccination. This recommendation states that two doses of the vaccine should be administered six months apart to children between the ages of 12 months and 19 years.

[2] Centers for Disease Control and Prevention. Surveillance for Acute Viral Hepatitis —United States, 2005 Surveillance Summaries, March 16, 2007... MMWR 2007;56(No. SS-3).



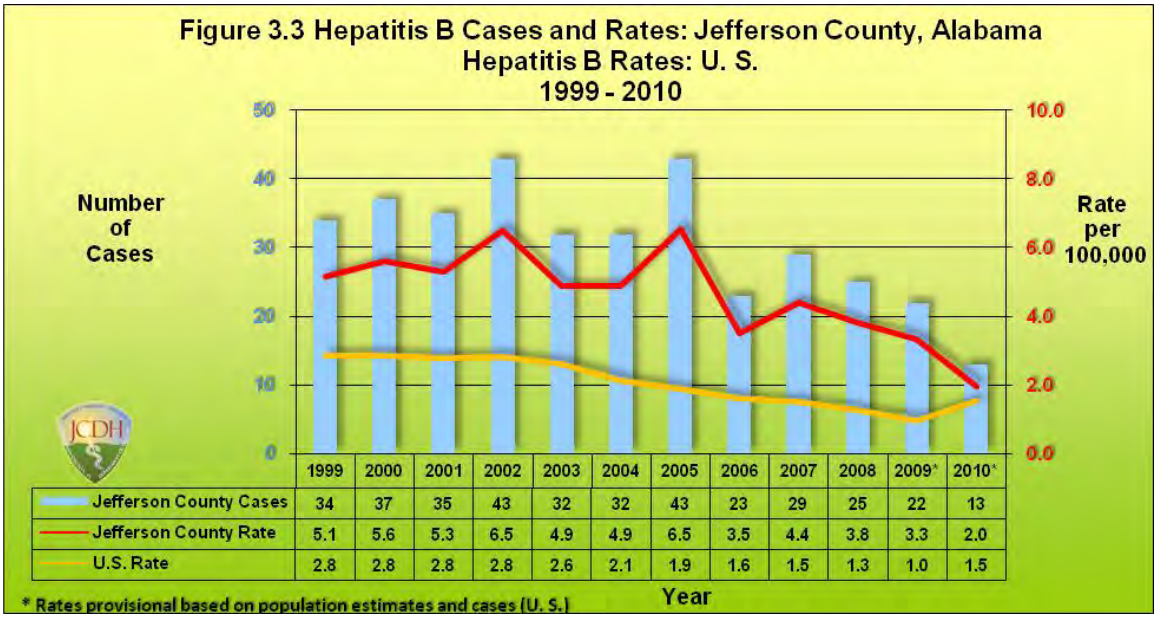
Note: Rates are provided for comparison purposes only and should be interpreted with caution due to the small number of cases.

Hepatitis B (HBV)

Overall, rates of hepatitis B in the United States have declined dramatically over the past 15 years. This decline followed the implementation of a national strategy to eliminate disease transmission including the routine immunization of children during the first 18 months of life .[3] In Jefferson County, rates of hepatitis B have gradually declined during the past four years (Figure 3.3) and in 2010 approached the national rate. A part of the narrowing of the gap in 2010 between Jefferson County's rate and the national rate is due to an increase in the national provisional rate. In 2010, the Jefferson County's HBV rate was 2.0 per 100,000 population, as compared to the national provisional rate of 1.5 per 100,000 population. In 2010, 13 cases of hepatitis B were reported in Jefferson County with 4 cases among white males, 3 cases among white females, and 6 cases among black females. There were no cases among black males.

No risk factors were identified for 3 of the 13 cases of hepatitis B reported in 2010. Of the remaining 10 cases, four individuals reported having a single heterosexual partner and one reported having multiple sexual partners. None of the cases in 2010 were identified as men who have sex with other men (MSM), or commercial sex workers. Three of the individuals with risk factors reported intravenous drug use, and two individuals reported using other types of drugs. Several individuals reported more than one risk factor for HBV.

[3] Centers for Disease Control and Prevention. Surveillance for Acute Viral Hepatitis —United States, 2006 Surveillance Summaries, March 21, 2008. MMWR 2008: 57(No. SS-2).



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*	2010*
Jefferson County Cases	34	37	35	43	32	32	43	23	29	25	22	13
Jefferson County Rate	5.1	5.6	5.3	6.5	4.9	4.9	6.5	3.5	4.4	3.8	3.3	2.0
U.S. Rate	2.8	2.8	2.8	2.8	2.6	2.1	1.9	1.6	1.5	1.3	1.0	1.5

Hepatitis B Maternity Surveillance

In Jefferson County during 2010, 174 women less than age fifty years tested positive for hepatitis B; active screening revealed that 29 of these women were pregnant. Among the 29 pregnant women testing positive for HBV, 18 had evidence of an active infection. Due to the risk of transmitting the infection to the unborn child, these women received intensive case management during pregnancy. The Hepatitis B Maternity Surveillance Program included the testing and vaccination of 21 newborns and 7 household and sexual contacts.

Hepatitis C (HCV)

The numbers of cases of acute hepatitis C diagnosed between 1998 and 2010 in Jefferson County are presented in Figure 3.4. It is difficult to compare Jefferson County's acute hepatitis C experience with that of other jurisdictions due to the small numbers of reported cases.

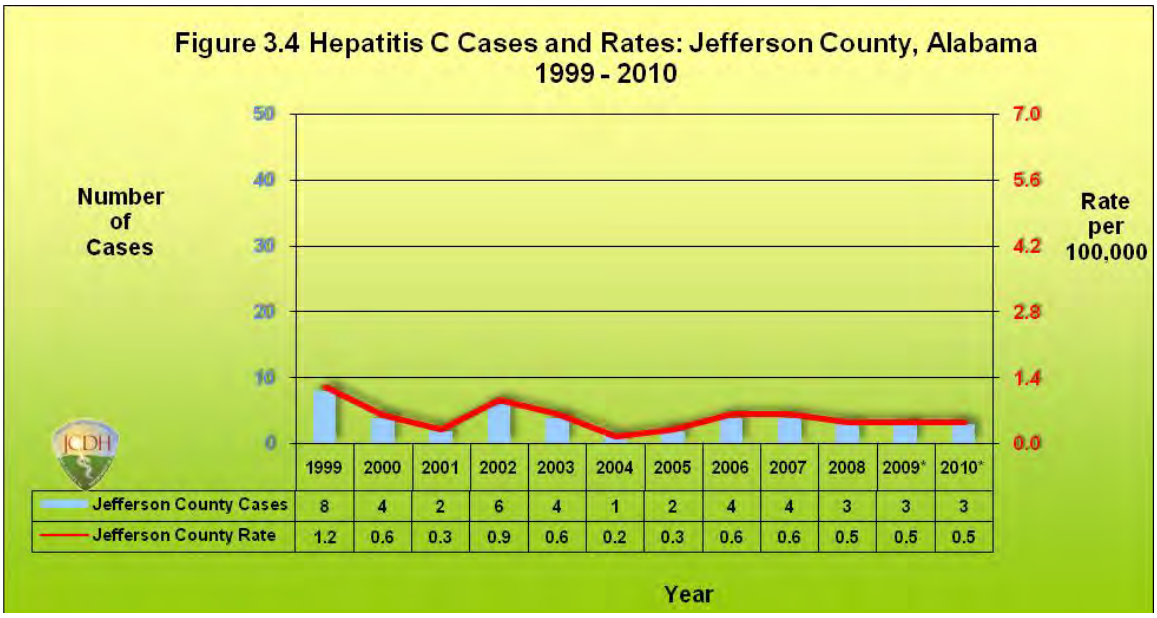


Figure 3.4 Hepatitis C Cases and Rates: Jefferson County, Alabama
1999 - 2010
Number of Cases
Rate per 100,000
50
40
30
20
10
0
7.0
5.6
4.2
2.8
1.4
0.0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009* 2010*
Jefferson County Cases 8 4 2 6 4 1 2 4 4 3 3 3
Jefferson County Rate 1.2 0.6 0.3 0.9 0.6 0.2 0.3 0.6 0.6 0.5 0.5 0.5
Year

Tuberculosis (TB)

CHAPTER 4

Tuberculosis is caused by the bacterium, *Mycobacterium tuberculosis*. It is spread through the air by a person with an active case of TB located in the lungs when coughing, sneezing or speaking. While TB commonly involves the lungs, TB can develop in other organs including the kidneys, brain, spine, and bone. Not all individuals infected with *Mycobacterium tuberculosis* will develop an active case of the disease. TB skin and blood testing only indicates if an individual is infected with the organism that causes the disease; the diagnosis of active or latent TB requires additional testing including chest x-rays and sputum cultures. The risk of exposure to TB is increased in high population density settings such as prisons, homeless shelters, and hospitals.

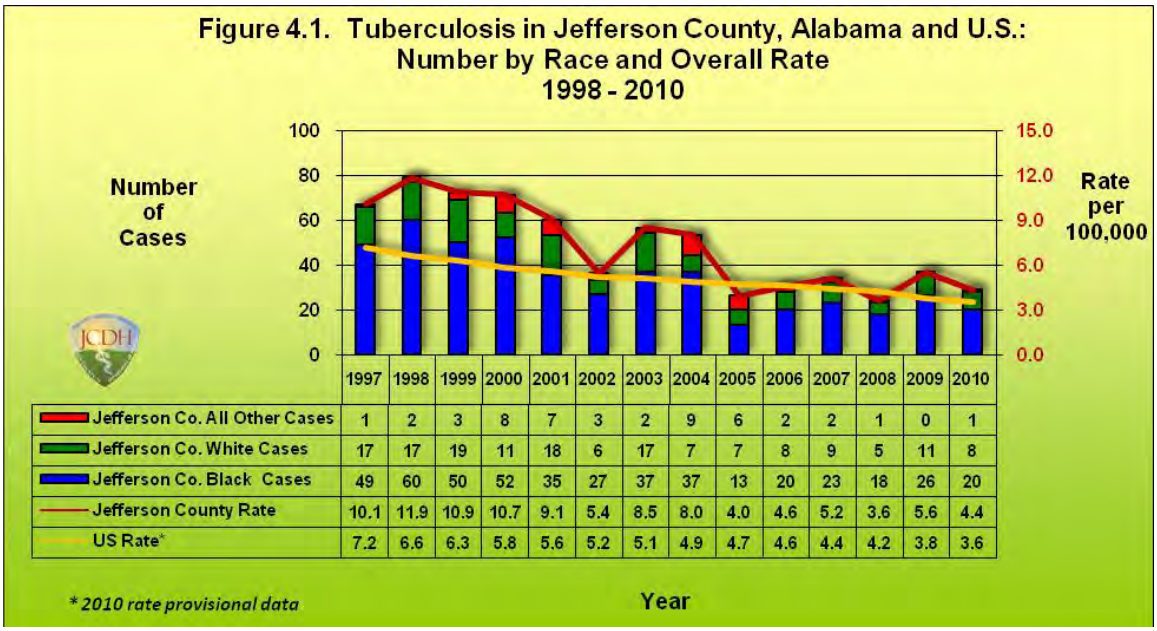
Latent TB Infection (LTBI) occurs when an individual becomes infected with *Mycobacterium tuberculosis,* but the immune system is able to contain the bacteria, and the person never develops signs or symptoms of the disease. In this situation, the bacteria are not growing, and the individual with Latent TB cannot transmit the disease to another person. The disease may lie dormant of years, or even a life time, in an individual with Latent TB.

In ***TB Disease***, the immune system is compromised, and the bacteria begin to grow. If the growth is occurring in the lungs, the individual is capable of transmitting the disease. Individuals with a compromised immune system, such as HIV and transplant patients, are at increased risk for developing the active disease.

Individuals with ***Active TB*** generally develop a cough accompanied by chest pain lasting at least three weeks. The coughing may produce blood or sputum in which *Mycobacterium tuberculosis* can be found. The individual may also experience loss of appetite, weight loss, weakness or fatigue, fever, chills, and/or night sweats. These individuals need to undergo a six to twelve month course of treatment. Failure to comply and complete the course of treatment increases the risk that the TB bacteria develop resistance to the drugs of choice and that the disease remains active.

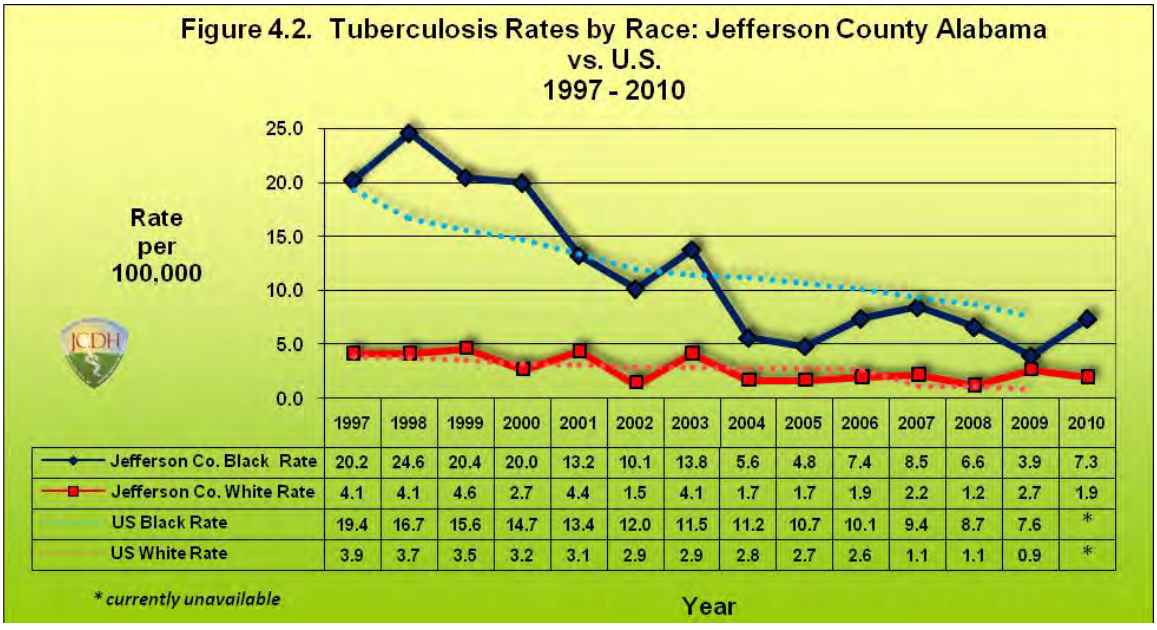
In 2010, the national rate of tuberculosis (TB) was 3.6 cases per 100,000 population, representing a 3.9% decline in the rate from 2009.[4] Tuberculosis rates in Jefferson County have also declined, as illustrated in Figure 4.1. Twenty-nine cases of tuberculosis were diagnosed in Jefferson County in 2010, resulting in a rate of 4.4 cases per 100,000 population. During 2010, only 3 of the diagnosed cases were among the homeless, a decrease to 10.3% of all cases from 16.2% (6 cases) in 2009. While the increase in multi-drug resistant (MDR) tuberculosis has been of increasing concern at the national level, there have been no cases of MDR tuberculosis reported in Jefferson County since 2006.

[4] Centers for Disease Control and Prevention; Trends in Tuberculosis --- United States, 20109; MMWR 60(11);333-337 (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6011a2.htm?s_cid=mm6011a2_e%0d%0a)



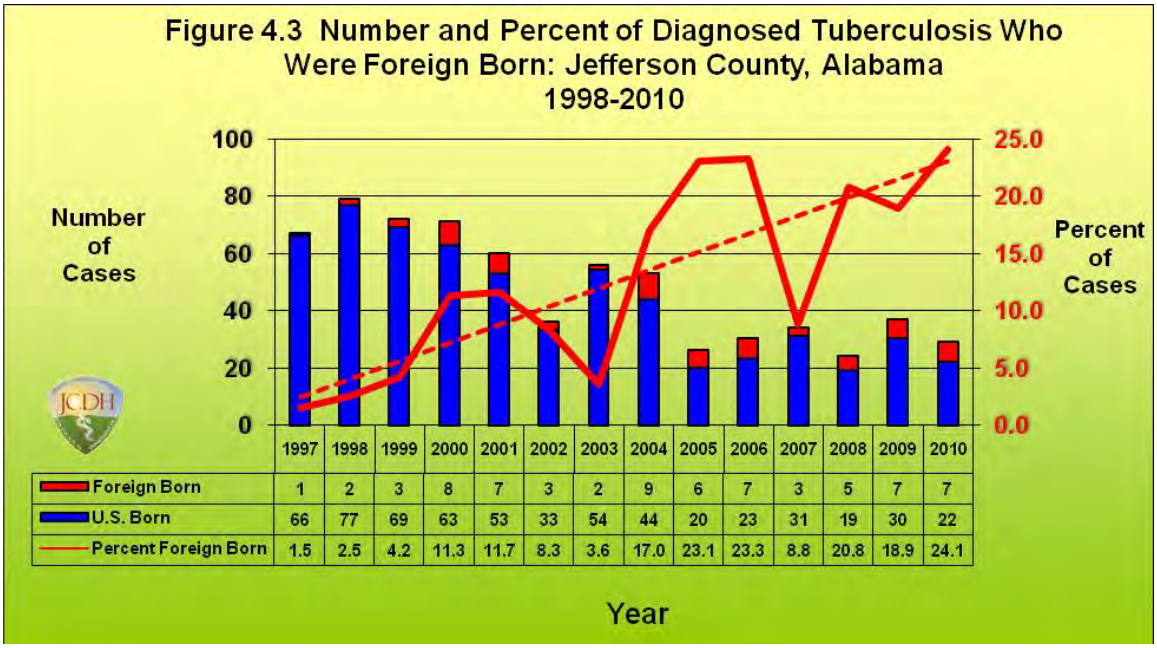
TB by Race

While the rates of tuberculosis in Jefferson County remain higher among black residents compared to white residents (Figure 4.1), the significant decline in the TB rate among the black residents of Jefferson County since 1998 has reduced the disease rate ratio of black to white cases to 3.8 in 2010, significantly lower than the 2009 national rate ratio of 8.4 (Figure 4.2)



United States-born and Foreign-born TB Cases

In Jefferson County, the percentage of TB cases among foreign-born persons in relation to the total number of TB cases has generally increased since 2003 (Figure 4.3). In 2010, the proportion of cases diagnosed among foreign-born individuals increased to 24.1. In 2010, the countries of origin for foreign-born individuals diagnosed with TB were from Kenya (3 cases), Mexico (2 cases,), India and Guatemala (one case each). Since 2002, Kenya and Mexico have provided the bulk of the foreign-born TB cases in Jefferson County with twelve and eleven cases respectively. Although TB rates in Jefferson County have continued to decline, the percentage of foreign-born cases demonstrates an upward trend. Targeted testing of individuals from countries with high rates of tuberculosis continues in an effort to diagnose, treat, and prevent the spread of this disease.



Additional information on Tuberculosis, may be found at the Tuberculosis web page of the Centers for Disease Control and Prevention. (http://www.cdc.gov/tb/default.htm

CHAPTER
5

Sexually Transmitted Diseases (STDs)

Sexually transmitted diseases remain a major public health challenge in the United States. While substantial progress has been made in preventing, diagnosing, and treating some STDs in recent years, the Centers for Disease Control and Prevention (CDC) estimates that 19 million new infections occur annually, almost half of them among young people ages 15 to 24.[5] In addition to the physical and psychological consequences of STDs, these diseases exact an economic toll with direct annual medical costs in the United States estimated at $14.1 billion.[6]

Chlamydia

Chlamydia is a common sexually transmitted disease caused by the bacterium *Chlamydia trachomatis* spread from person to person via sexual activity or from mother to child during vaginal delivery. The greater the number of sex partners an individual has had, the higher the risk of this infection. The majority of individuals infected with Chlamydia have no symptoms. Women who do develop symptoms may experience an abnormal vaginal discharge or a burning sensation when urinating. If the infection spreads into the fallopian tubes, women may experience abdominal and lower back pain, nausea, fever, and pain during intercourse. Infection of the upper reproductive tract can result in infertility. Men who develop symptoms experience a discharge from the urethra and a burning sensation when urinating. Infants infected during delivery may develop pneumonia and conjunctivitis. Chlamydia can easily be cured with antibiotics, but the individual does not become immune to this disease and can easily become reinfected through sex with an infected person.

Chlamydia remains the most commonly reported bacterial sexually transmitted disease in the United States and in Jefferson County, although the number of cases is likely greatly under reported due to the —silent" nature of the disease. Not unexpectedly, reported rates for Chlamydia in the United States, Alabama, and Jefferson County increased following the 2007 recommendation by the United States Preventive Service Task Force to screen all sexually active women under the age of 25 for this disease (Figure 5.1). Despite the declining rates of chlamydia infections in Jefferson County since 2007, Jefferson County's rate at 653.4 cases per 100,000 population in 2010 was almost twice that of the national rate (provisional) of 386.4 per 100,000 (Figure 5.2).

Chlamydia by Sex and Age Group

In 2009, females represented 69.4 % of the Chlamydia cases reported in Jefferson County (3,014 cases). The reported rate among females (861.6 per 100,000 population) was 2.3 times higher than the rate among males (376.9 per 100,000 population). These rates and the disparity between the sexes have improved from 2009 (1,220.3 per 100,000 for females and 475.3 per 100,000 for males, rate ratio 2.9). The disparity in rates by sex is likely a reflection of the differential screening rates for sexually active women and men. As previously stated, the 2007 STD Treatment Guidelines from the CDC recommend that all sexually active women under 25 years of age be screened for Chlamydia annually.

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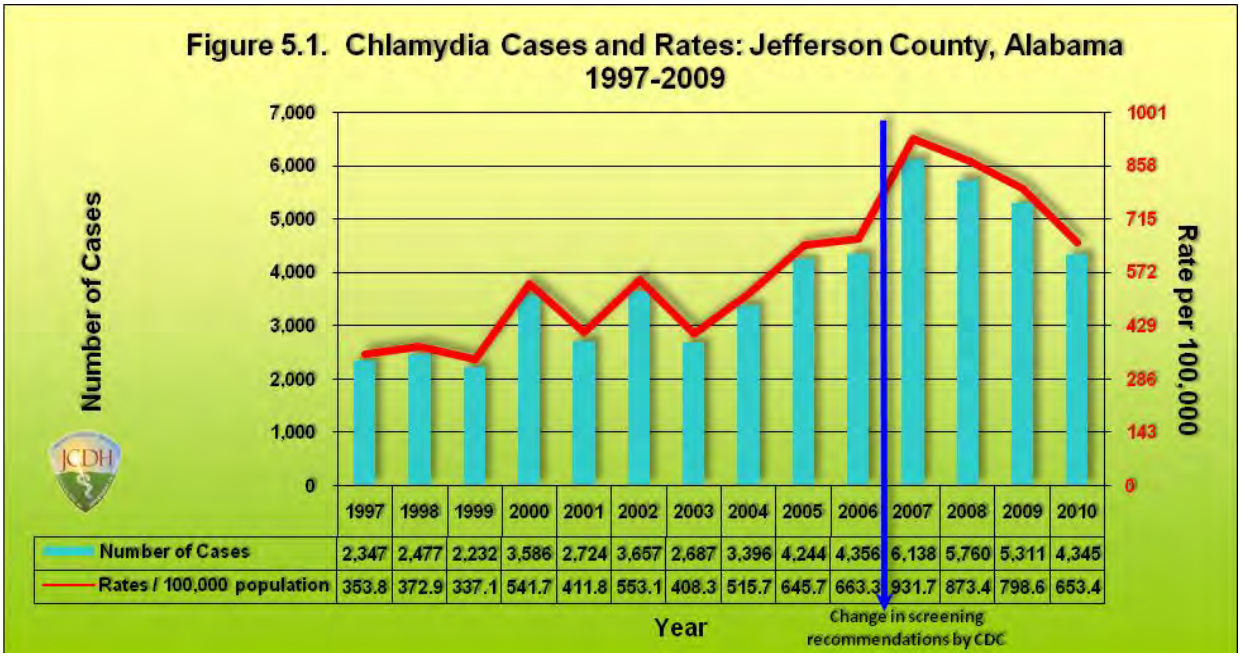
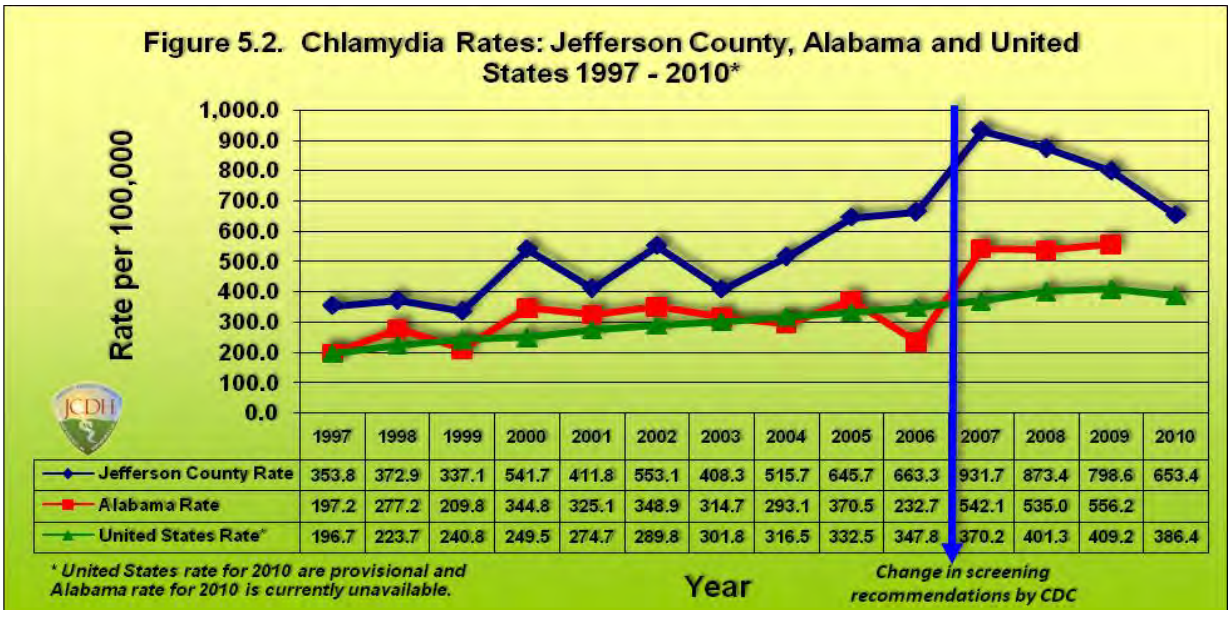
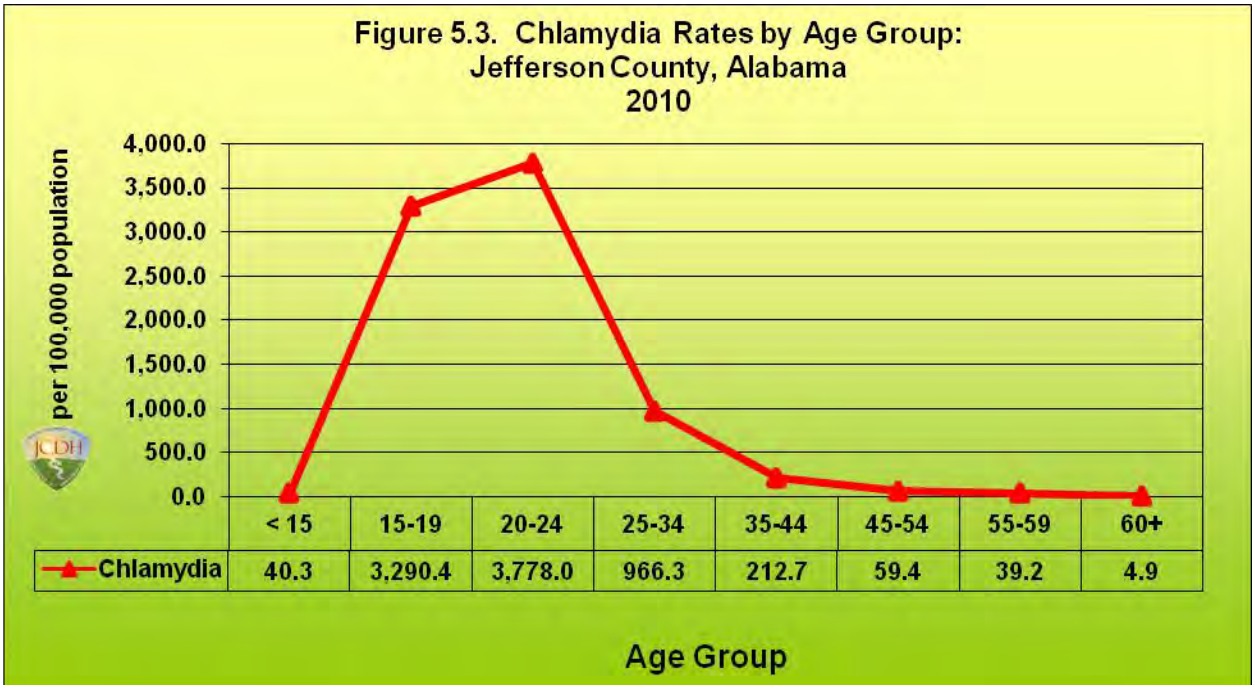
[5] Weinstock H, et al. Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health* 2004;36(1):6-10.

[6] HW Chesson, JM Blandford, TL Gift, G Tao, KL Irwin. The estimated direct medical cost of STDs among American youth, 2000. 2004 National STD Prevention Conference. Philadelphia, PA. March 8-11, 2004. Abstract P075.

Age-specific rates of Chlamydia in 2010 were highest among the 20-24 year-old age group (3,778 per 100,000 population), followed by the 15-19 year-old group (3,290.4 per 100,000 population) (Figure 5.3). Age-specific rates for the age groups by sex were not available.







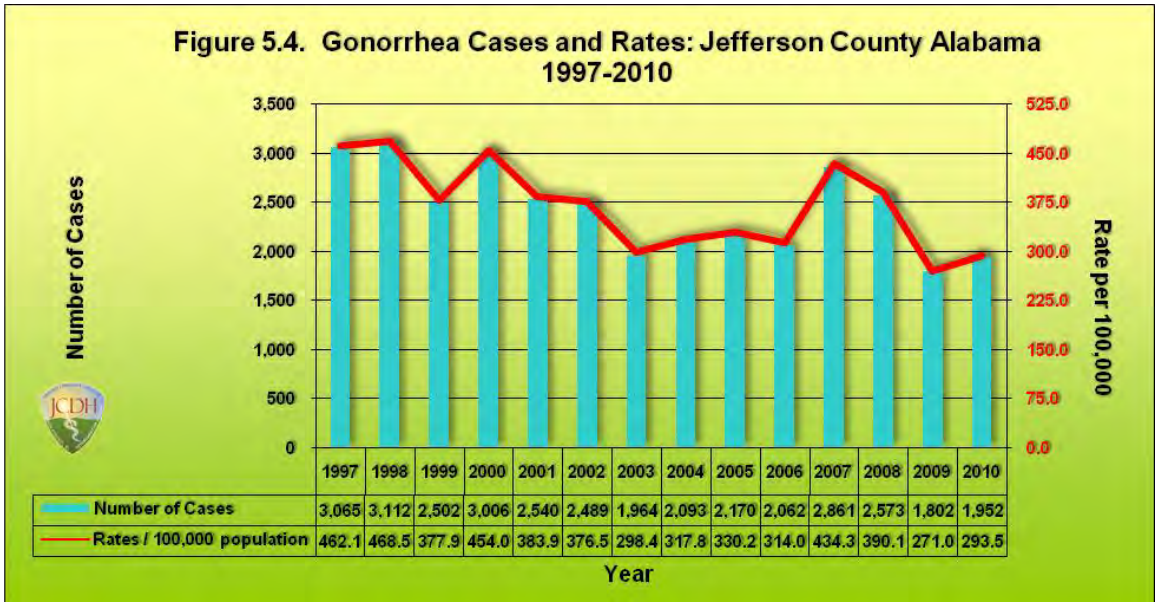
Decreases in the reported cases and rates of Chlamydia may be a reflection of both a reduction in actual cases and an improvement in the data collection process.

For additional information on Chlamydia, consult the Chlamydia web page of the Centers for Disease Control and Prevention. (http://www.cdc.gov/std/chlamydia/default.htm)

Gonorrhea

Gonorrhea is a common infectious sexually transmitted disease caused by the bacterium *Neisseria gonorrhoeae*. The bacteria can be transmitted through vaginal, oral, or anal sex. A common cause of Pelvic Inflammatory Disease (PID), Gonorrhea cause infertility in both women and men.

In 2010, Jefferson County experienced a slight increase in the number and rate of Gonorrhea cases from 2009 (Figure 5.4). Jefferson County's 2010 Gonorrhea rate at 293.5 cases per 100,000 population was 3.2 times the rate in the United States of 90.8 per 100,000 population (provisional).



Gonorrhea by Race

In 2010, 94.3% of Jefferson County's gonorrhea cases for which race was reported were among black residents (1,611 cases). At a rate of 591.9 cases per 100,000 population, the gonorrhea rate among black residents was 23.3 times higher than the rate among white residents (95 cases, 25.4 cases per 100,000 population). However, this disparity must be viewed cautiously in light of the fact that 243 cases (17.3% of all cases) had no race reported.

For additional information on Gonorrhea, consult the Gonorrhea web page of the Centers for Disease Control and Prevention. (http://www.cdc.gov/std/Gonorrhea/default.htm)

Syphilis

Syphilis is a sexually transmitted disease caused by the bacterium *Treponema pallidum*, transmitted from person to person through direct contact with a syphilis sore during sexual activity or to an infant during pregnancy or vaginal delivery. Syphilis is characterized as being either in the primary, secondary, latent, or late stage of the disease.

Primary syphilis is characterized by a single sore or chancre, although the appearance of multiple sores is possible, which usually persist from three to six weeks. The sore is typically small, round, painless, and will heal without treatment. If not properly treated, syphilis will progress to the secondary stage.

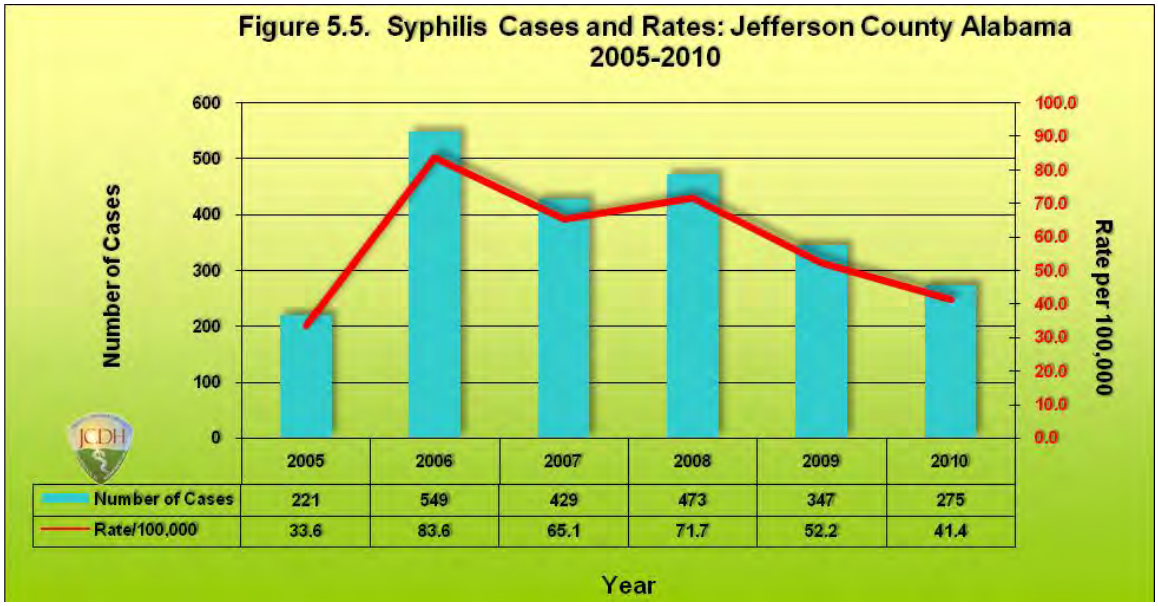
Secondary syphilis is characterized by the development of a rash occurring anywhere on the body including the palms of the hands and soles of the feet. Typically, the rash does not itch. This rash can occur prior to the sore or chancre healing or may present several weeks after the sore has healed. During the secondary stage of syphilis, the patient may develop a fever, swollen lymph glands, hair loss, headaches, weight loss, body aches, and/or fatigue. These signs and symptoms can resolve without treatment, at which time the disease enters the latent and late stages.

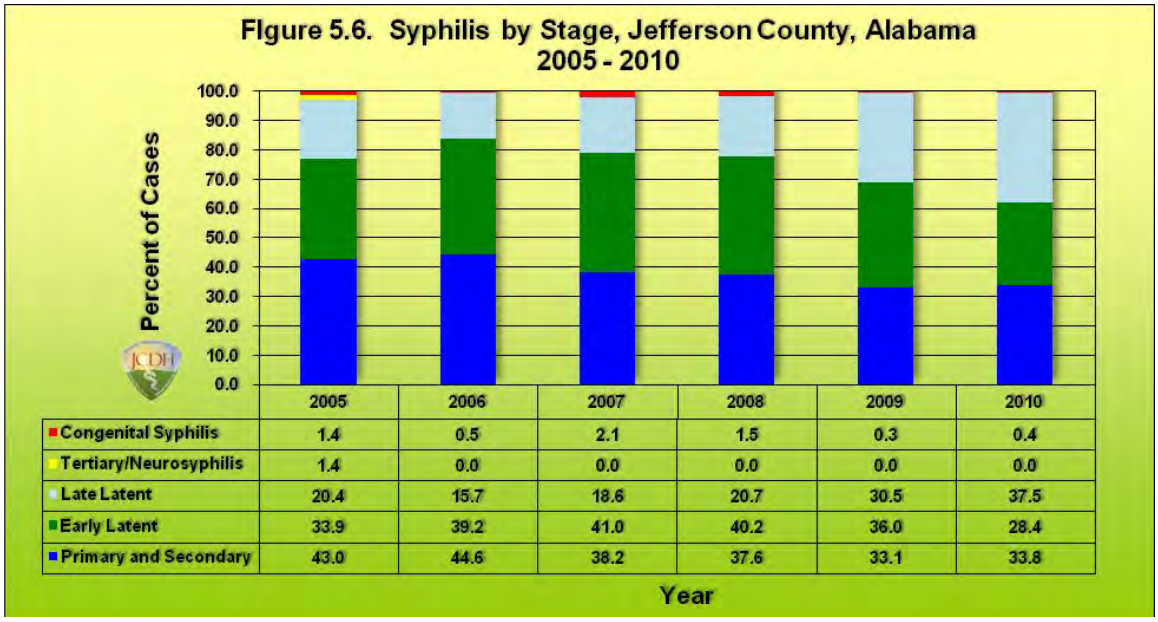
Latent syphilis is the asymptomatic stage of syphilis that begins when the signs and symptoms of the primary and secondary phases have spontaneously resolved although the bacterium continues to live in the body. This stage can last for many years, and the disease may never move on to the final stage. Latent syphilis is further characterized as ***early latent***, which is the disease state up to one year after the secondary phase, and ***late latent,*** the stage occurring more than one year beyond the secondary stage.

Late syphilis develops in approximately 15% of all untreated cases of this disease. It may take as long as twenty years before the signs and symptoms of this stage appear. In late syphilis, virtually all of the internal organs may be involved including the brain and nervous system. As a result, the person with late syphilis may develop neurologic manifestations including blindness, loss of muscle control, and dementia. Untreated, the infection may cause death.

Infants infected during pregnancy develop ***congenital syphilis*** and may be stillborn. If the pregnancy results in a live birth, the infant may be developmentally delayed, suffer neurologic problems such as seizures, or die.

In 2010, 275 cases of syphilis were reported in Jefferson County, a reduction of 50.1% from the high of 549 cases in 2006, and representing a 20.8% decrease in cases from 2009 (347 cases) (Figure 5.5). Of these cases, 33.8% (93 cases) were primary and secondary syphilis, 28.4% (78 cases) were early latent syphilis, 37.4% (103 cases) were latent syphilis, and 0.4 % (1 case) was congenital syphilis (Figure 5.6). There have been no cases of neuro-syphilis reported in Jefferson County since 2005. Early syphilis cases (including primary, secondary, and early latent syphilis) comprised 62.2% of the reported cases in 2010.

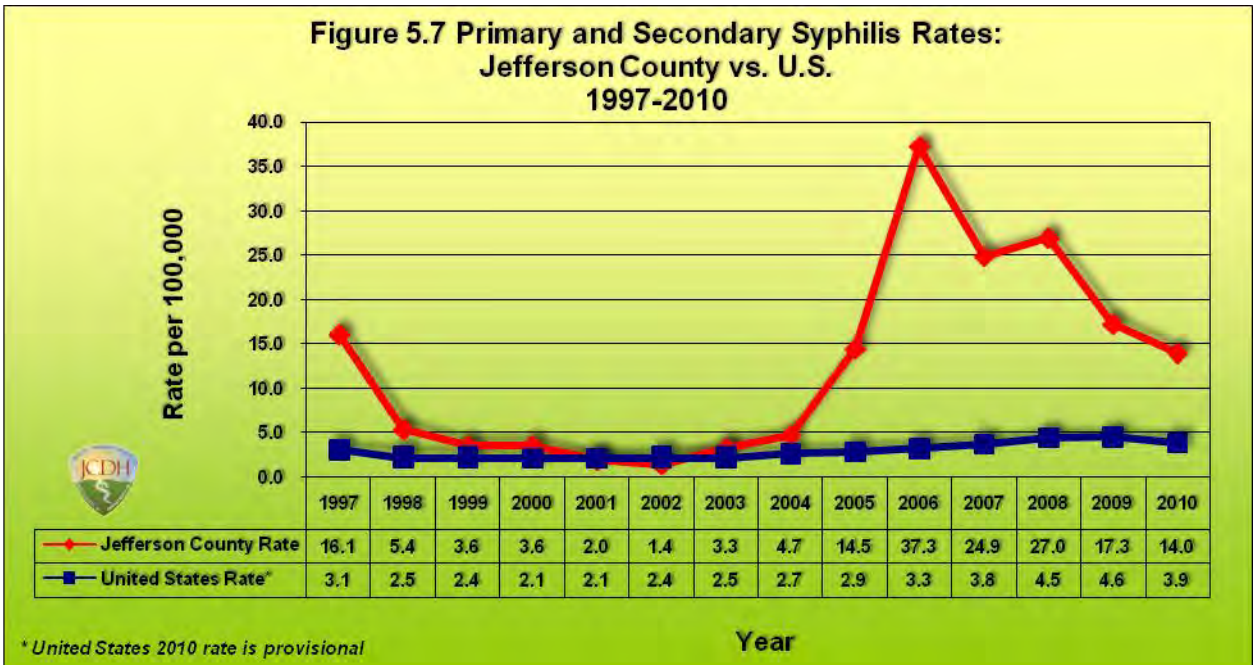




	2005	2006	2007	2008	2009	2010
Congenital Syphilis	1.4	0.5	2.1	1.5	0.3	0.4
Tertiary/Neurosyphilis	1.4	0.0	0.0	0.0	0.0	0.0
Late Latent	20.4	15.7	18.6	20.7	30.5	37.5
Early Latent	33.9	39.2	41.0	40.2	36.0	28.4
Primary and Secondary	43.0	44.6	38.2	37.6	33.1	33.8

Primary and Secondary Syphilis Rate

In 2006, the syphilis rate in Jefferson County rose to 37.3 cases per 100,000 population, eleven times the national rate of 3.3 cases per 100,000 population. In 2010, the rate of primary and secondary syphilis in Jefferson County, at 14.0 per 100,000 population, was 3.5 times higher than the rate in the United States overall (3.9 per 100,000 population, provisional). Jefferson County's syphilis rate has remained markedly higher than the national rate since 2005 (Figure 5.7). As a reflection of the aggressive control program initiated by the Jefferson County Department of Health's Sexually Transmitted Disease Program, the syphilis rate in Jefferson County has continuously declined since 2007.



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jefferson County Rate	16.1	5.4	3.6	3.6	2.0	1.4	3.3	4.7	14.5	37.3	24.9	27.0	17.3	14.0
United States Rate*	3.1	2.5	2.4	2.1	2.1	2.4	2.5	2.7	2.9	3.3	3.8	4.5	4.6	3.9

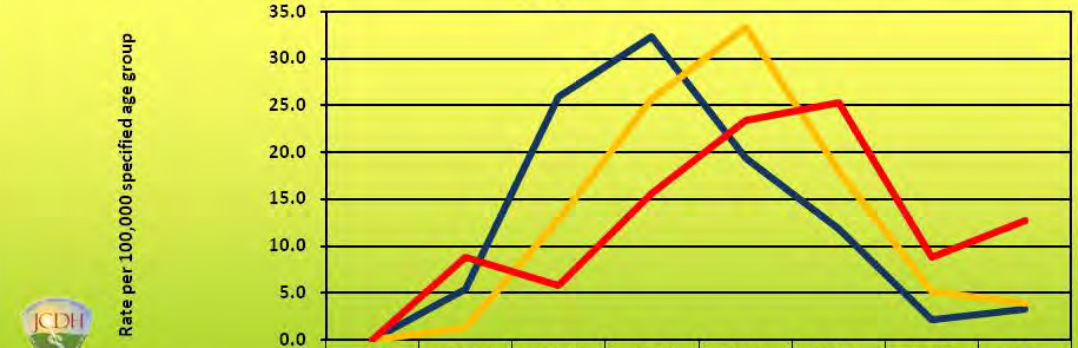
Primary and Secondary Syphilis by Race and Gender

The rate of primary and secondary syphilis in 2010 within the black population at 27.2 cases per 100,000 population was 9.2 times higher than the rate for the white population (5.1 per 100,000 population). This reduction in the gap between black and white rates is primarily due to a reduction in the rate of infection among the black population and a slight increase in the white population rate (from 4.0 per 100,000) in 2010. The rate of primary and secondary syphilis for males of all races (22.8 per 100,000 population) was 3.8 times the rate for females (6.0 per 100,000 population). The rate ratio of males to females has steadily increased over the last three years from 1.5 in 2007 to the current level.

Primary and Secondary Syphilis Among Adults and Adolescents

The rate of primary and secondary syphilis was highest among the 25 to 34 year age group followed by the 22 to 24 year old age group. As the stage of the disease progresses, the age group with the highest rates increases (Figure 5.8).

Figure 5.8. Syphilis Rates By Age Groups and Stage: Jefferson County, Alabama 2010



	< 15	15-19	20-24	25-34	35-44	45-54	55-59	60+
Primary and Secondary Syphilis	0.0	5.4	25.8	32.3	19.4	11.8	2.2	3.2
Early Latent Syphilis	0.0	1.3	12.8	25.6	33.3	17.9	5.1	3.8
Late Latent Syphilis	0.0	8.7	5.8	15.5	23.3	25.2	8.7	12.6

Age Groups

In response to the significant increase in syphilis cases in 2005-2006, the Jefferson County Department of Health developed and implemented a Syphilis Outbreak Response Plan involving a combination of increased staffing, supervisory training, public outreach, and education. Through these efforts, important foci of transmission were identified and strategies for interrupting transmission in these high risk networks have been implemented, and are proving to be effective as evidenced by the declining rates.

For additional information on Syphilis, consult the Syphilis web page of the Centers for Disease Control and Prevention. (http://www.cdc.gov/std/syphilis/default.htm

Human Immunodeficiency Virus (HIV)

Due to the unavailability of HIV data for 2007- 2010 for the state of Alabama, this portion of the report has not been updated. Updating will occur once the data become available. Please see 2007 Report for most current data. (http://www.jcdh.org/misc/ViewBLOB.aspx?BLOBId=165)

CHAPTER
6

Influenza-Like Illness (ILI) Surveillance

For the purposes of Influenza-Like Illness (ILI) National Surveillance, the Centers for Disease Control and Prevention (CDC) defines an influenza-like illness as a fever greater than or equal to 100° Fahrenheit accompanied by cough and/or sore throat in the absence of a known cause. In Jefferson County, data on patient visits for ILI are collected during the influenza season (October through March) from three Sentinel Provider Practices who voluntarily participate in the Influenza Surveillance Program. Two of these providers are private medical practices and the third is the Jefferson County Department of Health's six clinic sites. These providers, located in various parts of Jefferson County, provide a more complete picture of influenza activity occurring across the county and treat a high proportion of the county's children.

The percentage of influenza-like illness (ILI) among total patient visits varies throughout the flu season and from season to season (Figure 6.1). The proportion of patients with ILI among all patients visiting physicians is an indicator of the level of flu activity in the community but should not be interpreted as an estimate of the total number of influenza cases. Cultures collected from patients with ILI determine the circulating strains of the influenza virus. A sample of all ILI cases are cultured with results aggregated at the regional and national levels to estimate the circulating influenza strains.

In the 2009/2010 flu season the A strain caused the majority of infections throughout the season. During the 2010-2011 flu season a large peak in the number of cases was seen in the early to mid portion of the season, followed by a lower peak seen toward the end of the season. The strain type seen in the primary peak in 2010 was Type B; virtually no Type A virus was isolated until the secondary wave of infection. The high incidence of Type B virus experienced in the first peak was most likely due to the combination of high numbers of Type A infection seen in 2009/10 and the massive vaccination effort that saw more individuals receiving both the standard flu vaccination and the H1N1 (Type A) vaccination. This resulted in a large population with a residual immunity to Type A influenza viruses, but low immunity to Type B. Each year, different strains of the virus are used for producing the vaccine for the upcoming flu season based on a ~~"b~~est guess" regarding the strains which will be active, and the CDC reported that the strains used for the 2010-2011 were a good match. Unfortunately, vaccination rates were low during the early part of the season which most likely contributed to the early peak seen with Type B influenza.

Jefferson County serves as part of a larger national reporting network managed by the Centers for Disease Control and Prevention (CDC) (Figure 6.2) providing data for the World Health Organization's (WHO) Surveillance Program. The WHO Program monitors the burden of illness and the viral strains responsible for these illnesses. Data on the viral strains isolated in a given year are used to determine the viral strains to be included in the next year's vaccine. To better monitor the spread of disease across the United States, the CDC has organized the various states into regions to better track disease timing and severity (Figure 6.3). It should be noted that due to reorganization from nine to ten regions in the spring of 2009, regional data for flu seasons from the 2009/10 season forward are not comparable to prior years.

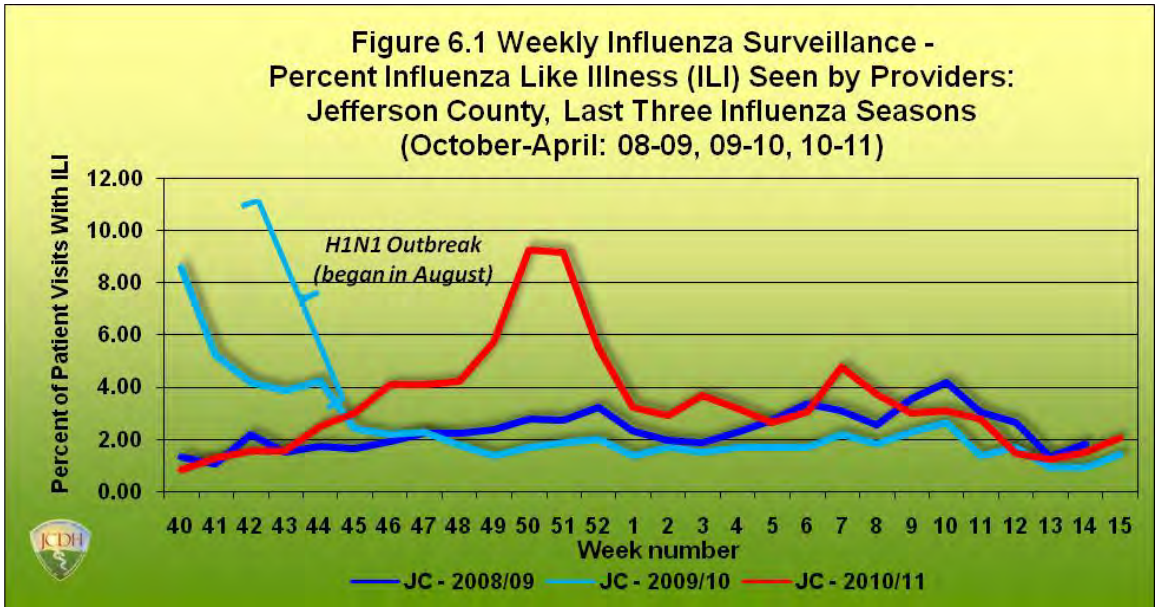
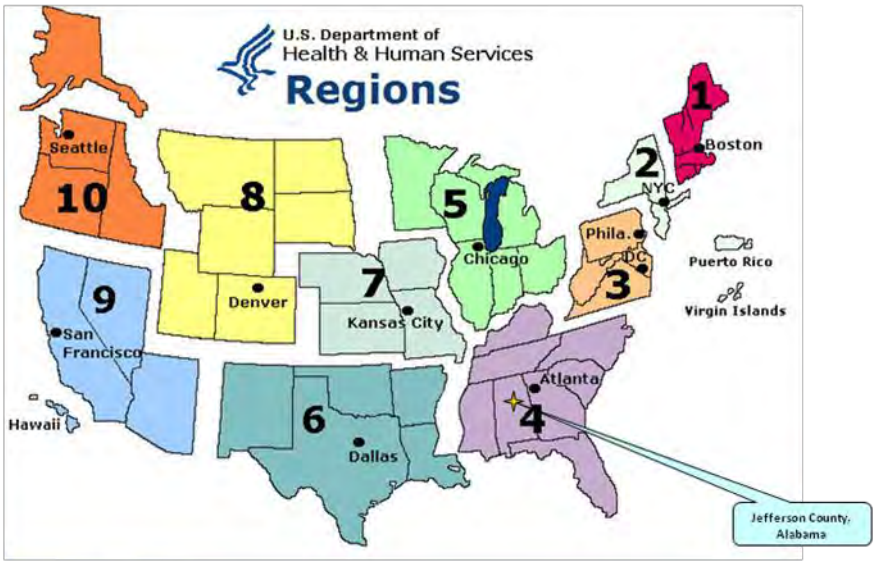
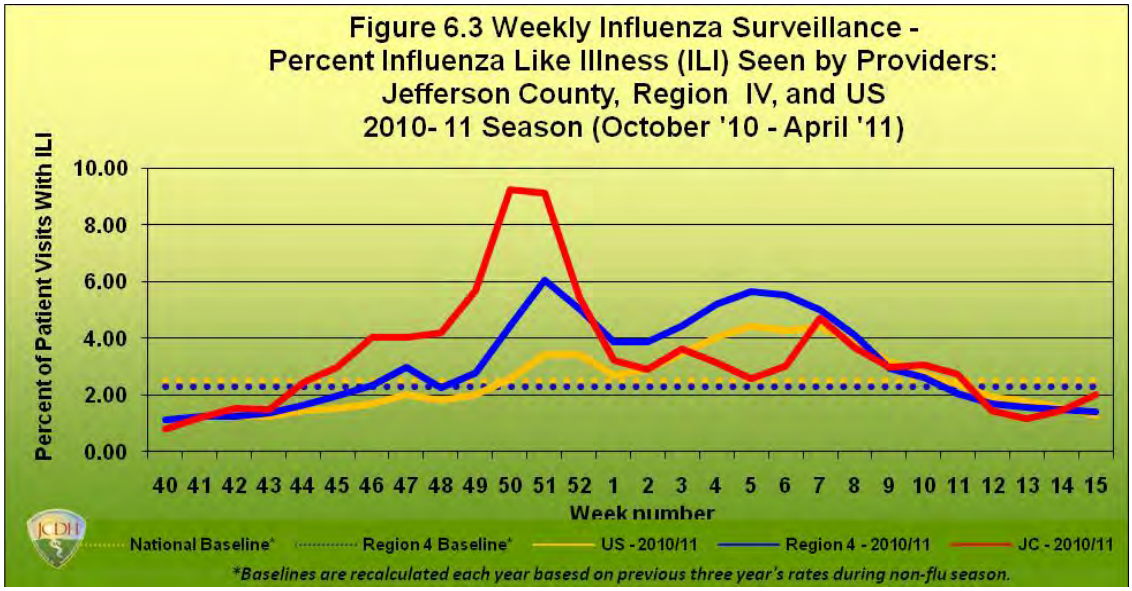


Figure 6.2 WHO/NREVSS Collaborating Laboratories – Regional Influenza Isolates



Region	States
Region I	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Region II	New Jersey, New York, Puerto Rico, US Virgin Islands
Region III	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia
Region IV	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
Region V	Illinois, Indiana, Michigan, Ohio, Wisconsin
Region VI	Arkansas, Louisiana, New Mexico, Oklahoma, Texas
Region VII	Iowa, Kansas, Missouri, Nebraska
Region VIII	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Region IX	Arizona, California, Guam, Hawaii, Nevada
Region X	Alaska, Idaho, Oregon, Washington

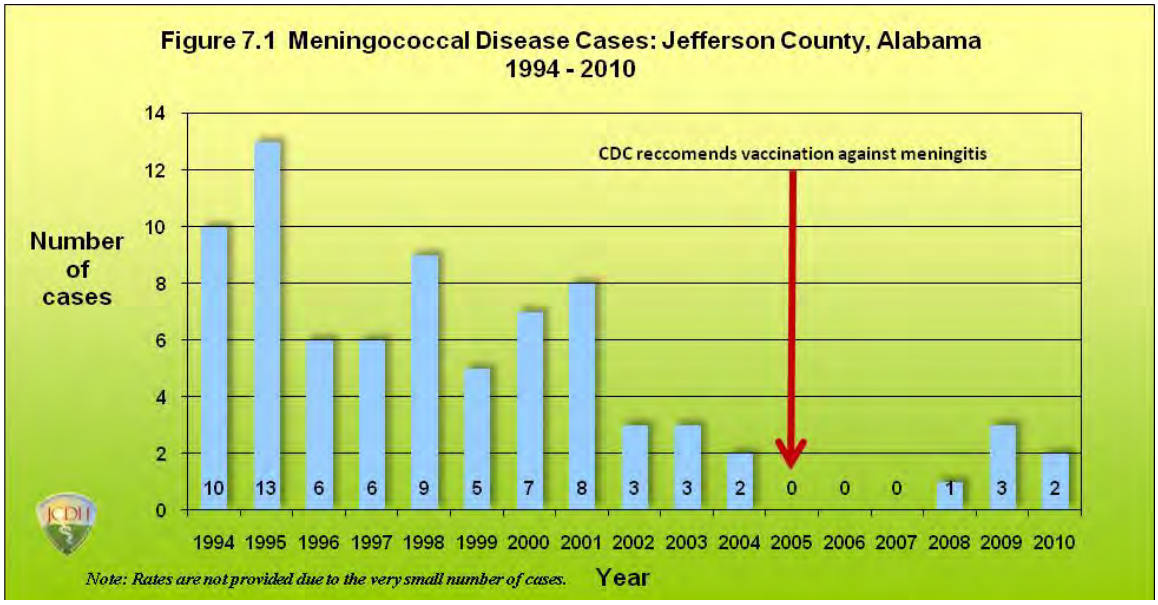


Historically, seasonal influenza has the most severe adverse outcomes in the very young and very old. Generally, the highest morbidity occurs among school-aged children, while the highest mortality occurs among the elderly.

CHAPTER 7

Meningococcal Disease

Although the incidence of meningococcal disease has varied during the past decade, an overall decrease in cases occurring within Jefferson County has been observed during recent years (Figure 7.1). During 2010, two cases of meningococcal disease were reported; one in a child under the age of 6, and one in an adult between the ages of 25 and 64.



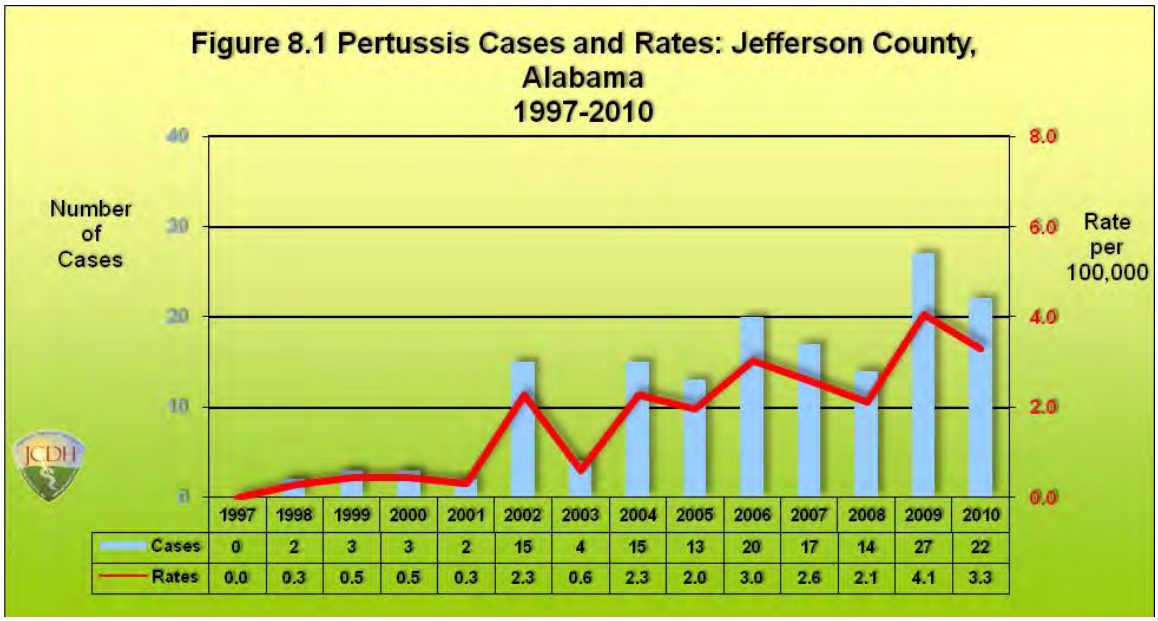
Meningococcal disease is a bacterial infection of the bloodstream or the lining covering the brain and spinal column (meninges) caused by one of five types of Meningococcus bacteria. This disease is spread person to person by direct contact with the nasal and throat discharges of an infected person. Despite treatment of meningococcal disease with antibiotics, ten to fifteen percent of individuals with this disease die and others suffer permanent brain damage, hearing loss, kidney failure, loss of limbs and chronic nervous system disorders. In 2005, the Centers for Disease Control and Prevention recommended the Meningococcal Conjugate Vaccine (MCV) to protect against the four strains of the strains of the meningococcal bacteria responsible for approximately seventy-five percent of the meningococcal cases in the United States. The vaccine, available to persons over the age of two, is currently recommended for individuals between the ages of 11 to 19 based on the high risk of infection among students residing in dormitories. In Jefferson County, the rate of meningococcal vaccine coverage is low due to the high cost of the vaccine.

CHAPTER
8

Vaccine-Preventable Disease

Pertussis

Pertussis (Whooping Cough) is a highly contagious bacterial illness spread by breathing the bacteria from an infected person's coughs and sneezes. Pertussis is a serious illness in infancy resulting in hospitalization for more than half of affected infants. Approximately one percent of infants contracting Pertussis die. Since 2001, Jefferson County has experienced an increase in Pertussis cases and rates. With 22 reported cases in 2010, the rate for pertussis (3.3 per 100,000 population) showed a decline from the highest rate of 4.1 cases per 100,000 population in 2009 (Figure 8.1).



The most effective method of preventing Pertussis is vaccination. Children are not fully protected against Pertussis until receiving three doses of the vaccine, administered at 2, 4 and 6 months of age. The Pertussis-containing vaccine available for adults is not licensed for persons older than 64 years of age; therefore, Pertussis cases are only considered preventable in persons between 6 months and 64 years of age. Based on these age limitations, 19 of the reported Pertussis cases in 2010 (86.4%) were vaccine-preventable.

Reporting of Pertussis cases as either confirmed (culture positive) or probable (clinical signs and symptoms) was initiated in 2007. The age distribution of cases is presented in Figure 8.2. The distribution of probable versus confirmed cases is presented in Figure 8.3.

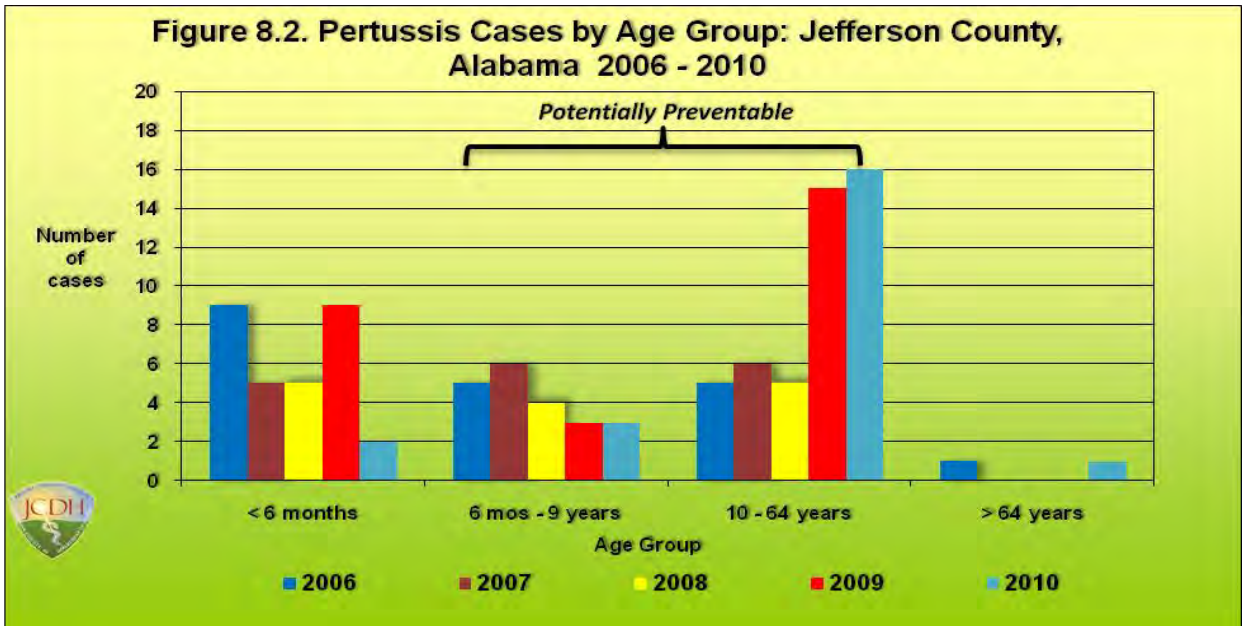


Figure 8.2. Pertussis Cases by Age Group: Jefferson County, Alabama 2006 - 2010
Potentially Preventable
Number of cases
20
18
16
14
12
10
8
6
4
2
0
< 6 months
6 mos - 9 years
10 - 64 years
> 64 years
Age Group
2006
2007
2008
2009
2010

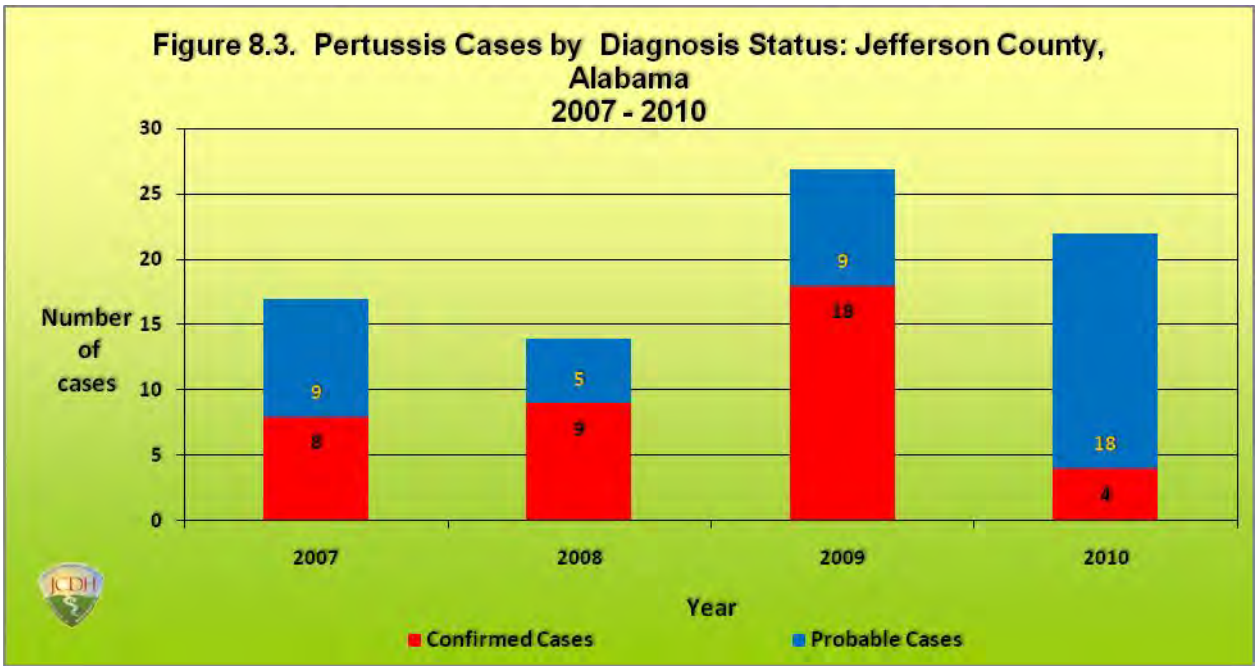


Figure 8.3. Pertussis Cases by Diagnosis Status: Jefferson County, Alabama 2007 - 2010
Number of cases
30
25
20
15
10
5
0
9
8
5
9
9
18
18
4
2007
2008
2009
2010
Year
Confirmed Cases
Probable Cases

Other Vaccine Preventable Diseases

Eight cases of Varicella (Chicken Pox) were reported to the Jefferson County Department of Health in 2010. No other vaccine-preventable diseases were reported to the Jefferson County Department of Health during the year. The remaining reportable vaccine preventable diseases according to Alabama State Law are:

Haemophilus influenzae B	Varicella (Chicken Pox)
Poliomyelitis (Polio)	Measles
Diphtheria	Mumps
Tetanus	Rubella (German Measles)

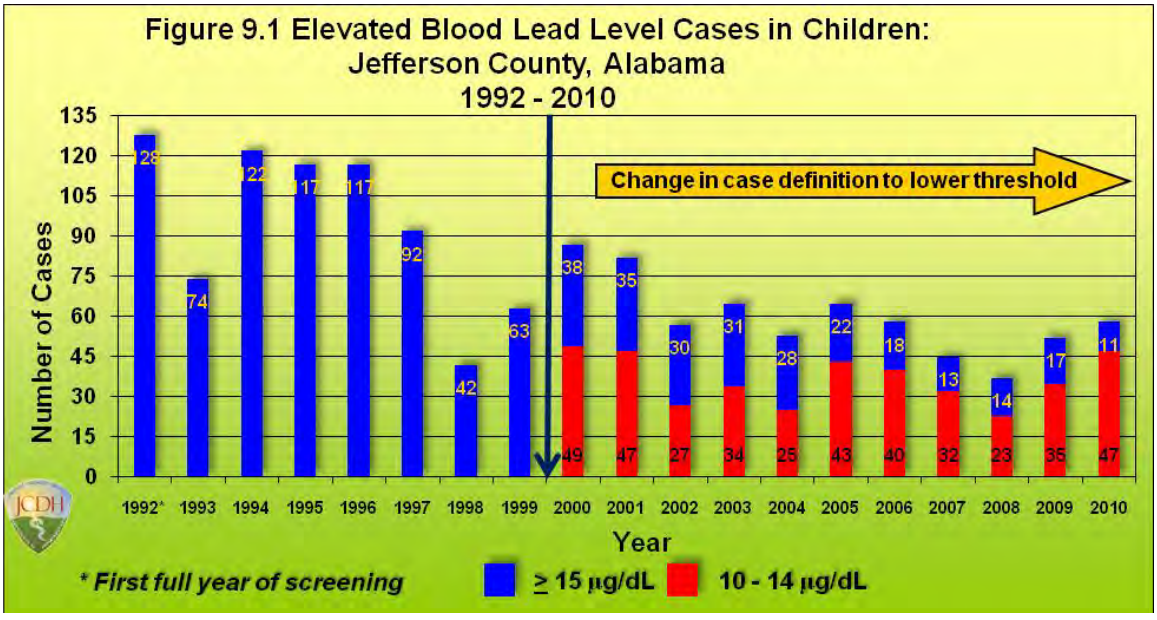
Please see Appendices A – C for the Recommended Immunization Schedules.

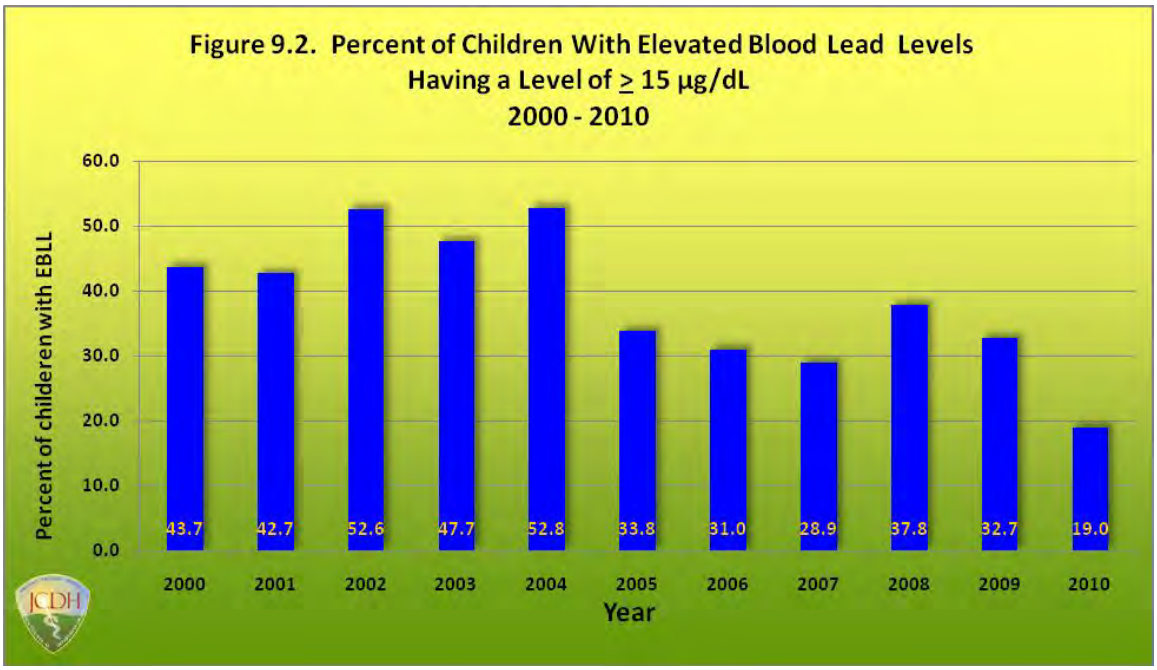
Lead Toxicity

CHAPTER 9

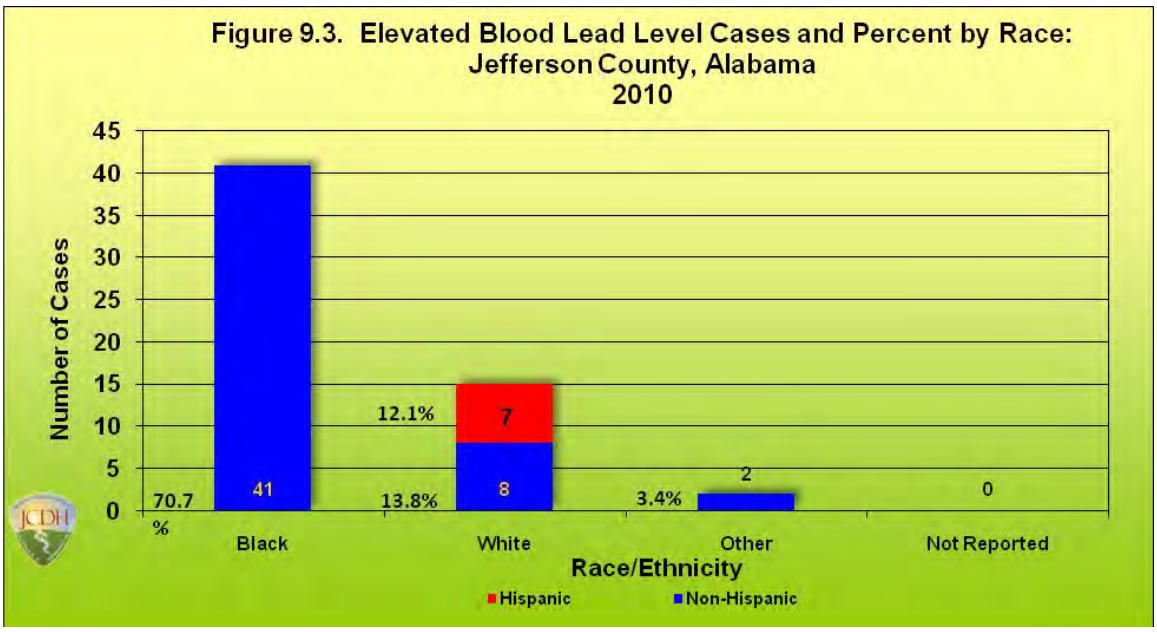
Lead, a toxic substance circulated in the blood stream and stored in bones, can damage the brain and nervous system resulting in learning and behavioral problems, slowed growth, hearing loss, headaches, and, in rare cases, seizures, coma and death at extremely high concentrations. Elevated blood lead level (EBLL), is defined as having ≥10 µg/dL of lead in whole blood, The majority of cases of EBLL in Alabama are identified by the Alabama Department of Public Health's State Laboratory. For purposes of this publication, ~~–e~~ases" are children with elevated blood lead levels.

Despite annual fluctuations, the trend in the number of reported lead toxicity cases has declined since 2000 (Figure 9.1). It is important note that the Alabama Board of Health redefined the criteria for an elevated blood lead level from 15 µg/dL to 10 µg/dL in November 1999 based upon recommendation from the Centers for Disease Control and Prevention (CDC). Of additional importance is that the number of children tested in Jefferson County rose from 2,850 in 2008 to 6,180 in 2010. As a result of increased testing, 58 cases of childhood elevated lead blood levels were reported in Jefferson County during 2010. The proportion of children with a blood lead level greater than or equal to 15 µg/dL has steadily decreased from 43.7% in 2000 to 19.0% in 2010 (Figure 9.2). The highest blood lead level detected in 2010 was 43 µg/dL.





As in previous years, the majority (70.7%) of cases of lead toxicity in 2010 were reported among black children (Figure 9.3). During the year, 12.1 percent of the lead toxicity cases were among Hispanic children, 13.8 percent were among white children, and 3.4% were among children in other racial groups.



Information on reducing lead exposure can be attained from the Centers for Disease Control and Prevention at the following web address: http://www.cdc.gov/nceh/lead/.

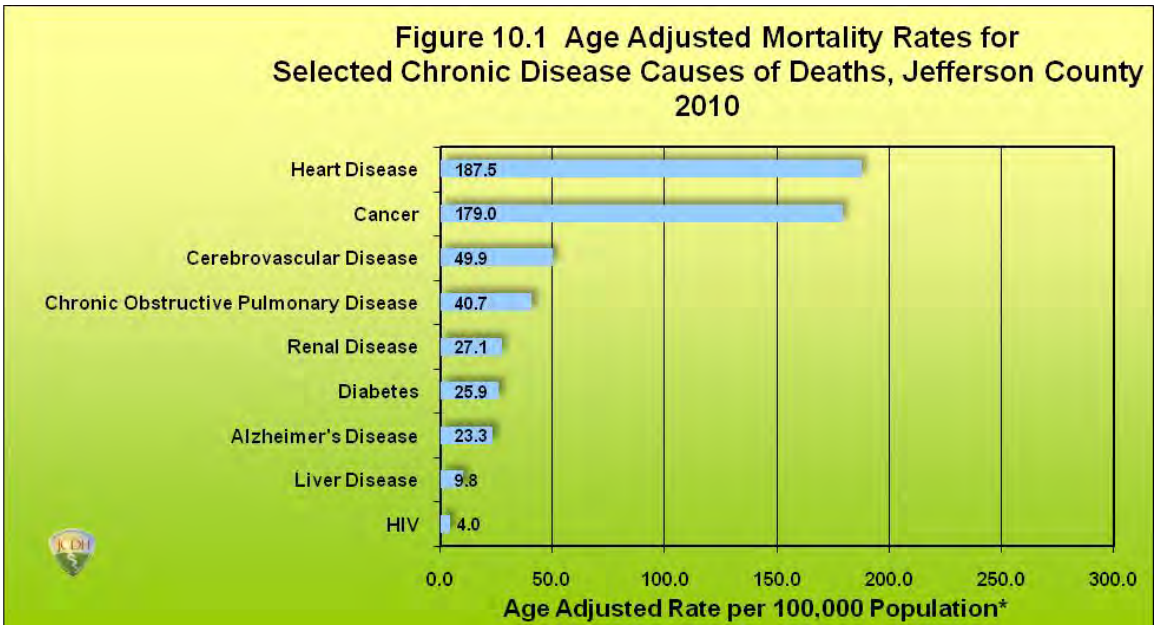
Chronic Disease Mortality and Morbidity

CHAPTER 10

This chapter describes the leading causes of chronic disease related deaths among Jefferson County residents. Although incidence and prevalence data for chronic diseases are not routinely collected by the Jefferson County Department of Health, data are available for selected chronic conditions through various annual national surveys. Deaths of Jefferson County residents attributable to these diseases are identified from Vital Records (death certificates).

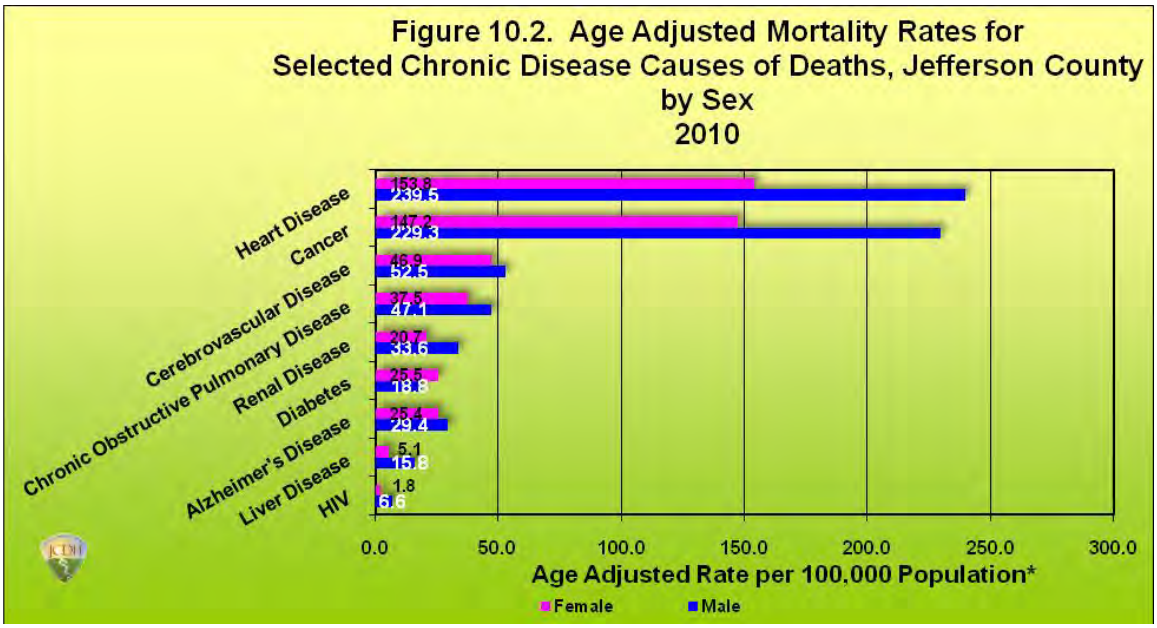
Mortality

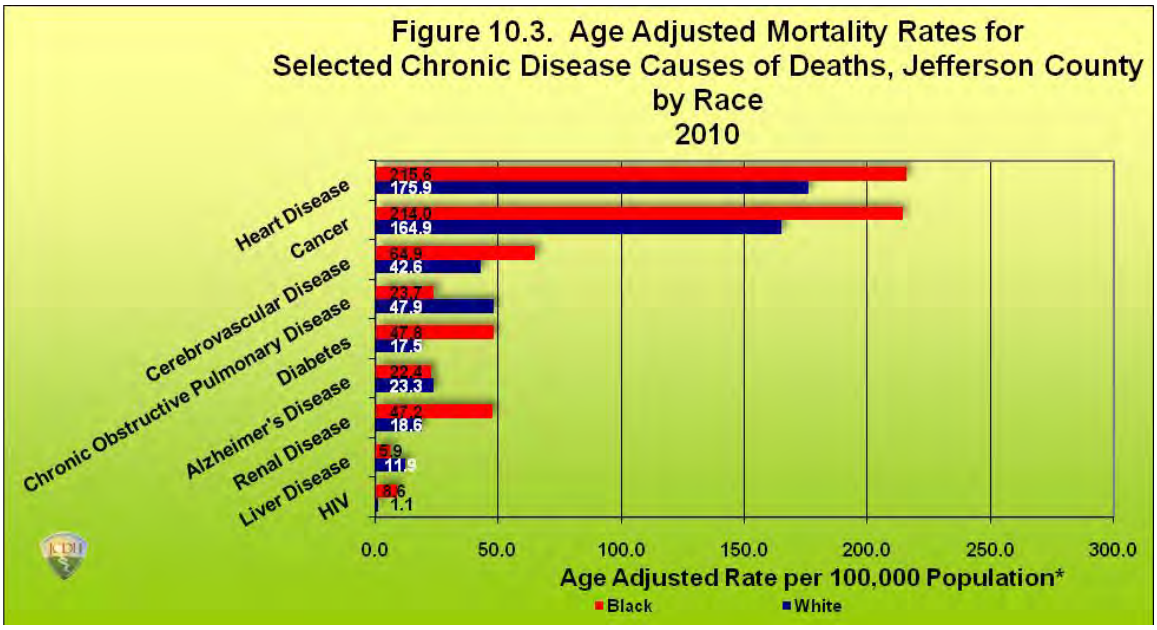
Local mortality data abstracted from the Alabama Department of Public Health's Vital Records Database are used to calculate the age-adjusted rates for the various causes of death. Of the leading fifteen specified causes of death in 2010, nine were attributable to chronic diseases (Figure 10.1).



*Age-adjusted to the year 2000 standard United States population. Mortality data usually lag a year behind the current report date due to unavailability of death certificates and population estimates used for calculating rates. Rates for 2010 are based on provisional population estimates and death counts.

For some chronic diseases, significant disparities in mortality are apparent by both sex and race as seen in Figures 10.2 and 10.3.





*Age-adjusted to the year 2000 standard United States population

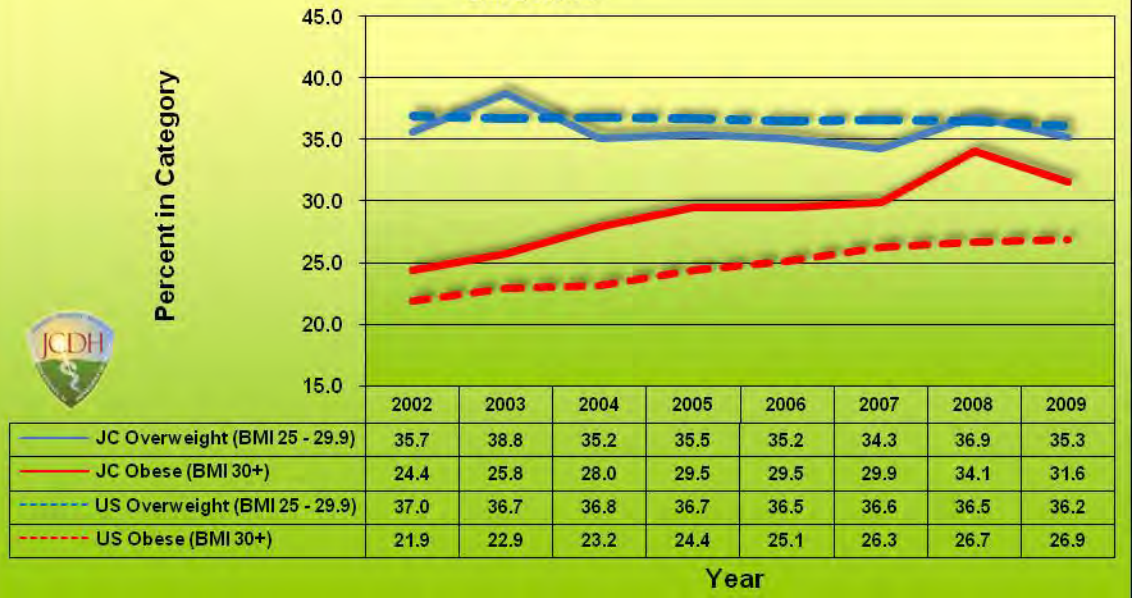
Morbidity – Obesity

A significant public health concern and risk factor for several of the leading causes of death in the United States is obesity. While obesity is not a reportable disease, it is tracked nationally through several surveys conducted by the Centers for Disease Control and Prevention (CDC). One of these surveys, the Behavioral Risk Factor Surveillance Survey (BRFSS), breaks provides data annually by state and various reporting areas, including Jefferson County. In BRFSS, individuals

aged twenty and older report their height and weight from which the Body Mass Index (BMI) is calculated. There are two different components of weight characterization tracked: overweight which is defined as having a BMI between 25 and 29.9, and obese, defined as a BMI of 30 or greater. A limitation of this measure is the lack of adjustment for individuals with high BMI due to fit muscle mass versus excess body fat. In adults, the endpoints for each category are fixed regardless of age or sex, but in children, the weight category is specified by the percentile of the BMI for age and sex which shifts throughout a child's growth and development.

Based on BRFSS data currently available from 2002 through 2009 (Fig. 10.4), while the proportion of overweight adults in the U.S. and in Jefferson County has remained relatively constant, the proportion of individuals who are obese has risen steadily. The percentage of Jefferson County residents that was overweight was 35.3% and the percentage that was obese was 31.6% in 2009. Both rates reflected small decreases from 2008 rates.

Figure 10.4. Prevalence of Overweight and Obesity Among U.S. and Jefferson County Adults by Self Report: Behavioral Risk Factor Surveillance System 2002-2009



	2002	2003	2004	2005	2006	2007	2008	2009
JC Overweight (BMI 25 - 29.9)	35.7	38.8	35.2	35.5	35.2	34.3	36.9	35.3
JC Obese (BMI 30+)	24.4	25.8	28.0	29.5	29.5	29.9	34.1	31.6
US Overweight (BMI 25 - 29.9)	37.0	36.7	36.8	36.7	36.5	36.6	36.5	36.2
US Obese (BMI 30+)	21.9	22.9	23.2	24.4	25.1	26.3	26.7	26.9

The proportion of individuals defined as either overweight or obese in the United States rose from 58.9% in 2002 to 63.1% in 2009, while in Jefferson County the proportion rose from 60.1% to 66.9%. Both Jefferson County and the state of Alabama have Obesity Task Forces working to address the various issues related to obesity, such as availability of quality food, safe exercise opportunities, and weight reduction programs. Additionally, in 2010, JCDH was awarded $5.8 million in funding through CDC's Communities Putting Prevention to Work (CPPW) grant to address obesity and physical inactivity in Jefferson County.

Additional information about the Alabama Obesity Task Force can be found at the following web site, http://www.adph.org/obesity/.

Special Topic – Infectious Disease Outbreak in a Correctional Facility

CHAPTER 11

Infectious disease outbreak management within correctional facilities presents both challenges and opportunities for public health. In September 2009, the Jefferson County Department of Health (JCDH) was asked to perform an epidemiologic investigation related to the method of entry and transmission of syphilis within a state correctional facility located in Jefferson County. Although no early syphilis cases had been reported among this facility's inmates in over fifteen years, two cases had been detected among the approximately 1,500 inmates housed in this maximum-security institution specializing in repeat and/or violent offenders. Notably, prior to the reporting of the two syphilis cases at this facility, another Alabama State prison had reported multiple cases of syphilis during the spring and summer of 2009.

In initiating the investigation of the syphilis cases, staff from JCDH's Sexually Transmitted Disease (STD) Program requested a list of inmates who had been transferred from the other facility to the Jefferson County facility during the six months prior to the case identifications at the Jefferson County facility. All of the twenty-five inmates identified as having transferred from the other facility to the Jefferson County facility during the six month period were examined by the medical staff at Jefferson County facility but tested negative for syphilis.

As the investigation progressed, an inmate who previously transferred from the other facility to the Jefferson County facility in July 2009 presented to the Jefferson County facility's infirmary with a generalized body rash in September 2009. Laboratory testing confirmed the diagnosis of syphilis; this patient was initiated on treatment.

The inmate previously housed at the other facility and diagnosed with syphilis and the two Jefferson County facility inmates diagnosed with early syphilis were interviewed by JCDH's STD staff. The infected inmate from the other facility identified one of the two inmates diagnosed with early syphilis as his sexual partner. It is theorized that the inmate from the other facility arrived at the Jefferson County facility infected with syphilis or in the incubation phase of early syphilis and became infectious shortly after arrival.

The Alabama State prison system's routine syphilis control program includes inmate screening upon prison system entry, every three years during incarceration, and within 30 days of release. Additionally, testing for syphilis is conducted on inmates as indicated by history or symptoms during sick call. It is notable that inmates are ***not*** routinely screened for syphilis when transferring between Alabama State prisons.

As a result of the case identifications and the lack of routine syphilis screening upon prison transfer, JCDH's STD staff performed syphilis screenings on over 1,600 Jefferson County facility inmates between March and December 2009. From this screening, eight additional early syphilis cases were detected. Concurrently, the prison's medical staff obtained laboratory confirmation of six syphilis cases among inmates presenting to the infirmary with suspicious rashes or genital lesions. As part of the continuing investigation, JCDH recommended that all prison health care staff, correctional officers, and inmates receive syphilis education to enhance the understanding, detection, treatment, and prevention of syphilis. Numerous syphilis information sheets displaying photographs of syphilis lesions and rashes were posted throughout the prison alerting inmates and staff of the outbreak. Through JCDH's targeted screening and internal communication of the

syphilis outbreak, an increase in the number of inmates presenting for examination and testing was observed, with five additional syphilis cases discovered during the interview process.

Inmates diagnosed with syphilis were interviewed by JCDH staff to elicit the names of sexual contacts during the presumed time of infectivity. Those inmates named as sexual contacts of infected inmates received physical exams, syphilis testing, and preventive treatment. Of interest, none of the inmates diagnosed with early syphilis during this outbreak tested positive for the Human Immunodeficiency Virus (HIV) within 4 to 6 months of testing positive for syphilis. Ultimately, with JCDH's assistance, the Jefferson County facility identified twenty inmates with early syphilis; one with primary, seven with secondary, and twelve with early latent stages of the disease between September 2009 and December 2010.

The incidence of early syphilis during this outbreak, the nature of the sexual networks, and the frequency of prison to prison transfers among inmates illustrated the tremendous potential for the spread of syphilis within correctional facilities. Recommended measures to improve the detection of syphilis earlier in the course of infection in this population include annual screening of inmates, screening inmates upon transfer between prisons and local jails, and voluntary mass screening of all inmates when outbreaks occur. While condom use can reduce the transmission of syphilis and other sexually transmitted diseases, the distribution of condoms within the Alabama Department of Corrections, as in most state prison systems, is prohibited.

In addition to the syphilis cases identified at Jefferson County facility, six cases of tuberculosis (TB) were reported at the facility during 2010. The Jefferson County facility had reported sporadic cases of TB during the past ten years, with a single case being reported in 2002, 2004, and 2007. The contact investigation completed for each of these isolated cases resulted in no evidence of spread of the infection. However, on February 5, 2010, a single, highly infectious case of TB was reported to JCDH. Five additional cases were identified during the contact investigation performed by JCDH.

All inmates entering the Alabama prison system are processed at a common Correctional Facility and receive a TB skin test during intake, before being transferred to their assigned prison. TB skin testing is repeated during the inmate's annual physical examination at the correctional facility if the most current TB test was negative. Treatment for inmates with a latent TB infection (LTBI), defined as a positive TB skin test and normal chest x-ray, is not required, but is recommended to the inmate by the prison physician. The standard treatment for LTBI is a nine month course of Isoniazid or a four month course of Rifampin. Unless the inmate is housed within a segregated unit, he must present to the prison's infirmary to receive medication. As with non-incarcerated individuals, inmates cannot be forced to take medications for latent TB.

The index or primary TB case was a 31 year old black male diagnosed with latent tuberculosis in 2008 who remained untreated due to the inmate's non-compliance with the prescribed treatment regimen. In October 2008, further attempts at tuberculosis treatment for this inmate were discontinued. The inmate subsequently developed severe chest pain, cough, and weight loss in January 2009 and had abnormal findings on chest X-ray.

Over the next year, the inmate's symptoms worsened, and a repeat chest x-ray on February 8, 2010 revealed a 4-centimeter, thin-walled, right base cavitation, a right mid-lung density, and right upper lobe pneumonia. Sputum specimens were obtained, and the inmate was placed in isolation. When the inmate's sputum culture was positive for TB and revealed significant

bacterial growth, he was transferred to another correctional facility for appropriate isolation and initiated on a four drug TB treatment protocol.

JCDH then conducted a contact investigation in the four dormitories of the Jefferson County facility where the inmate diagnosed with TB had been housed. As part of the contact investigation, TB skin tests were administered to the 666 inmates who had been housed with the index case. The initial testing revealed four secondary TB cases and an additional 102 inmates with latent tuberculosis infection (64 inmates were found to have had a previously positive TB skin test). The bacterial strain recovered from each of the secondary cases was found to be identical to that of the index case.

Due to the identification of multiple secondary cases with a matching TB genotype, the investigation was expanded to include the entire facility. A second round of TB skin tests performed on May 10, 2010 identified three new suspect cases, inmates with a positive TB skin test after a prior negative test and either TB symptoms or an abnormal chest x-ray. Of the three suspect cases, one was culture positive and counted as the sixth case. A total of 1,352 TB skin tests were conducted including the 500 tests provided in February 2010. Of the 105 inmates who developed a first-time positive TB skin test, 63 had tested negative in February.

The final round of testing in this contact investigation occurred on July 19, 2010. A total of 1,177 tests were administered with 421 inmates receiving a third screening. From the final testing, 17 additional inmates were found to have converted from a previous negative skin testing to a positive test, but no additional suspect or confirmed cases were identified. Due to the low number and percentage of positive TB skin test conversions during the July 2010 testing, the decision was made to cease additional testing in this contact investigation.

The six confirmed TB cases identified through the Jefferson County facility investigation completed the prescribed TB medication regimen without complication, and each case was closed by mid-November 2010. Additionally, 224 inmates of the correctional facility were identified with latent tuberculosis infection and all initiated an appropriate treatment. To date, 92.4% of the inmates with latent TB have completed the prescribed treatment resulting in corresponding case closure.

To further reduce the spread of this disease, Correctional Medical Services, the contract provider of prisoner health care, tested 50 of its staff and 224 employees of the Department of Corrections. These assessments identified 10 additional latent TB cases, all of whom completed treatment in an effort to prevent the spread of the infection.

Like syphilis, tuberculosis can be easily spread in a high population density setting such as a prison. The movement of the inmate population within the facility and the close living conditions increase the potential for the airborne transmission of the TB bacteria. Early case detection is essential in reducing the spread of disease within such facilities. Education among medical personnel, inmates, and Department of Corrections employees on the signs and symptoms of TB can reduce the spread of the infection through earlier case identification.

The concurrent outbreaks of syphilis and tuberculosis at the Jefferson County facility during 2009-2010 highlight the potential for disease outbreaks in high density populations and the special needs for addressing screening and treatment in these populations. While the risk of infection transmission to the general population is lessened among incarcerated individuals as

opposed to individuals in other high density populations such as military bases and school dormitories, and the ability to conduct contact tracing for testing and treatment may be enhanced, challenges remain including the transfer of infected individuals and subsequent spread of the infection to other facilities in the correctional system.

As a result of the activities conducted throughout 2010, an even more effective working relationship was developed between JCDH and the Jefferson County facility. It is anticipated that the education programs instituted as a result of these outbreaks will lead to the institution of new policies and procedures to enhance the disease surveillance activities at all of the correctional facilities within the state.

APPENDIX A

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2010

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼ Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B[1]	HepB	HepB			HepB						
Rotavirus[2]			RV	RV	RV[2]						
Diphtheria, Tetanus, Pertussis[3]			DTaP	DTaP	DTaP	see footnote[3]	DTaP				DTaP
Haemophilus influenzae type b[4]			Hib	Hib	Hib[4]	Hib					
Pneumococcal[5]			PCV	PCV	PCV	PCV				PPSV	
Inactivated Poliovirus[6]			IPV	IPV		IPV					IPV
Influenza[7]					Influenza (Yearly)						
Measles, Mumps, Rubella[8]						MMR		see footnote[8]			MMR
Varicella[9]						Varicella		see footnote[9]			Varicella
Hepatitis A[10]						HepA (2 doses)				HepA Series	
Meningococcal[11]										MCV	

Range of recommended ages for all children except certain high-risk groups

Range of recommended ages for certain high-risk groups

This schedule includes recommendations in effect as of December 15, 2009. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: **http://www.cdc.gov/vaccines/pubs/acip-list.htm**. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at **http://www.vaers.hhs.gov** or by telephone, **800-822-7967**.

1. **Hepatitis B vaccine (HepB).** (Minimum age: birth)
   At birth:
   - Administer monovalent HepB to all newborns before hospital discharge.
   - If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
   - If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).

   After the birth dose:
   - The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1 or 2 months. Monovalent HepB vaccine should be used for doses administered before age 6 weeks. The final dose should be administered no earlier than age 24 weeks.
   - Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg 1 to 2 months after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).
   - Administration of 4 doses of HepB to infants is permissible when a combination vaccine containing HepB is administered after the birth dose. The fourth dose should be administered no earlier than age 24 weeks.
2. **Rotavirus vaccine (RV).** (Minimum age: 6 weeks)
   - Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks 0 days or older.
   - The maximum age for the final dose in the series is 8 months 0 days
   - If Rotarix is administered at ages 2 and 4 months, a dose at 6 months is not indicated.
3. **Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).** (Minimum age: 6 weeks)
   - The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.
   - Administer the final dose in the series at age 4 through 6 years.
4. ***Haemophilus influenzae* type b conjugate vaccine (Hib).** (Minimum age: 6 weeks)
   - If PRP-OMP (PedvaxHIB or Comvax [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
   - TriHiBit (DTaP/Hib) and Hiberix (PRP-T) should not be used for doses at ages 2, 4, or 6 months for the primary series but can be used as the final dose in children aged 12 months through 4 years.
5. **Pneumococcal vaccine.** (Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])
   - PCV is recommended for all children aged younger than 5 years. Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
   - Administer PPSV 2 or more months after last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant. See *MMWR* 1997;46(No. RR-8).
6. **Inactivated poliovirus vaccine (IPV)** (Minimum age: 6 weeks)
   - The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
   - If 4 doses are administered prior to age 4 years a fifth dose should be administered at age 4 through 6 years. See *MMWR* 2009;58(30):829–30.
7. **Influenza vaccine (seasonal).** (Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])
   - Administer annually to children aged 6 months through 18 years.
   - For healthy children aged 2 through 6 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used, except LAIV should not be given to children aged 2 through 4 years who have had wheezing in the past 12 months.
   - Children receiving TIV should receive 0.25 mL if aged 6 through 35 months or 0.5 mL if aged 3 years or older.
   - Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
   - For recommendations for use of influenza A (H1N1) 2009 monovalent vaccine see *MMWR* 2009;58(No. RR-10).
8. **Measles, mumps, and rubella vaccine (MMR).** (Minimum age: 12 months)
   - Administer the second dose routinely at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.
9. **Varicella vaccine.** (Minimum age: 12 months)
   - Administer the second dose routinely at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
   - For children aged 12 months through 12 years the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
10. **Hepatitis A vaccine (HepA).** (Minimum age: 12 months)
    - Administer to all children aged 1 year (i.e., aged 12 through 23 months). Administer 2 doses at least 6 months apart.
    - Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits
    - HepA also is recommended for older children who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.
11. **Meningococcal vaccine.** (Minimum age: 2 years for meningococcal conjugate vaccine [MCV4] and for meningococcal polysaccharide vaccine [MPSV4])
    - Administer MCV4 to children aged 2 through 10 years with persistent complement component deficiency, anatomic or functional asplenia, and certain other conditions placing them at high risk.
    - Administer MCV4 to children previously vaccinated with MCV4 or MPSV4 after 3 years if first dose administered at age 2 through 6 years. See *MMWR* 2009;58:1042–3.

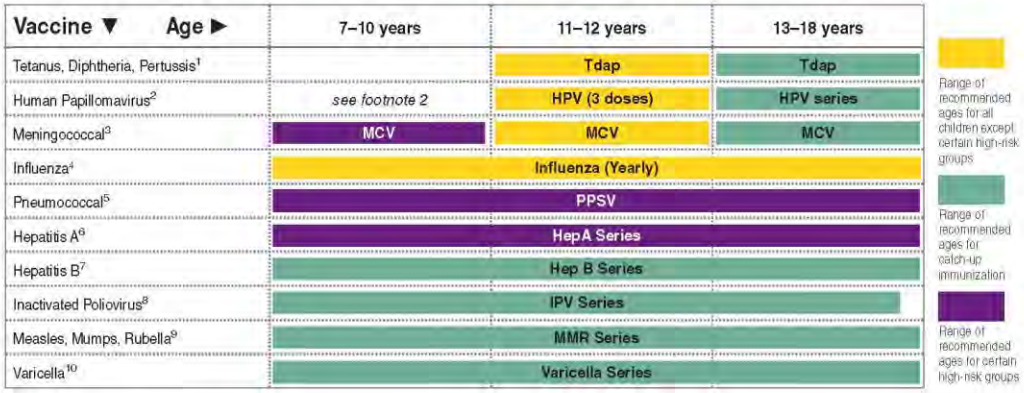
The Recommended Immunization Schedules for Persons Aged 0 through 18 Years are approved by the Advisory Committee on Immunization Practices (**http://www.cdc.gov/vaccines/recs/acip**), the American Academy of Pediatrics (**http://www.aap.org**), and the American Academy of Family Physicians (**http://www.aafp.org**).

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

APPENDIX B

Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2010

For those who fall behind or start late, see the schedule below and the catch-up schedule



This schedule includes recommendations in effect as of December 15, 2009. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: **http://www.cdc.gov/vaccines/pubs/acip-list.htm**. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at **http://www.vaers.hhs.gov** or by telephone, **800-822-7967**.

1. **Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).** (Minimum age: 10 years for Boostrix and 11 years for Adacel)
   - Administer at age 11 or 12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoid (Td) booster dose.
   - Persons aged 13 through 18 years who have not received Tdap should receive a dose.
   - A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose; however, a shorter interval may be used if pertussis immunity is needed.
2. **Human papillomavirus vaccine (HPV).** (Minimum age: 9 years)
   - Two HPV vaccines are licensed: a quadrivalent vaccine (HPV4) for the prevention of cervical, vaginal and vulvar cancers (in females) and genital warts (in females and males), and a bivalent vaccine (HPV2) for the prevention of cervical cancers in females.
   - HPV vaccines are most effective for both males and females when given before exposure to HPV through sexual contact.
   - HPV4 or HPV2 is recommended for the prevention of cervical precancers and cancers in females.
   - HPV4 is recommended for the prevention of cervical, vaginal and vulvar precancers and cancers and genital warts in females.
   - Administer the first dose to females at age 11 or 12 years.
   - Administer the second dose 1 to 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).
   - Administer the series to females at age 13 through 18 years if not previously vaccinated.
   - HPV4 may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of acquiring genital warts.
3. **Meningococcal conjugate vaccine (MCV4).**
   - Administer at age 11 or 12 years, or at age 13 through 18 years if not previously vaccinated.
   - Administer to previously unvaccinated college freshmen living in a dormitory.
   - Administer MCV4 to children aged 2 through 10 years with persistent complement component deficiency, anatomic or functional asplenia, or certain other conditions placing them at high risk.
   - Administer to children previously vaccinated with MCV4 or MPSV4 who remain at increased risk after 3 years (if first dose administered at age 2 through 6 years) or after 5 years (if first dose administered at age 7 years or older). Persons whose only risk factor is living in on-campus housing are not recommended to receive an additional dose. See *MMWR* 2009;58:1042–3.
4. **Influenza vaccine (seasonal).**
   - Administer annually to children aged 6 months through 18 years.
   - For healthy nonpregnant persons aged 7 through 18 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used.
   - Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
   - For recommendations for use of influenza A (H1N1) 2009 monovalent vaccine. See *MMWR* 2009;58(No. RR-10).
5. **Pneumococcal polysaccharide vaccine (PPSV).**
   - Administer to children with certain underlying medical conditions, including a cochlear implant. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition. See *MMWR* 1997;46(No. RR-8).
6. **Hepatitis A vaccine (HepA).**
   - Administer 2 doses at least 6 months apart.
   - HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, who are at increased risk for infection, or for whom immunity against hepatitis A is desired.
7. **Hepatitis B vaccine (HepB).**
   - Administer the 3-dose series to those not previously vaccinated.
   - A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB is licensed for children aged 11 through 15 years.
8. **Inactivated poliovirus vaccine (IPV).**
   - The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
   - If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.
9. **Measles, mumps, and rubella vaccine (MMR).**
   - If not previously vaccinated, administer 2 doses or the second dose for those who have received only 1 dose, with at least 28 days between doses.
10. **Varicella vaccine.**
    - For persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4]), administer 2 doses if not previously vaccinated or the second dose if only 1 dose has been administered.
    - For persons aged 7 through 12 years, the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
    - For persons aged 13 years and older, the minimum interval between doses is 28 days.

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The Recommended Immunization Schedules for Persons Aged 0 through 18 Years are approved by the Advisory Committee on Immunization Practices (**http://www.cdc.gov/vaccines/recs/acip**), the American Academy of Pediatrics (**http://www.aap.org**), and the American Academy of Family Physicians (**http://www.aafp.org**).

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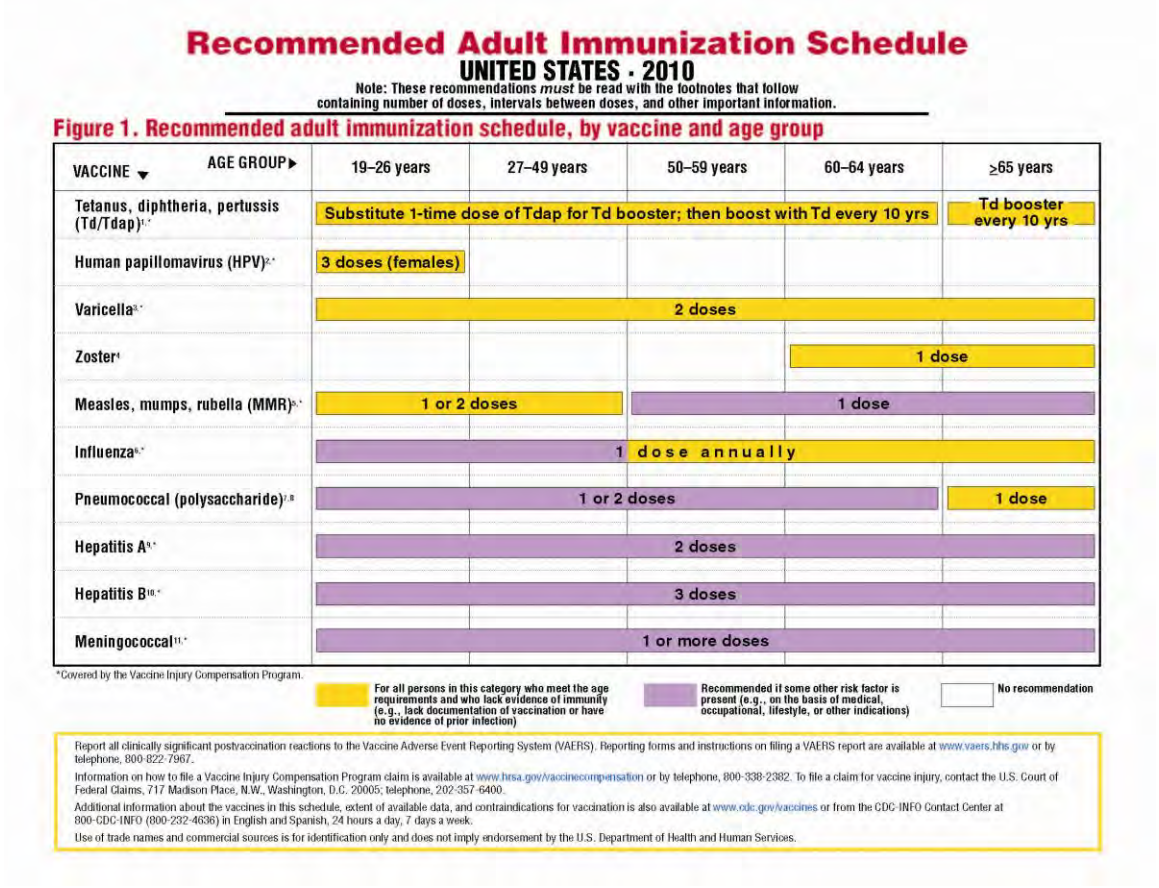
APPENDIX C

The Advisory Committee on Immunization Practices (ACIP) annually reviews the recommended Adult Immunization Schedule to ensure that the schedule reflects current recommendations for the licensed vaccines. In October 2008, ACIP approved the Adult Immunization Schedule for 2009. ***No new vaccines were added to the schedule; however, several indications were added to the pneumococcal polysaccharide vaccine footnote, clarifications were made to the footnotes for human Papillomavirus, Varicella, and meningococcal vaccines, and schedule information was added to the Hepatitis A and Hepatitis B vaccine footnotes.***

Additional information is available as follows: schedule (in English and Spanish) at http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm; adult vaccination at http://www.cdc.gov/vaccines/default.htm; ACIP statements for specific vaccines at http://www.cdc.gov/vaccine/pubs/acip-list.htm; and reporting adverse events at http://www.vaers.hhs.gov or by telephone, 800-822-7967.



Recommended Adult Immunization Schedule
UNITED STATES · 2010
Note: These recommendations *must* be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group

VACCINE ▼ / AGE GROUP ▶	19–26 years	27–49 years	50–59 years	60–64 years	≥65 years
Tetanus, diphtheria, pertussis (Td/Tdap)[1,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs				Td booster every 10 yrs
Human papillomavirus (HPV)[2,*]	3 doses (females)				
Varicella[3,*]	2 doses				
Zoster[4]				1 dose	
Measles, mumps, rubella (MMR)[5,*]	1 or 2 doses		1 dose		
Influenza[6,*]	1 dose annually				
Pneumococcal (polysaccharide)[7,8]	1 or 2 doses				1 dose
Hepatitis A[9,*]	2 doses				
Hepatitis B[10,*]	3 doses				
Meningococcal[11,*]	1 or more doses				

*Covered by the Vaccine Injury Compensation Program.

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)

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

No recommendation

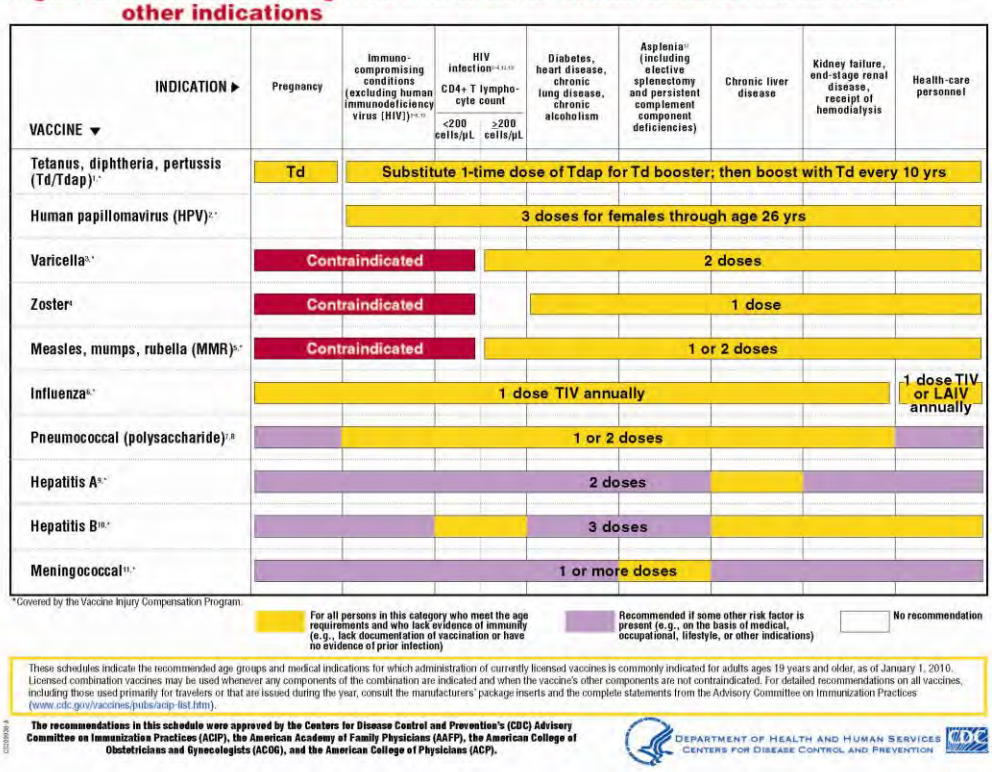
Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.

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

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 24 hours a day, 7 days a week.

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

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



Footnotes

Recommended Adult Immunization Schedule—UNITED STATES · 2010

For complete statements by the Advisory Committee on Immunization Practices (ACIP), visit www.cdc.gov/vaccines/pubs/ACIP-list.htm.

1. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination

Tdap should replace a single dose of Td for adults aged 19 through 64 years who have not received a dose of Tdap previously.

Adults with uncertain or incomplete history of primary vaccination series with tetanus and diphtheria toxoid-containing vaccines should begin or complete a primary vaccination series. A primary series for adults is 3 doses of tetanus and diphtheria toxoid-containing vaccines; administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second; Tdap can substitute for any one of the doses of Td in the 3-dose primary series. The booster dose of tetanus and diphtheria toxoid containing vaccine should be administered to adults who have completed a primary series and if the last vaccination was received ≥10 years previously. Tdap or Td vaccine may be used, as indicated.

If a woman is pregnant and received the last Td vaccination ≥10 years previously, administer Td during the second or third trimester. If the woman received the last Td vaccination <10 years previously, administer Tdap during the immediate postpartum period. A dose of Tdap is recommended for postpartum women, close contacts of infants aged <12 months, and all health-care personnel with direct patient contact if they have not previously received Tdap. An interval as short as 2 years from the last Td is suggested; shorter intervals can be used. Td may be deferred during pregnancy and Tdap substituted in the immediate postpartum period, or Tdap can be administered instead of Td to a pregnant woman.

Consult the ACIP statement for recommendations for giving Td as prophylaxis in wound management.

2. Human papillomavirus (HPV) vaccination

HPV vaccination is recommended at age 11 or 12 years with catch-up vaccination at ages 13 through 26 years.

Ideally, vaccine should be administered before potential exposure to HPV through sexual activity; however, females who are sexually active should still be vaccinated consistent with age-based recommendations. Sexually active females who have not been infected with any of the four HPV vaccine types (types 6, 11, 16, 18 all of which HPV4 prevents) or any of the two HPV vaccine types (types 16 and 18 both of which HPV2 prevents) receive the full benefit of the vaccination. Vaccination is less beneficial for females who have already been infected with one or more of the HPV vaccine types. HPV4 or HPV2 can be administered to persons with a history of genital warts, abnormal Papanicolaou test, or positive HPV DNA test, because these conditions are not evidence of prior infection with all vaccine HPV types.

HPV4 may be administered to males aged 9 through 26 years to reduce their likelihood of acquiring genital warts. HPV4 would be most effective when administered before exposure to HPV through sexual contact.

A complete series for either HPV4 or HPV2 consists of 3 doses. The second dose should be administered 1–2 months after the first dose; the third dose should be administered 6 months after the first dose.

Although HPV vaccination is not specifically recommended for persons with the medical indications described in Figure 2, "Vaccines that might be indicated for adults based on medical and other indications," it may be administered to these persons because the HPV vaccine is not a live virus vaccine. However, the immune response and vaccine efficacy might be less for persons with the medical indications described in Figure 2 than in persons who do not have the medical indications described or who are immunocompetent. Health-care personnel are not at increased risk because of occupational exposure, and should be vaccinated consistent with age-based recommendations.

3. Varicella vaccination

All adults without evidence of immunity to varicella should receive 2 doses of single-antigen varicella vaccine if not previously vaccinated or the second dose if they have received only 1 dose, unless they have a medical contraindication. Special consideration should be given to those who 1) have close contact with persons at high risk for severe disease (e.g., health-care personnel and family contacts of persons with immunocompromising conditions) or 2) are at high risk for exposure or transmission (e.g., teachers; child-care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).

Evidence of immunity to varicella in adults includes any of the following: 1) documentation of 2 doses of varicella vaccine at least 4 weeks apart; 2) U.S.-born before 1980 (although for health-care personnel and pregnant women, birth before 1980 should not be considered evidence of immunity); 3) history of varicella based on diagnosis or verification of varicella by a health-care provider (for a patient reporting a history of or presenting with an atypical case, a mild case, or both, health-care providers should seek either an epidemiologic link with a typical varicella case or to a laboratory-confirmed case or evidence of laboratory confirmation, if it was performed at the time of acute disease); 4) history of herpes zoster based on diagnosis or verification of herpes zoster by a health-care provider; or 5) laboratory evidence of immunity or laboratory confirmation of disease.

Pregnant women should be assessed for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the health-care facility. The second dose should be administered 4–8 weeks after the first dose.

4. Herpes zoster vaccination

A single dose of zoster vaccine is recommended for adults aged ≥60 years regardless of whether they report a prior episode of herpes zoster. Persons with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication.

5. Measles, mumps, rubella (MMR) vaccination

Adults born before 1957 generally are considered immune to measles and mumps.

Measles component: Adults born during or after 1957 should receive 1 or more doses of MMR vaccine unless they have 1) a medical contraindication; 2) documentation of vaccination with 1 or more doses of MMR vaccine; 3) laboratory evidence of immunity; or 4) documentation of physician-diagnosed measles.

A second dose of MMR vaccine, administered 4 weeks after the first dose, is recommended for adults who 1) have been recently exposed to measles or are in an outbreak setting; 2) have been vaccinated previously with killed measles vaccine; 3) have been vaccinated with an unknown type of measles vaccine during 1963–1967; 4) are students in postsecondary educational institutions; 5) work in a health-care facility; or 6) plan to travel internationally.

Mumps component: Adults born during or after 1957 should receive 1 dose of MMR vaccine unless they have 1) a medical contraindication; 2) documentation of vaccination with 1 or more doses of MMR vaccine; 3) laboratory evidence of immunity; or 4) documentation of physician-diagnosed mumps.

A second dose of MMR vaccine, administered 4 weeks after the first dose, is recommended for adults who 1) live in a community experiencing a mumps outbreak and are in an affected age group; 2) are students in postsecondary educational institutions; 3) work in a health-care facility; or 4) plan to travel internationally.

Rubella component: 1 dose of MMR vaccine is recommended for women who do not have documentation of rubella vaccination, or who lack laboratory evidence of immunity. For women of childbearing age, regardless of birth year, rubella immunity should be determined and women should be counseled regarding congenital rubella syndrome. Women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the health-care facility.

Health-care personnel born before 1957: For unvaccinated health-care personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, health-care facilities should consider vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval (for measles and mumps) and 1 dose of MMR vaccine (for rubella), respectively.

During outbreaks, health-care facilities should recommend that unvaccinated health-care personnel born before 1957, who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, receive 2 doses of MMR vaccine during an outbreak of measles or mumps, and 1 dose during an outbreak of rubella.

Complete information about evidence of immunity is available at www.cdc.gov/vaccines/recs/provisional/default.htm.

6. Seasonal influenza vaccination

Vaccinate all persons aged ≥50 years and any younger persons who would like to decrease their risk of getting influenza. Vaccinate persons aged 19 through 49 years with any of the following indications.

Medical: Chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases, including diabetes mellitus; renal or hepatic dysfunction, hemoglobinopathies; or immunocompromising conditions (including immunocompromising conditions caused by medications or HIV); cognitive, neurologic or neuromuscular disorders; and pregnancy during the influenza season. No data exist on the risk for severe or complicated influenza disease among persons with asplenia; however, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia.

Occupational: All health-care personnel, including those employed by long-term care and assisted-living facilities, and caregivers of children aged <5 years.

Other: Residents of nursing homes and other long-term care and assisted-living facilities; persons likely to transmit influenza to persons at high risk (e.g., in home household contacts and caregivers of children aged <5 years, persons aged ≥50 years, and persons of all ages with high-risk conditions).

Healthy, nonpregnant adults aged <50 years without high-risk medical conditions who are not contacts of severely immunocompromised persons in special care units may receive either intranasally administered live, attenuated influenza vaccine (FluMist) or inactivated vaccine. Other persons should receive the inactivated vaccine.

7. Pneumococcal polysaccharide (PPSV) vaccination

Vaccinate all persons with the following indications.

Medical: Chronic lung disease (including asthma); chronic cardiovascular diseases; diabetes mellitus; chronic liver diseases, cirrhosis; chronic alcoholism; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]); immunocompromising conditions including chronic renal failure or nephrotic syndromes; and cochlear implants and cerebrospinal fluid leaks. Vaccinate as close to HIV diagnosis as possible.

Other: Residents of nursing homes or long-term care facilities and persons who smoke cigarettes. Routine use of PPSV is not recommended for American Indians/Alaska Natives or persons aged <65 years unless they have underlying medical conditions that are PPSV indications. However, public health authorities may consider recommending PPSV for American Indians/Alaska Natives and persons aged 50 through 64 years who are living in areas where the risk for invasive pneumococcal disease is increased.

8. Revaccination with PPSV

One-time revaccination after 5 years is recommended for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and for persons with immunocompromising conditions. For persons aged ≥65 years, one-time revaccination is recommended if they were vaccinated ≥5 years previously and were younger than aged <65 years at the time of primary vaccination.

9. Hepatitis A vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis A virus (HAV) infection.

Behavioral: Men who have sex with men and persons who use injection drugs.

Occupational: Persons working with HAV-infected primates or with HAV in a research laboratory setting.

Medical: Persons with chronic liver disease and persons who receive clotting factor concentrates.

Other: Persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (a list of countries is available at www.cdc.gov/travel/contentDiseases.aspx).

Unvaccinated persons who anticipate close personal contact (e.g., household contact or regular babysitting) with an international adoptee from a country of high or intermediate endemicity during the first 60 days after arrival of the adoptee in the United States should consider vaccination. The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally ≥2 weeks before the arrival of the adoptee.

Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6–12 months (Havrix), or 0 and 6–18 months (Vaqta). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule, administered on days 0, 7, and 21–30 followed by a booster dose at month 12 may be used.

10. Hepatitis B vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection.

Behavioral: Sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than one sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection-drug users; and men who have sex with men.

Occupational: Health-care personnel and public-safety workers who are exposed to blood or other potentially infectious body fluids.

Medical: Persons with end-stage renal disease, including patients receiving hemodialysis; persons with HIV infection; and persons with chronic liver disease.

Other: Household contacts and sex partners of persons with chronic HBV infection; clients and staff members of institutions for persons with developmental disabilities; and international travelers to countries with high or intermediate prevalence of chronic HBV infection (a list of countries is available at www.cdc.gov/travel/contentDiseases.aspx).

Hepatitis B vaccination is recommended for all adults in the following settings: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatment and prevention services; health-care settings targeting services to injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs and facilities for chronic hemodialysis patients; and institutions and nonresidential daycare facilities for persons with developmental disabilities.

Administer or complete a 3-dose series of HepB to those persons not previously vaccinated. The second dose should be administered 1 month after the first dose; the third dose should be administered at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule, administered on days 0, 7, and 21–30 followed by a booster dose at month 12 may be used.

Adult patients receiving hemodialysis or with other immunocompromising conditions should receive 1 dose of 40 μg/mL (Recombivax HB) administered on a 3-dose schedule or 2 doses of 20 μg/mL (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2 and 6 months.

11. Meningococcal vaccination

Meningococcal vaccine should be administered to persons with the following indications:

Medical: Adults with anatomic or functional asplenia, or persistent complement component deficiencies.

Other: First-year college students living in dormitories; microbiologists routinely exposed to isolates of *Neisseria meningitidis*; military recruits; and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the "meningitis belt" of sub-Saharan Africa during the dry season [December through June]), particularly if their contact with local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj.

Meningococcal conjugate vaccine (MCV4) is preferred for adults with any of the preceding indications who are aged ≤55 years; meningococcal polysaccharide vaccine (MPSV4) is preferred for adults aged ≥56 years. Revaccination with MCV4 after 5 years is recommended for adults previously vaccinated with MCV4 or MPSV4 who remain at increased risk for infection (e.g., adults with anatomic or functional asplenia). Persons whose only risk factor is living in on-campus housing are not recommended to receive an additional dose.

12. Selected conditions for which *Haemophilus influenzae* type b (Hib) vaccine may be used

Hib vaccine generally is not recommended for persons aged ≥5 years. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults. However, studies suggest good immunogenicity in patients who have sickle cell disease, leukemia, or HIV infection or who have had a splenectomy. Administering 1 dose of Hib vaccine to these high-risk persons who have not previously received Hib vaccine is not contraindicated.

13. Immunocompromising conditions

Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, influenza [inactivated influenza vaccine]) and live vaccines generally are avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at www.cdc.gov/vaccines/pubs/acip-list.htm.

APPENDIX D

Web Links of Interest