



Infectious Lung Diseases

Infectious diseases considered in this section are: **pneumonia** and **influenza**, **tuberculosis**, and **pertussis** (whooping cough). In the United States, **deaths** from infectious diseases **dropped considerably over the past century** as a result of improved hygiene and sanitation practices and improved antibiotic therapy. We need to keep close watch on these diseases because they **spread fast** and **large numbers of people** can be affected. This attention is particularly important because of emerging antibiotic resistant strains.

We also need to pay attention to the continuing **high death rates from infectious disease worldwide** (they account for over 13 million deaths and are the world's biggest killer of children and young adults). For example, in 1998, respiratory infections such as pneumonia accounted for over 3.5 million deaths worldwide, tuberculosis for almost 3.5 million, and pertussis for almost 400,000 (WHO, 1999). Collectively, these diseases accounted for 10% of the total deaths (54 million), with much of the burden being borne by middle and low-income countries. In Maine, we need to keep close watch on the worldwide picture because of the **risks associated with immigrant populations in Maine** and the **high rate of international travel**.

For questions on Lung Health Indicators...
Norman Anderson, Research Coordinator

American Lung Association of Maine
122 State St. Augusta, Maine 04330
Phone: (207) 622-6394 - Fax: (207) 626-2919
Email: nanderson@mainelung.org

Pneumonia and Influenza

Infection with the **influenza** (flu) virus **may be severe** and **occasionally fatal**. Typical influenza illness includes fever and respiratory symptoms, such as cough, sore throat, runny or stuffy nose, as well as headache, muscle aches, and often extreme fatigue. Although most people who get the flu recover completely within 1-2 weeks, some people may develop serious medical **complications such as pneumonia**. For this reason, an **annual flu shot** is recommended for those individuals as highest risk, especially the elderly and people with chronic health problems.

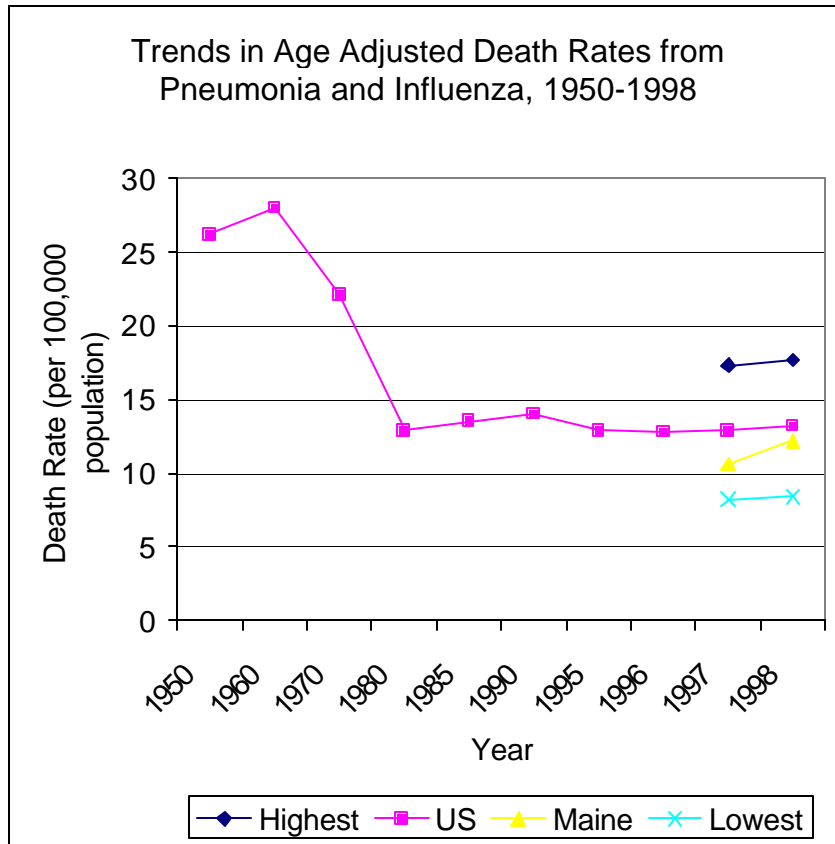
Pneumonia is a serious **infection or inflammation of the lung**. The air sacs in the lungs fill with pus and other liquid, preventing oxygen from reaching the blood. Because of this and the spreading infection through the body, pneumonia can cause death.

Pneumonia is **not a single disease**. It can have **over 30 different causes**. The five main causes of pneumonia are: bacteria, viruses, mycoplasmas, other infectious agents (such as fungi), and various chemicals. Half of all pneumonias are believed to be caused by viruses.

Bacterial pneumonia **can attack anyone** from infants through the very old. Alcoholics, the debilitated, post operative patients, people with respiratory diseases or viral infections, the elderly, and people who have weakened immune systems are at greatest risk. **Pneumococcal pneumonia** (*Streptococcus pneumoniae*) is the **most common bacterial pneumonia**. A **vaccine is available** for pneumococcal pneumonia. A one-time administration of the vaccine is generally recommended for individuals over 65 years old and other at high risk for infection. Vaccination is increasingly important for *Streptococcus pneumoniae* given the emergence of antibiotic resistant strains of this bacterium.

Until 1936, pneumonia was the leading cause of death in this country. Use of **antibiotics** has **lowered the death rates** considerably over the second half of the twentieth century. These diseases still remain a leading cause of death, particularly among the elderly. More detailed information is provided in Appendix AV.1.

US Trends in Age-Adjusted Death Rates from Pneumonia and influenza, 1950-1998

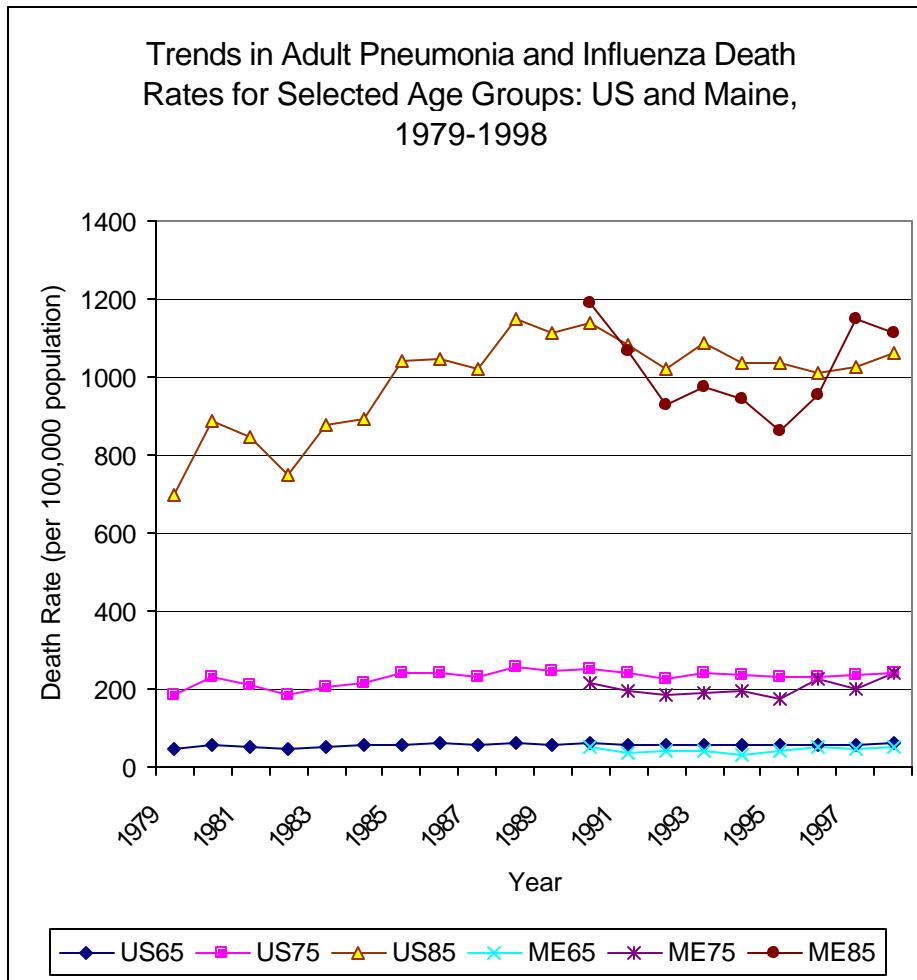


Source: NCHS, 2000a,b; NCHS 1999.
Rates are age adjusted to the 1940 US population.

Nationally, death rates from pneumonia and influenza have remained relatively constant since the 1980s (approximately 12-13 deaths per 100,000 population). Maine's death rate in 1997 was 10.6 deaths per 100,000 population, ranking the state 42nd in the country. In **1998, Maine's rate climbed slightly to 12.2 deaths per 100,000 population, ranking the state 29th in the nation.**

There is no Healthy People 2010 Objective for this indicator.

Trends in Adult Pneumonia and Influenza Death Rates for Selected Age Groups: US and Maine, 1979-1998

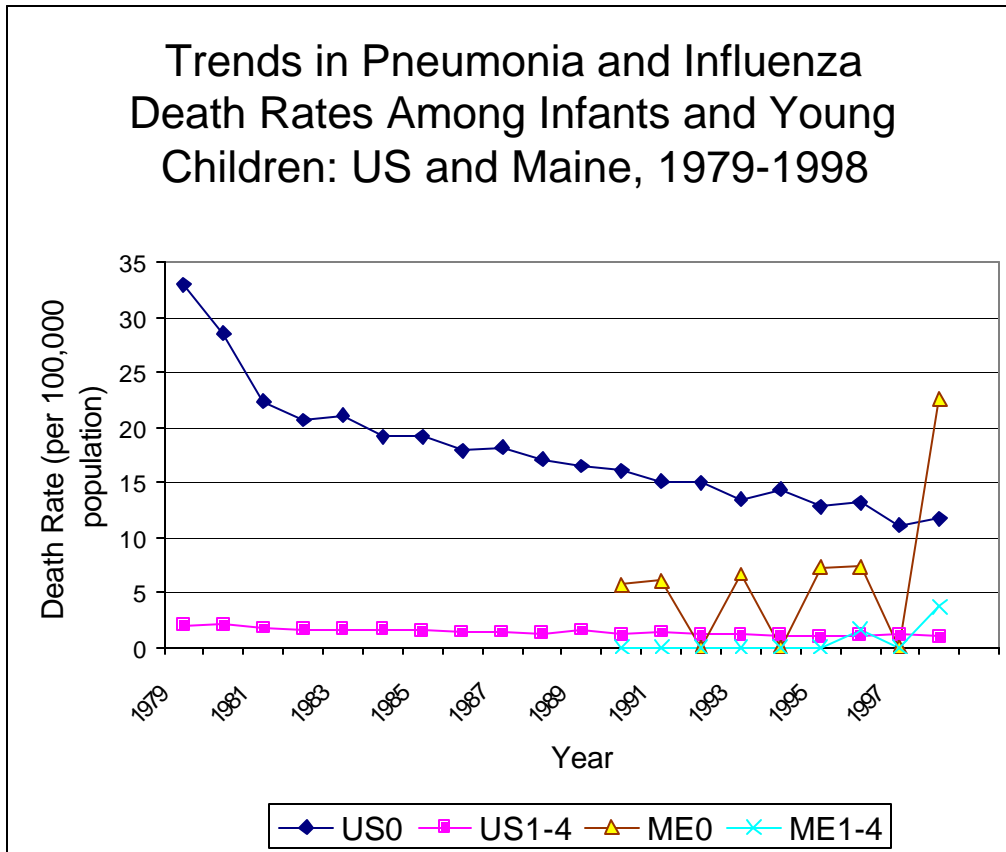


Sources: NCHS, 2000c; MboH, 2000

US65: US population 65-74 years old; US75: US population 75-84 years old; US85: US population 85 years and older; ME65: Maine population 65-74 years old; ME75: US population 75-84 years old; ME85: Maine population 85 years and older.

Over the past twenty years, age specific **death rates** for pneumonia and influenza have **increased in the older adult** populations (65+ years), and **decreased in the childhood** population (0-14 years), and have remained relatively constant in other population subgroups. The national data indicate a significant rise in the age specific pneumonia and influenza death rates among people 85 years and older. In general, the Maine estimates have been at or below the national levels, as would be expected from comparison with the age adjusted rates.

**Trends in Pneumonia and Influenza Death Rates
Among Infants and Young Children for Selected Age Groups:
US and Maine, 1979-1998**



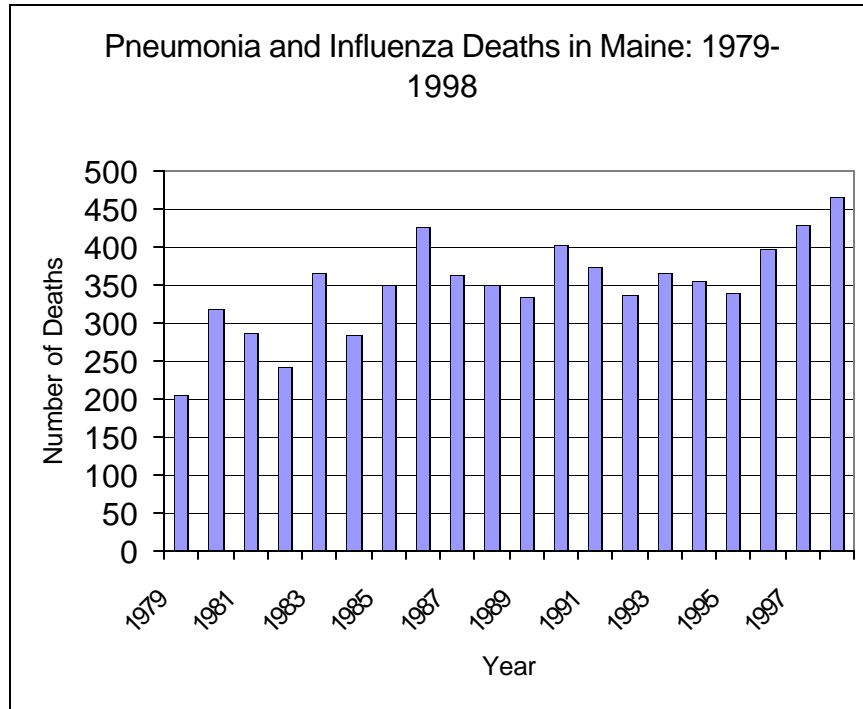
Source: NCHS, 2000c; MboH, 2000

US0: US population age 0-1 years old; US1-4: US population age 1-4 years old; ME0: Maine population age 0-1 years old; ME1-4: Maine population age 1-4 years old

Pneumonia often **affects children with low birth weight** or **weakened immune systems**. Worldwide, pneumonia kills more children than any other infectious disease. **Most of these deaths occur in developing countries**, and childhood deaths in developed countries are rare. **Maine's** pneumonia and influenza death **rate** among the pediatric population has generally been **below the national averages**. There was a spike in 1998, when three deaths were reported among infants 0-1 years old, a pattern characteristic of the infant pneumonia and influenza death rates in the 1980s (See Appendix AV.1)

There is no Healthy People 2010 Objective for this indicator.

Number of Pneumonia and Influenza Deaths in Maine: 1979-1998

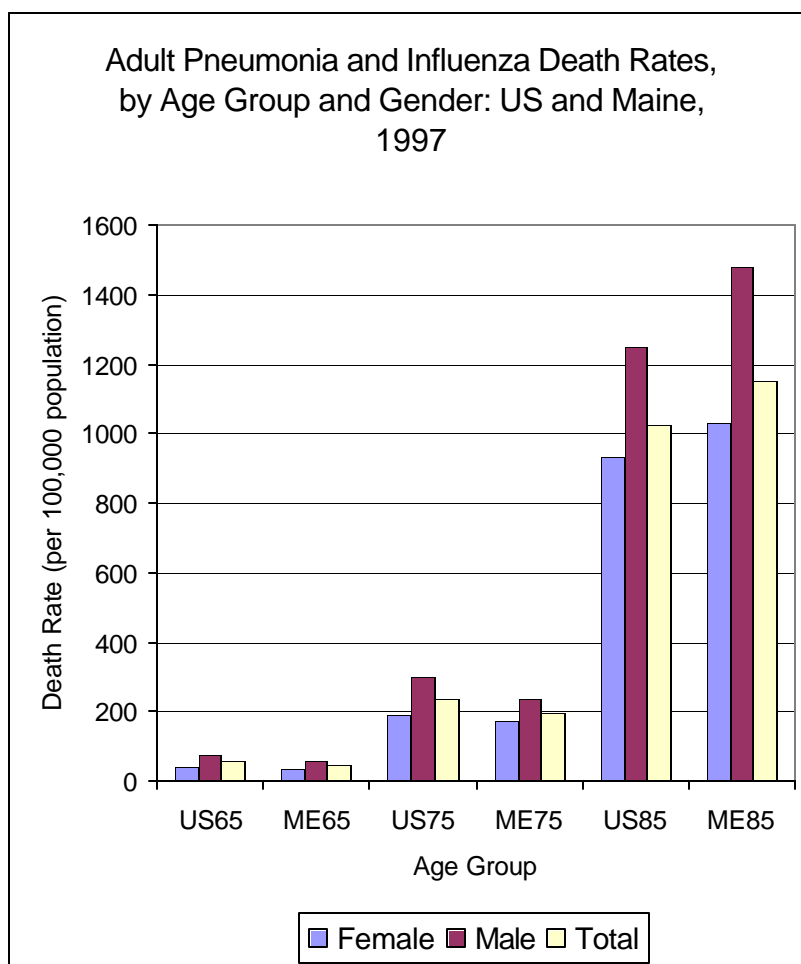


Source: MBoH, 2000

Over the past 20 years, the number of pneumonia and influenza **deaths** has **more than doubled**. The rise in the total number of deaths is due mostly to Maine's growing elderly population and to the increased age specific death rates in this population.

There is no Healthy People 2010 Objective for this indicator.

**Adult Pneumonia and Influenza Death Rates,
by Age Group and Gender: US and Maine, 1997**

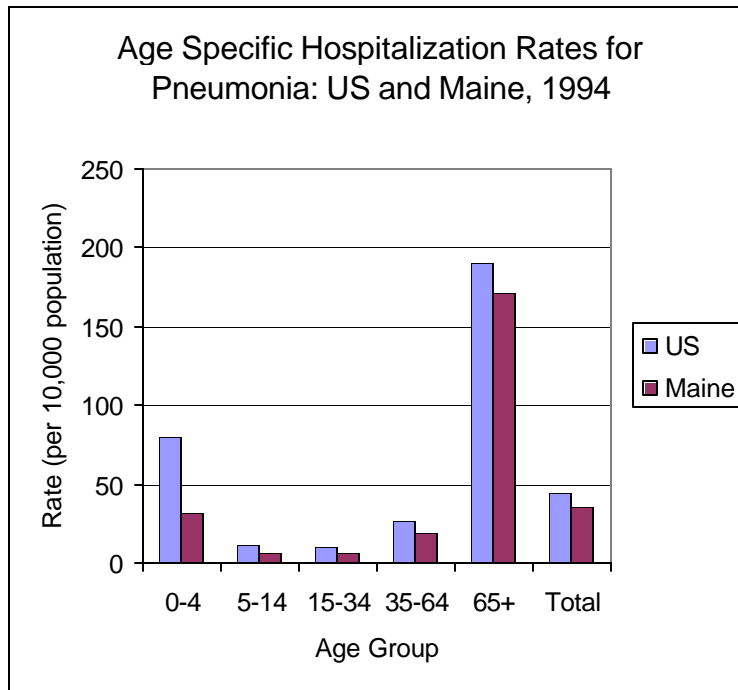


Sources: NCHS, 2000; MBoH, 2000

In 1997, Maine's death rate for pneumonia and influenza was lower than the national estimates, except for those 85 years of age and older. This difference may be particularly significant, given the aging of Maine's population and the high death among people in this age group.

There is no Healthy People 2010 Objective for this indicator.

Age Specific Hospitalization Rates for Pneumonia: US and Maine, 1994

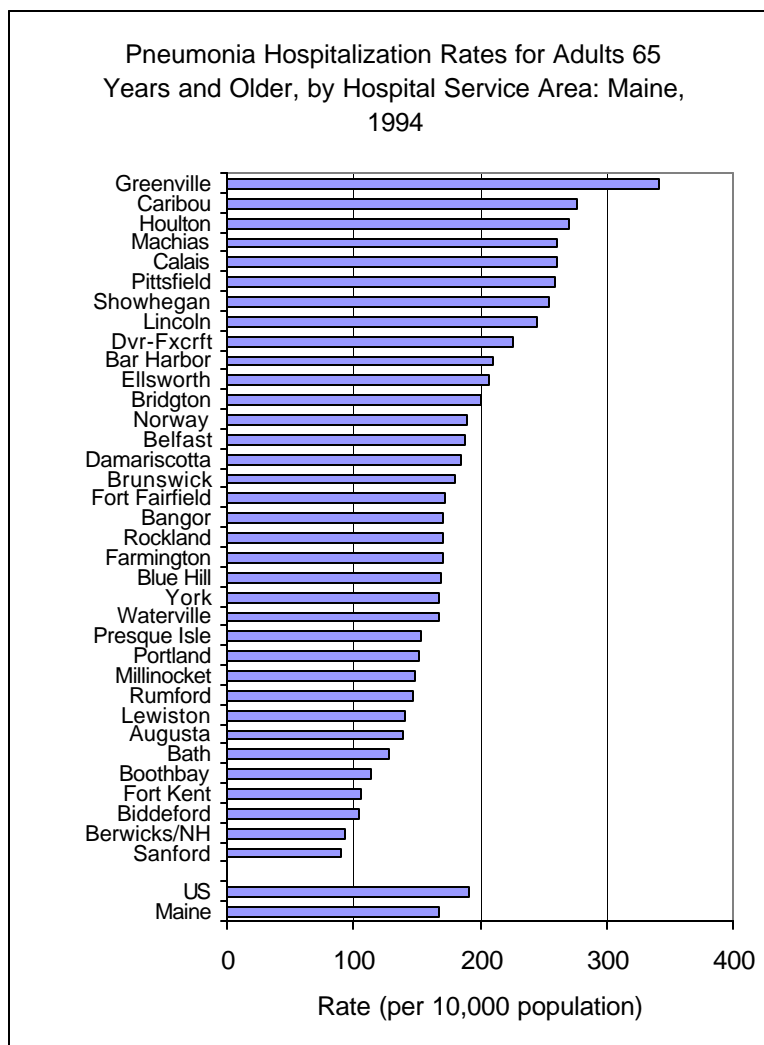


Source: PHRI/ALAM, 2000

The **pattern of hospitalization visits for pneumonia is similar to the pattern of death rates from pneumonia and influenza**. Rates increase dramatically above the age of 65, although there is a smaller peak among very young children. Maine rates are slightly lower than the national rates.

There is no Healthy People 2010 Objective for this indicator.

**Pneumonia Hospitalization Rates Among Adults 65 years and Older,
by Hospital Service Area: Maine, 1994**

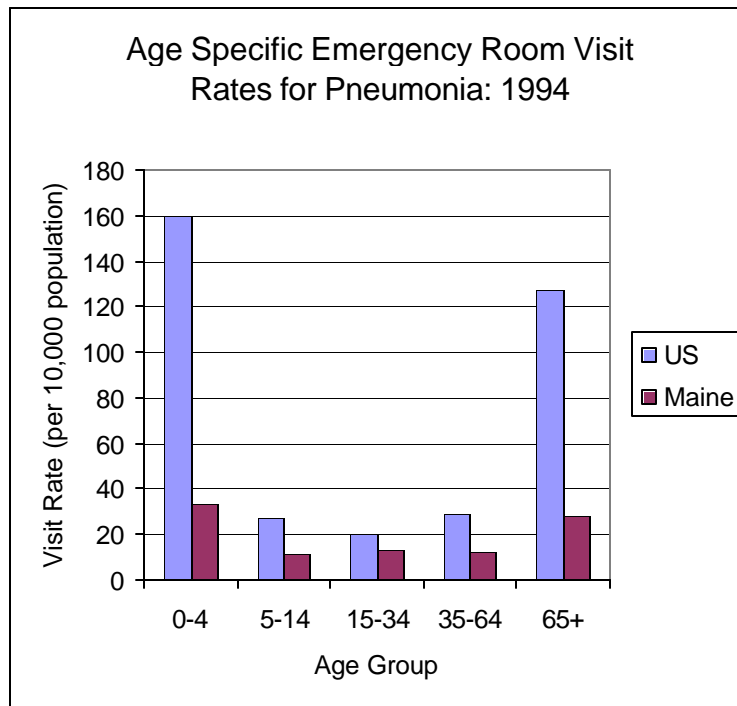


Source: PHRI/ALAM, 2000

There is considerable **geographic variation** in the hospitalization rates for pneumonia. In general, the highest rates are found in northern and eastern Maine.

There is no Healthy People 2010 objective for this indicator.

Age Specific Emergency Room Visit Rates for Pneumonia: US and Maine, 1994

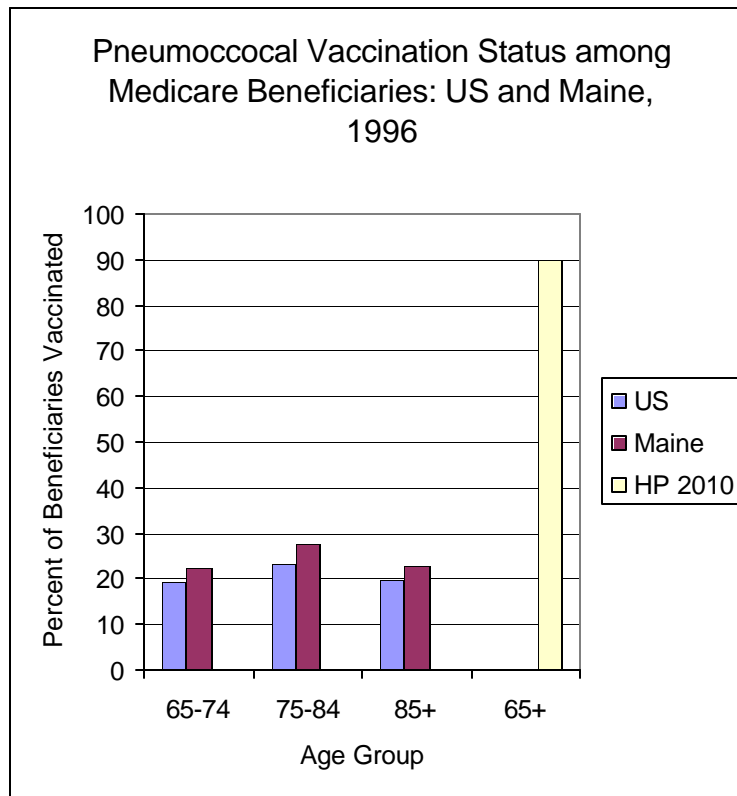


Source: PHRI/ALAM, 2000

Maine's emergency room visit rates for pneumonia are lower than the national rates, a pattern that is similar to the hospitalization rates. Of note is that the emergency room visit rates among the very young and the older populations are significantly lower than the national rates.

There is no Healthy People 2010 Objective for this indicator.

**Pneumococcal Vaccination Status among Medicare Beneficiaries:
US and Maine, 1996**

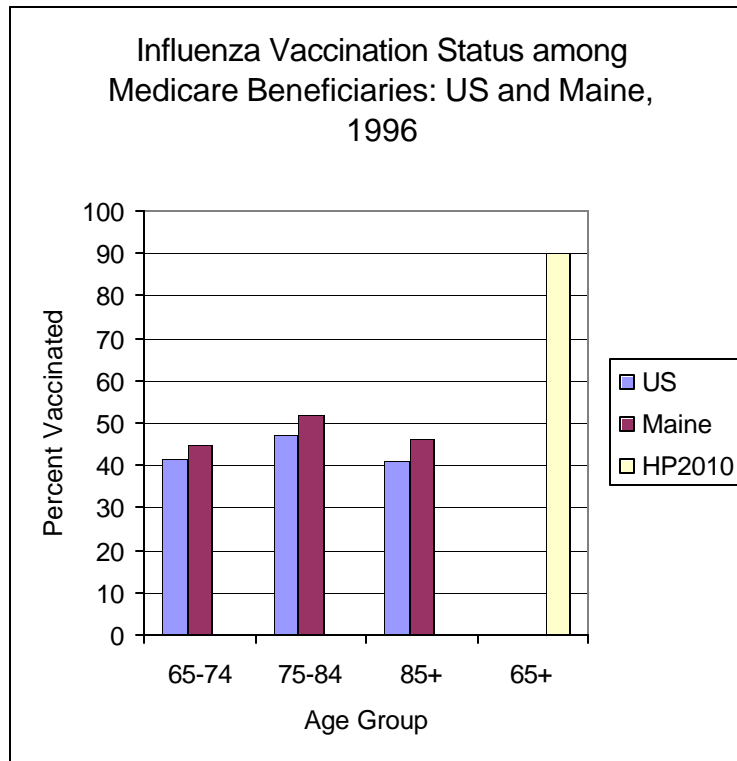


Source: NAIC, 1998

In 1996, Maine had **higher rates of pneumococcal vaccinations** among Medicare beneficiaries than the national average.

The Healthy Maine 2010 Objective for this indicator is 90% (all adults age 65 and older).

Influenza Vaccination Status among Medicare Beneficiaries: US and Maine, 1996



Source: NAIC, 1998

In 1996, Maine had higher rates of influenza vaccinations among Medicare beneficiaries than the national average.

The Healthy Maine 2010 Objective for this indicator is 90% (all adults age 65 and older).

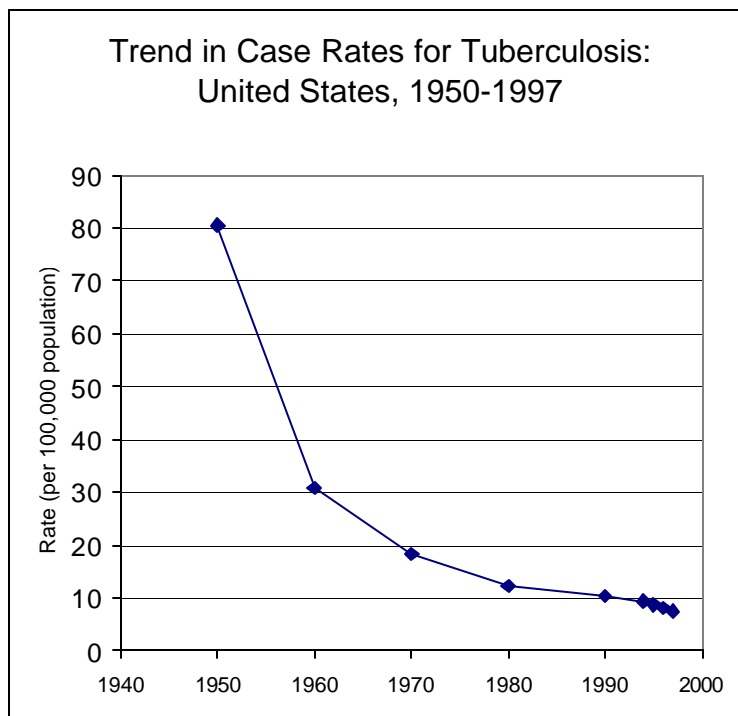
Notifiable Diseases: Tuberculosis

Individual cases of a **notifiable disease** must be reported to the Centers for Disease Control to prevent it from spreading. As of January 1, 1998, a total of **52 infectious diseases** were designated as notifiable at the national level.

Tuberculosis is a chronic communicable disease caused by a variety of tubercle bacilli. The **lungs are the primary target**, and infection occurs primarily by inhalation. Tuberculosis can be effectively **treated with bacteriostatic and bactericidal drugs**. Patients must take their all their medications as directed or the disease will re-emerge, sometimes in a stronger form. This is so important that patients must be directly observed taking their medications.

As with most infectious diseases **in the USA, the incidence and mortality from tuberculosis has dropped** dramatically in the past century. While Maine may be near the tuberculosis elimination rate, many of the **remaining cases are difficult to manage**. Since 1994, 28% of the cases were foreign born, 6% were HIV positive, and 6% were resistant to isoniazid (a drug to combat TB). Tuberculosis cases among the elderly are also a public health concern in the state. In spite of the currently low levels, full funding is necessary for **effective monitoring and treatment programs** is essential to **prevent re-emergence** of this disease.

Trend in Case Rates for Tuberculosis: United States, 1950-1997

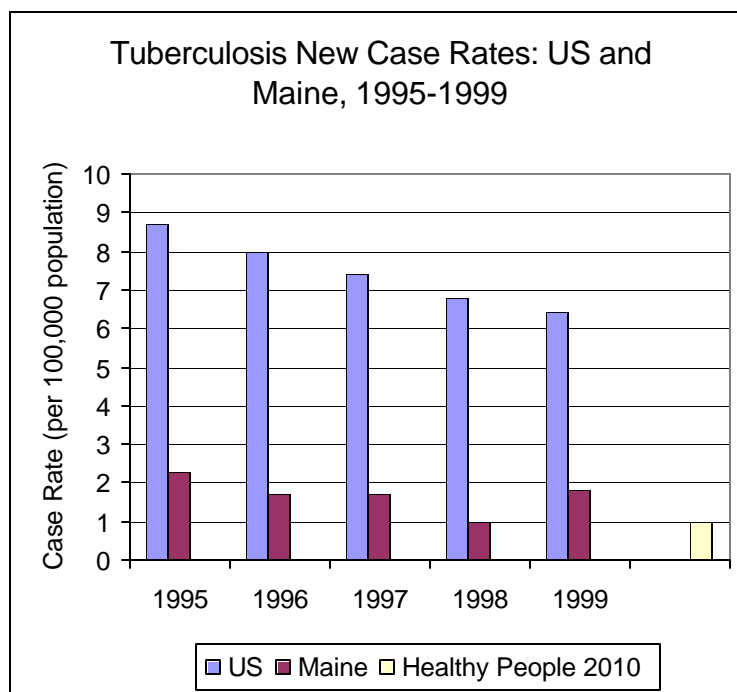


Source: NCHS, 2000a

Nationally, the case rates for tuberculosis fell dramatically between 1950 and 1980. Since that time, the incidence of tuberculosis has declined at a much slower rate.

The Healthy People 2010 Objective for tuberculosis is 1 case per 100,000 population.

Comparison of Tuberculosis Case Rates: US and Maine, 1995-1999

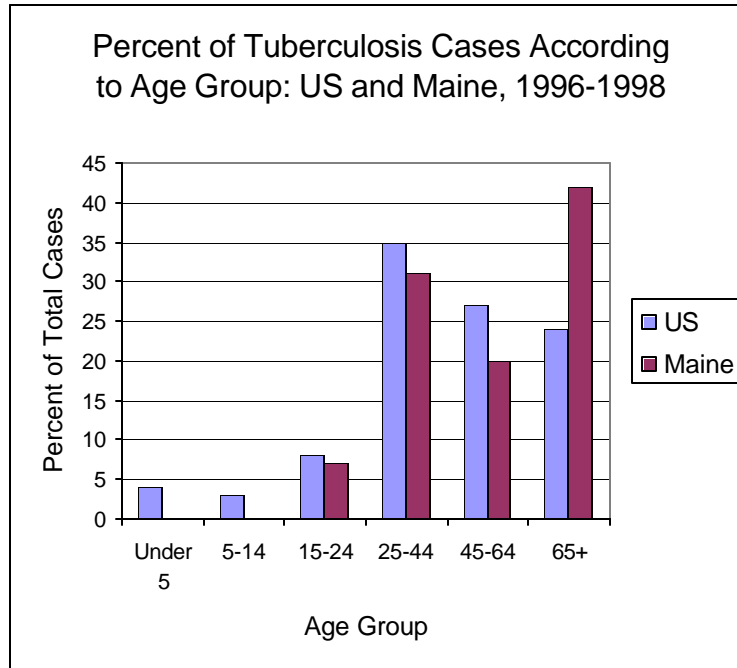


Source: CDC, 2000

Maine's tuberculosis case rate is well below the national average, and close to the Healthy People 2010 objective of 1 case per 100,000 population. Because tuberculosis is a highly contagious disease, these **rates can quickly change**. For example, in the late 1980s, a shipyard worker in Bath infected over 400 coworkers and neighbors with the TB bacteria.

The Healthy People 2010 Objective for this indicator is 1 case per 100,000 population.

**Percent of Tuberculosis Cases According to Age Group:
US and Maine, 1996-1998**

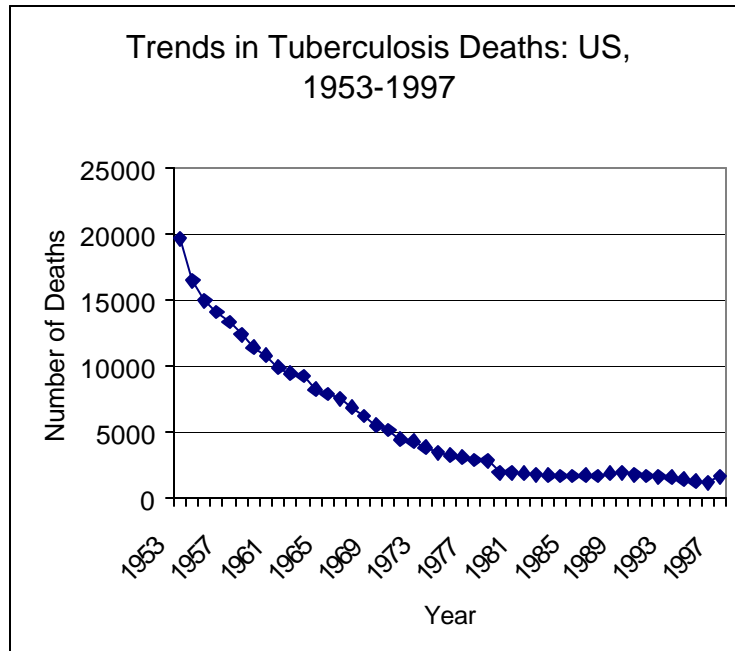


Source: CDC, 2000

Maine differs from the national profile of tuberculosis cases in that **Maine has not had any pediatric cases from 1996-1998** (although it did have pediatric cases in 1999), and the adult cases tend to be older than the cases in the nation as a whole.

There is no Healthy People 2010 Objective for this indicator.

Trend in Tuberculosis Deaths: U.S., 1953-1997



Source: CDC, 2000

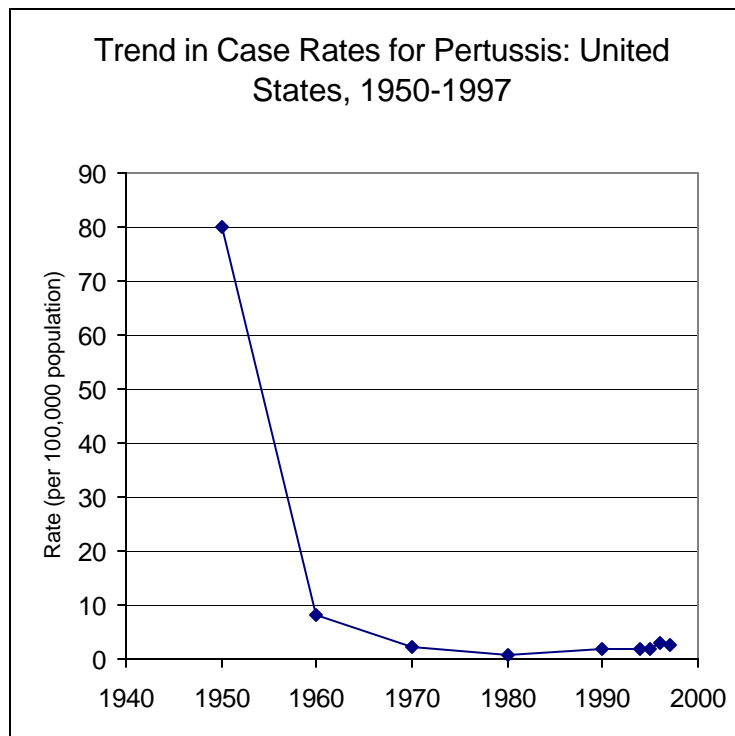
Tuberculosis deaths in the United States have decreased from almost 20,000 in 1953 to 1166 in 1997. The large decrease in 1979 occurred because of coding changes in tuberculosis deaths.

Notifiable Diseases: Pertussis (Whooping cough)

Individual cases of a **notifiable disease** must be reported (by the doctor) to the Centers for Disease Control to prevent it from spreading. As of January 1, 1998, a total of 52 infectious diseases were designated as notifiable at the national level.

Pertussis (whooping cough) is **caused by the microorganism *Bordetella pertussis***. The infecting organism passes from person to person in moist droplets. The death rate is highest in infancy. Infection can be **prevented through vaccination**.

Trend in Case Rates for Pertussis: United States, 1950-1997

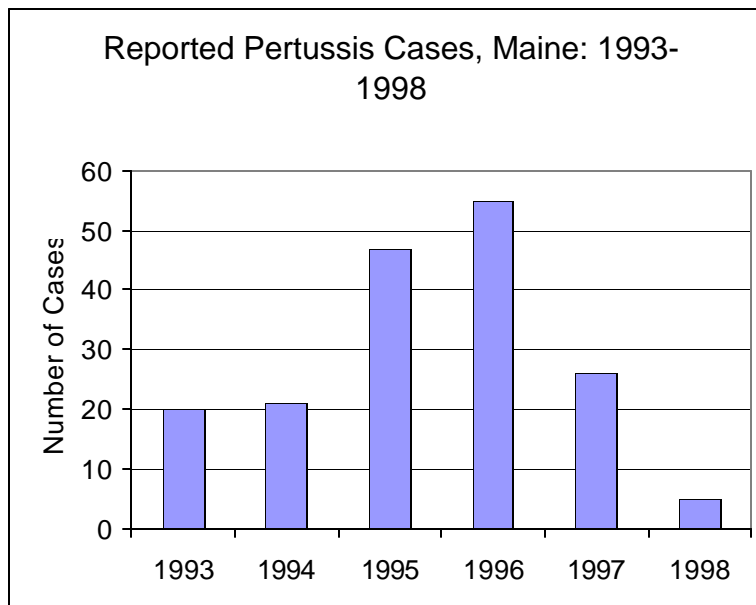
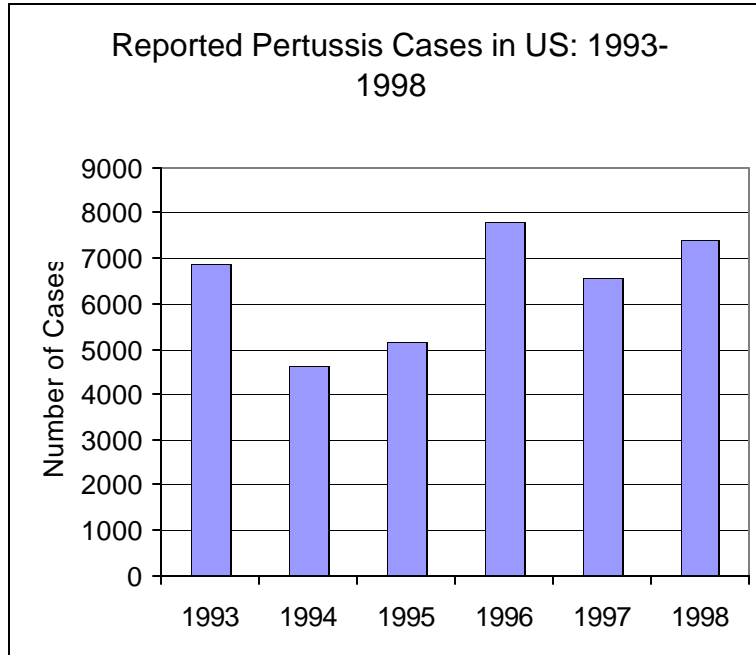


Nationally, the case rates for pertussis **fell dramatically between 1950 and 1980**.

Since that time, its **incidence has been slowly increasing**, from 0.76 deaths per 100,000 population in 1980 to about 2.5 deaths per 100,000 population in 1997.

There is no Healthy People 2010 objective for this indicator.

Number of Reported Pertussis Cases United States and Maine, 1993-1998



Sources: CDC, 1993, 1994, 1995, 1996, 1997, 1998, 1999.

There is **considerable variation in the absolute numbers** of pertussis cases from year to year, both nationally and in Maine.

There is no Healthy People 2010 objective for this indicator.