Epidemiology
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• The study of the frequency and distribution of disease and health-related factors in human populations

• Surveillance – collecting, analyzing, and reporting data on rates of occurrence, mortality, morbidity and transmission of infections

• Reportable, notifiable diseases must be reported to authorities
• Centers for Disease Control and Prevention (CDC) in Atlanta, GA – principal government agency responsible for keeping track of infectious diseases nationwide

• http://www.cdc.gov
Frequency of Cases

• **Prevalence** – total number of existing cases with respect to the entire population usually represented by a percentage of the population

• **Incidence** – measures the number of new cases over a certain time period, as compared with the general healthy population
Figure 13.30 (a)

Overall rates of chlamydia, gonorrhea and syphilis have risen for the second year in a row, raising concerns among public health officials. Rates per 100,000 people:

Chlamydia
- 1987: 50.8
- 2006: 347.8

Gonorrhea
- 1987: 325
- 2006: 120.9

Syphilis*
- 1987: 14.7
- 2006: 3.3

*Rate for primary and secondary syphilis, the earliest stages of the infection and the most infectious periods.
Source: Centers for Disease Control and Prevention.
Figure 13.30 (b)

(b) Chlamydia — Age- and sex-specific rates: United States, 2006
Figure 13.30 (c)

(c) West Nile virus — Activity by state, 2007
• **Mortality rate** – the total number of deaths in a population due to a certain disease

• **Morbidity rate** – number of people afflicted with a certain disease
• **Endemic** – disease that exhibits a relatively steady frequency over a long period of time in a particular geographic locale

• **Sporadic** – when occasional cases are reported at irregular intervals

• **Epidemic** – when prevalence of a disease is increasing beyond what is expected

• **Pandemic** – epidemic across continents
Figure 13.21 Patterns of infectious disease occurrence