

**TABLE 3.6 Important Rates in Epidemiology**

Examples Rate		Definition	Multiplier	(U.S. 2011) <sup>15,16</sup>
Crude birth rate	=	$\frac{\text{Number of live births}}{\text{Estimated midyear population}}$	× 1,000	12.7/1,000
Crude death rate	=	$\frac{\text{Number of deaths (all causes)}}{\text{Estimated midyear population}}$	× 100,000	806.6/100,000
Age-specific death rate	=	$\frac{\text{Number of deaths, 15-24 years}}{\text{Estimated midyear population, 15-24 years}}$	× 100,000	67.6/100,000
Infant mortality rate	=	$\frac{\text{Number of deaths under 1 year of age}}{\text{Number of live births}}$	× 1,000	6.05/100,000
Neonatal mortality rate	=	$\frac{\text{Number of deaths under 28 days of age}}{\text{Number of live births}}$	× 1,000	4.04/1,000
Cause-specific death rate	=	$\frac{\text{Number of deaths (diabetes mellitus)}}{\text{Estimated midyear population}}$	× 100,000	23.5/100,000
Age-specific, cause-specific death rate	=	$\frac{\text{Number of deaths, 15-24 years (motor vehicles)}}{\text{Estimated midyear population}}$	× 100,000	15.9/100,000

to diseases of the heart in 2011, and 2,512,873 total deaths reported that same year.<sup>15</sup> Thus, the PMR for diseases of the heart can be calculated as follows:  $596,339 \div 2,512,873 \times 100 = 24\%$ . In other words, in the United States, heart disease was responsible for nearly one in four deaths in 2011.

### Reporting of Births, Deaths, and Diseases

It is important to epidemiologists that births, deaths, and cases of diseases be recorded promptly and accurately. Physicians, clinics, and hospitals are required by law to report all births and deaths as well as all cases of certain **notifiable diseases** to their local health departments. Notifiable diseases are infectious diseases that can become epidemic and for which health officials maintain weekly records. The Centers for Disease Control and Prevention (CDC) issues a list of notifiable diseases for which it requests reports from each state health department. This list is revised periodically. In 2013, more than 70 diseases were designated as notifiable at the national level (see **Table 3.7**).<sup>17</sup> The reporting requirements vary for each condition listed. For example, some conditions require immediate/urgent reporting (e.g., anthrax), while others require only annual reporting (e.g., cancer). Further, the requirements also specify which types of cases must be reported for each disease. The CDC website has more information about the national reporting requirements for each condition.<sup>17</sup> Individual states may require the reporting of additional diseases that are of local public health concern. Local health departments are required by their respective state health departments to summarize all records of births (see **Figure 3.2**), deaths, and notifiable diseases and to report them. State health departments summarize these reports and relay them to the CDC through the **National Electronic Telecommunications System (NETS)**. The reporting scheme for notifiable disease is shown in **Figure 3.3**.

**Notifiable diseases** diseases for which health officials request or require reporting for public health reasons

**National Electronic Telecommunications System (NETS)** the electronic reporting system used by state health departments and the CDC.