**Table S1. The equations of epidemiologic indicators in the article**

|  |  |
| --- | --- |
| Number | Equation |
| **Equation 1**. | Point prevalence |
| **Equation 2.** | Period prevalence |
| **Equation 3**. | Cumulative incidence rate |
| **Equation 4.** | Person-time incidence rate |
| **Equation 5.** | (or  (or |
| **Equation 6.** | Secondary attack rate |
| **Equation 7.** | Crude death rate |
| **Equation 8.** |  |
| **Equation 9.** |  |
| **Equation 10.** |  |
| **Equation 11.** | Female age-specific death rate, age 30 to 44 |
| **Equation 12.** | Case-fatality rate ( |
| **Equation 13.** | Death-to-case ratio = |
| **Equation 14.** | Proportional mortality |
| **Equation 15.** | Or |
| **Equation 16.** |  |
| **Equation 17.** |  |
| **Equation 18.** |  |
| **Equation 19.** |  |
| **Equation 20.** |  |
| **Equation 21.** | C |
| **Equation 22.** |  |
| **Equation 23.** |  |
| **Equation 24.** |  |

**Table S2. The examples and questions of epidemiologic indicators explained in this article**

|  |  |
| --- | --- |
| Number | Question and answer |
| **Question 1**. | Forty new cases of disease A have occurred in a community of 1000 individuals who had never experienced the disease for the previous 10 years. What is the cumulative incidence rate of disease A in this community? |
| **Answer 1.** | The cumulative incidence rate of disease A = 40/1000 for 10 years. Alternatively, the cumulative incidence rate of disease A in this community is 4 cases per 1000 person-years. |
| **Question 2** | Figure 1 shows the number of people in a sample population at various time points and the number of cases who developed a disease for various durations. Calculate the prevalence on January 1, 1991 and on December 31, 1993. Express the rate per 10000 population. |
| **Answer 2.** | Point prevalence on January 1, 1991 = 2/1000 × 10000 = 20 patients per 10000 population Point prevalence on December 31, 1993 = 3/2000 × 10000 = 15 patients per 10000 population |
| **Question 3**. | Calculate the period prevalence from January 1, 1992 to December 31, 1992, using (a) the midpoint population of people alive on July 1, 1992 as the denominator, and (b) the average number of persons in the population from the beginning and the end of 1992 as the denominator |
| **Answer 3.** | (a) 6/1300 × 10000 = 46 cases per 10,000 population (b) 6/([1200+1500]/2) × 10000 = 44 cases per 10000 population |
| **Question 4**. | Calculate the period prevalence from January 1, 1991 to December 31, 1993, using the average number of persons in the population from the beginning to the end of the period. |
| **Answer 4.** | Period prevalence from 1991 to 1993 = 10 / ([1000+2000]/2) × 10000 = 67 patients per 10000 population |
| **Question 5**. | Calculate the cumulative incidence rate of disease A per 10000 population from January 1, 1991 to December 31, 1993, using the average number of persons in the population from the beginning to the end of the period. |
| **Answer 5.** | Numerator = 8 new cases (the ninth and tenth patients are excluded because they were diagnosed prior to the period of interest)  Denominator = (The average number of persons in the population from January 1, 1991 to December 31, 1993) – 2 (the ninth and tenth patients who became no longer susceptible to the disease)  Therefore, the cumulative incidence per 10000 population  =  = 8 / 1498 = 0.67 cases per 10000 in 3 years |
| **Question 6**. | Figure S2 shows a population in which cardiovascular disease occurred in some individuals. Calculate the person-time incidence rate of cardiovascular disease in this population. |
| **Answer 6.** | Numerator = 5 cases observed during 7 years of follow-up  Denominator = Sum of susceptible person-years of the healthy population observed = 40 person-years  Person-time incidence rate = 12.5 cases per 100 person-years (note that the person-time after onset of disease is not counted). |
| **Question 7**. | Calculate the cumulative incidence rate of cardiovascular disease. |
| **Answer 7.** | (During 7 years of observation)  Numerator = Number of new cases observed (5)  Denominator = Sum of susceptible persons (10)  Cumulative incidence rate = 50 cases per 100 population per 7 years |
| **Question 8**. | Calculate the average duration of cardiovascular disease in the population of figure S2. |
| **Answer 8.** | Prevalence = Incidence × (Average) Duration  Numerator = Total duration of illness (11 years)  Denominator = Total number of incident cases (5)  Therefore, the average duration is 2.2 years. |
| **Question 9**. | Table S3 shows a summary of data from the Middle East respiratory syndrome (MERS) outbreak in hospital A, where the index case was hospitalized in 2015. The index case was in ward B from May 15 to May 17. Subsequently, from May 15 to May 21, 13 of 70 inpatients in ward B were confirmed as MERS cases. In ward C, where patients who had not been diagnosed with MERS in ward B were transferred, 7 additional cases of MERS were confirmed from May 20 to May 29. Calculate the attack rate among nurses in ward B of hospital A when the index case was hospitalized in 2015. Sixteen nurses were on duty during the exposure period, and two confirmed cases were reported within 14 days (the maximum incubation period of MERS) after the index case left. |
| **Answer 9.** | Attack rate = (2 ⁄ 16) × 100% = 12.5% |
| **Question 10**. | Table S4 shows the general characteristics and numbers of deaths of MERS-confirmed patients in hospital A during the 2015 Middle East respiratory syndrome (MERS) outbreak in Korea. Calculate the case-fatality rate among all patients. |
| **Answer 10.** | 6/36 100 = 16.7% |
| **Question 11**. | In table S4, shen sex- and age-specific fatalities are compared, which characteristic affected fatality most strongly? |
| **Answer 11.** | Case-fatality rate among males: 15.0% (=3/20), case-fatality among females: 18.8% (=3/16); case-fatality rate in 20- to 49-year-olds: 0%, case-fatality rate in 50- to 69-year-olds: 23.1% (=3/13), case-fatality rate in 70- to 79-year-olds: 50.0% (=3/6). |
| **Question 12**. | The health bureau from a country reported a total of 15075 new patients with tuberculosis in 2002, and 802 tuberculosis deaths in the same period. Calculate the death-to-case ratio in 2002 and interpret it. |
| **Answer 12.** | %  5.3 deaths occurred per 100 new tuberculosis cases. This indicator is a ratio, not a proportion, since most mortality cases in 2002 were new tuberculosis cases prior to 2002. Most of the 802 deaths probably did not occur among the 15075 new patients. |

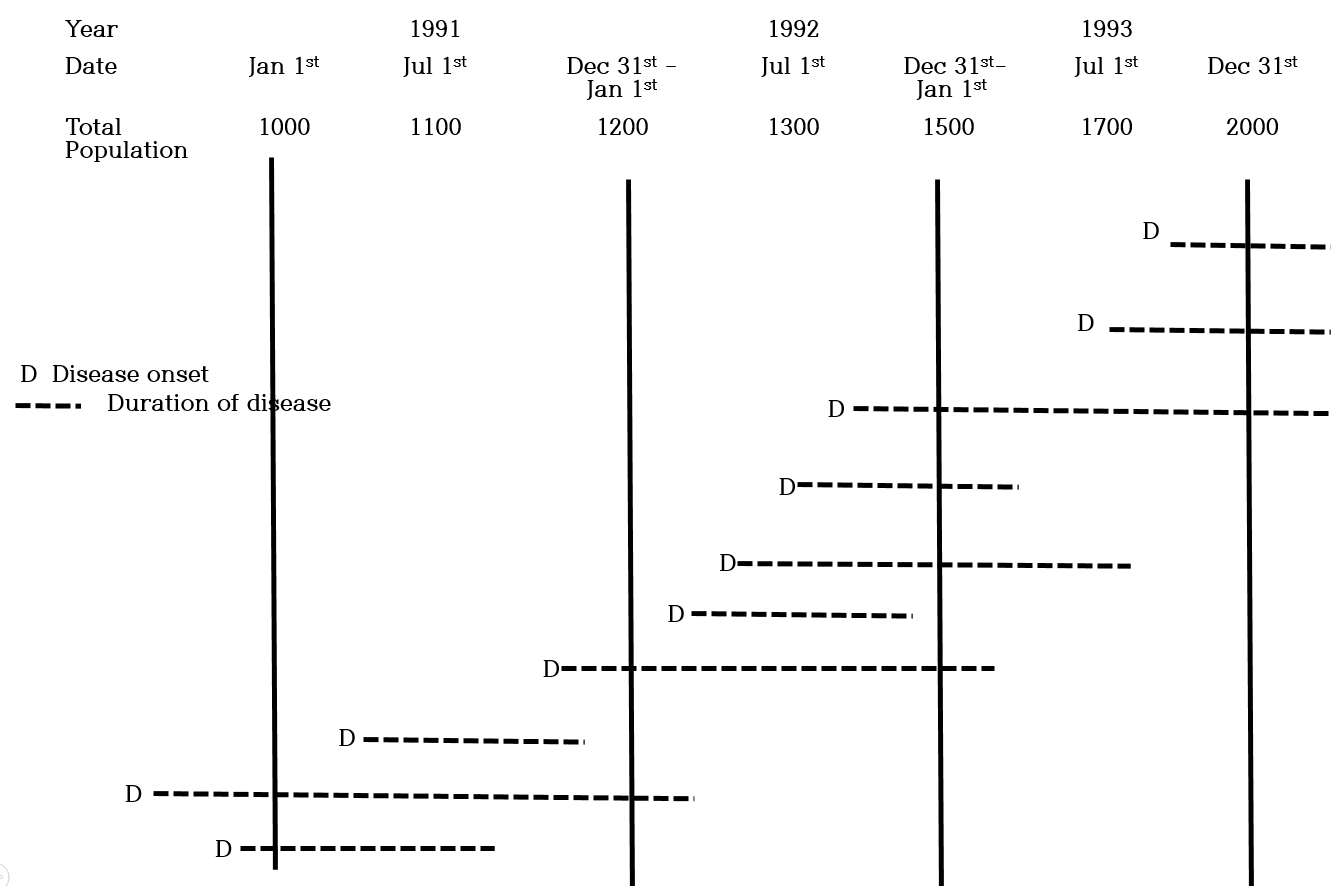


Figure S1. An example of several prevalent cases of disease A in a sample population between 1991 and 1993.

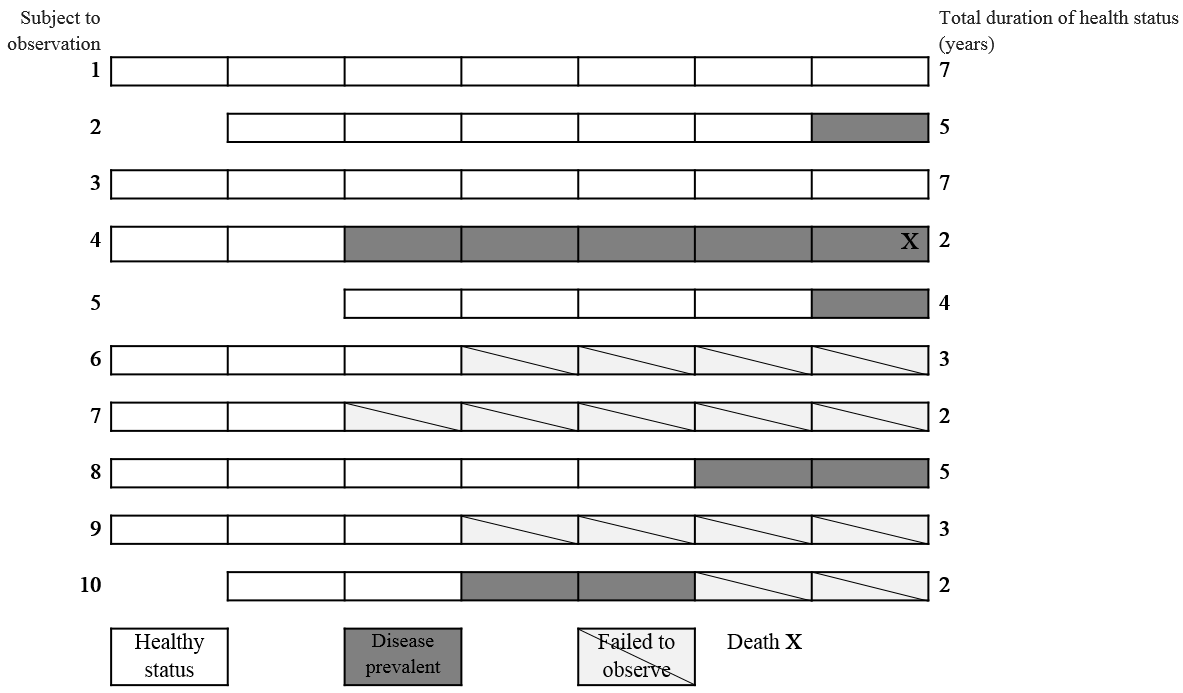


Figure S2. An example of the 10 new cases of coronary artery disease in a region.

**Table S3. Outbreak status of Middle East respiratory syndrome (MERS) at hospital A, Korea, 2015**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Inpatients who stayed in the same ward as MERS cases or a nearby ward | | Healthy persons who were in contact with MERS cases | | |
| Ward B  (May 15-21) | Ward C  (May 20-29) | Caregivers,  visitors | Nurses in ward B | Nurses in ward C |
| Total (n) | 70 | 148 | 277 | 16 | 20 |
| Confirmed cases | 13 | 7 | 3 | 2 | 1 |

Source from: Kim KM et al., 2015.

**Table S4. General characteristics and numbers of deaths of MERS-confirmed patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristics |  | n (%) |  | Deaths (n) |
| Total |  | 36 (100) |  | 6 |
| Sex | Male | 20 (55.5) |  | 3 |
| Female | 16 (44.4) |  | 3 |
| Age (y) | 20-49 | 17 (47.2) |  | 0 |
| 50-69 | 13 (36.1) |  | 3 |
| 70-79 | 6 (16.7) |  | 3 |
| Infection | Primary | 26 (72.2) |  | 4 |
| Secondary | 10 (27.8) |  | 2 |

Source from: Kim KM et al., 2015