Epidemiology: HLSC 2003

In-Class Group Assignment 2

Sept 17, 2013

Group ID: _____

Group Members (in attendance only):

1. _____ 2. _____ 3. _____ 4. _____

Read the news report on West Nile Virus (next page) and answer the following questions:
Note: Population of the United States for the mid-point of 2012 = 311,500,000

1. What would the **cause-specific mortality rate** for West Nile Virus be in 2012 in the US if no further cases were reported after Sept 11, 2012 (show calculation)?

   West Nile mortality rate = 118 / 311,500,000 = **3.8 deaths per 10,000,000 people**

2. What was the **case fatality ratio** for West Nile Virus in the US between Jan 1 – Sept 11, 2012 (show calculation)?

   West Nile case fatality ratio = 118 / 2636 = 0.0448 x 100 = **4.5%**

3. The mortality rate from a disease in city A is 75 per 100,000 in persons 65-69 years old. The mortality rate from the same disease in city B is 150 per 100,000 in persons 65-69 years old. The inference that the disease is 2 times more prevalent in persons 65-69 years old in city B is: (1 mark)

   A. Correct

   B. Incorrect, because of failure to distinguish between prevalence and mortality. (Correct answer)

   C. Incorrect, because of a failure to adjust for differences in age distributions.

   D. Incorrect, because of a failure to distinguish between incidence and prevalence.

   E. Incorrect, because of a proportion is used when a rate is required to make this inference.

September 12, 2012 1:35 PM PRINT TEXT

CDC: 2,636 cases of West Nile virus so far in record 2012

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By Michelle Castillo Topics News

(Credit: CBS News)

(CBS News) Reported cases of West Nile Virus and deaths caused by the disease continue to rise, the Centers for Disease Control and Prevention (CDC) said during a press conference on Tuesday.

Forty-eight states have reported cases of West Nile infection in people, birds and mosquitoes, with Alaska and Hawaii the only exceptions. As of Sept. 11, there have been 2,636 cases of West Nile virus disease in people this year, including 118 deaths. Of these, 1,405 (53 percent) were classified as neuroinvasive or brain-related which includes infections like meningitis or encephalitis, and 1,231 (47 percent) were classified as non-neuroinvasive disease, sometimes referred to as West Nile fever. It is the highest number reported through September since a 2003 outbreak.

CDC reports 40 percent increase in U.S. West Nile virus cases
What's making the 2012 West Nile virus outbreak the worst ever?
West Nile virus outbreak: How to protect yourself

Two-thirds of all the cases have been reported from six states - Texas, Louisiana, South Dakota, Mississippi, Michigan, and Oklahoma - with 40 percent of all cases coming from Texas. Previously, Dallas County officials declared a state of emergency, and the city has undergone several aerial sprayings of insecticide to control the mosquito population.

4. For a disease such as pancreatic cancer, which is highly fatal and of short duration (1 mark)

A. Incidence rates and mortality rates will be similar (correct answer)

B. Mortality rates will be much higher than incidence rates

C. Incidence rates will be much higher than mortality rates

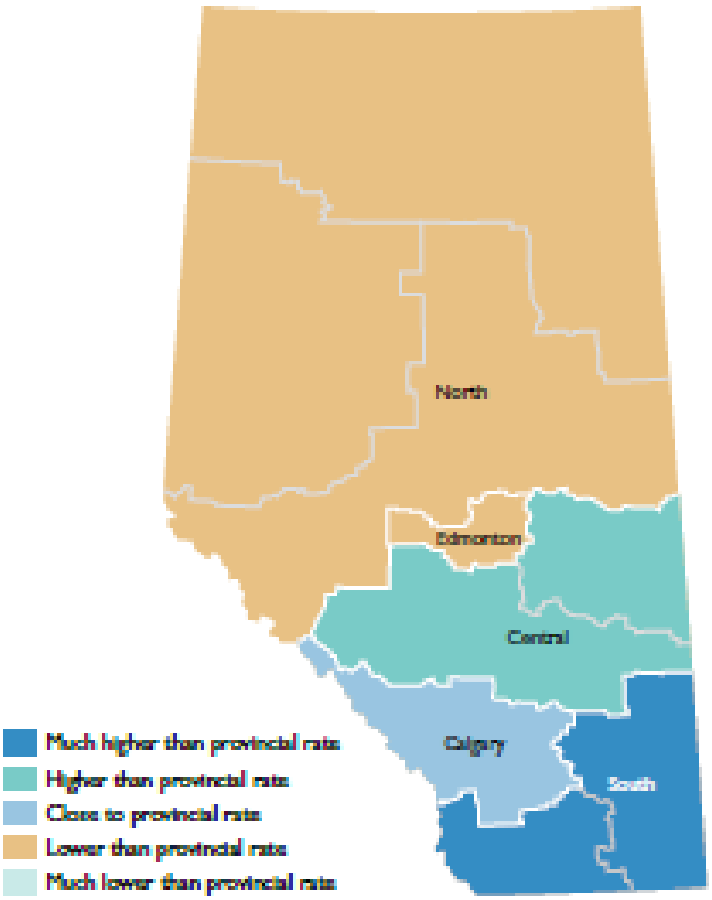
D. Incidence rates will be unrelated to mortality rates

E. None of the above.

Descriptive Epidemiology by Place

5. Using Figure 10.2 describe diabetes prevalence among Aboriginals living in Alberta by place. Could observed differences be due to differences in the average age of Aboriginal peoples living in different parts of the province? Why or why not?

Figure 10.2 **Age-Adjusted Status Aboriginal Diabetes Prevalence Rates for All Ages by Zone, 2007**



ANSWER:

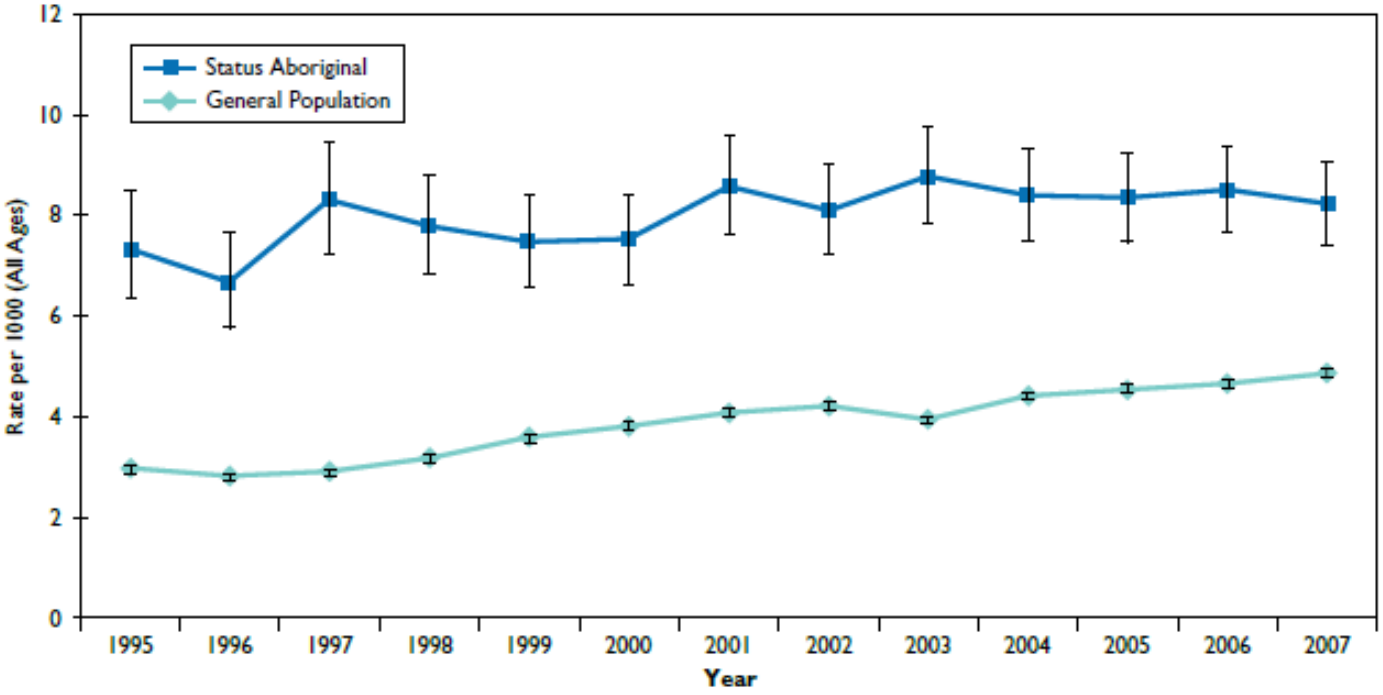
In 2007, the prevalence of diabetes within the Aboriginal population was much higher than the provincial average in southern Alberta, higher than the provincial average in central Alberta, close to the provincial average in the Calgary area, and lower than the provincial average in northern Alberta. These differences in diabetes prevalence by place cannot be explained by age given the data has been age-adjusted. Factors other than age are accounting for these differences and deserve further study.

***Tip**: For accuracy it is best to use the descriptions within the legend of a chart (if provided) to describe a disease by place.

Descriptive Epidemiology by Time

6. Describe differences in the pattern of diabetes incidence between Aboriginal and non-Aboriginal adults in Alberta between **2003 - 2007**. Would this change best be described as a cyclic fluctuation, a point epidemic, or a secular time trend?

Figure 10.4 **Age- and Sex-Adjusted Diabetes Incidence Rates, Among Status Aboriginal and General Populations, 1995-2007**



ANSWER: Between 2003-2007 there was a higher overall incidence of diabetes among Aboriginal adults as compared to non-Aboriginal adults in Alberta. The incidence of diabetes decreased slightly among Aboriginal adults during this time, and increased slightly among non-Aboriginal adults over the same time period. These changes are best described as secular time trends.

7. Pertussis (whooping cough) is responsible for an estimated 13 million DALYs each year throughout the world. Explain what this means (2 marks)

ANSWER: In one year pertussis is responsible for 13 million years of life and healthy life lost around the globe.