

# Epidemiology

## Lec:3 Cohort

# Studies

Epidemiology Lecture #3

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## 4. Chapter: Lec:3 Cohort Studies

### 1. Lec:3 Cohort Studies Questions

#### 4.1.1. To study the question of whether unemployment leads to a higher ris...

Author: Janet Forrester

To study the question of whether unemployment leads to a higher risk of cardiovascular disease, which study design would be better - a randomized controlled trial or a cohort study? What is your reasoning?

- It would not be feasible or ethical to randomize volunteers to a state of unemployment. Therefore, the only feasible/ethical study design would be a cohort study.

Check the answer of this question online at QuizOver.com:

Question: [To study the question of whether unemployment by Dr. Janet Forrester](#)

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#### 4.1.2. Low serum levels of cholesterol have been associated with depressio...

Author: Janet Forrester

Low serum levels of cholesterol have been associated with depression. (This is true! I did not make this up. It is not clear why, but I like to think that ice cream deprivation may be an explanation ?- :) - JEF) Based on this observation, investigators conducted a study to examine the association of serum cholesterol levels and suicide. They used a database from a health maintenance organization to identify persons who had normal cholesterol and persons who had high cholesterol levels identified by their physician at least 10 years ago. The investigators then linked this information to the National Death Index to identify persons who had later died by suicide. What type of study was this?

- This was a retrospective cohort study. It is a cohort study because the groups were assembled based on their exposure status. It is retrospective because the suicides had already occurred when the investigators began their study. (By the way, they did find an association between low cholesterol and suicide. Perhaps we need to start thinking of ice cream as medicine. :)

Check the answer of this question online at QuizOver.com:

Question: [Low serum levels of cholesterol have been by Dr. Janet Forrester](#)

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#### 4.1.3. Cohort studies do not involve randomization. What advantage does ra...

Author: Janet Forrester

Cohort studies do not involve randomization. What advantage does randomization confer to a randomized controlled trial that does not exist in cohort studies?

- We learned in the session on randomized controlled trials that one of the important advantages of randomization is that it results in two groups that have comparable risk profiles - especially if the trial is a large one. Since cohort studies do not involve randomization, the exposed and unexposed groups may have very different risk profiles. This creates a problem called confounding which we will discuss in more detail in a later session.

Check the answer of this question online at QuizOver.com:

Question: [Cohort studies do not involve randomization by Dr. Janet Forrester](#)

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#### 4.1.4. Calculate and interpret the odds ratio describing the association b...

Author: Janet Forrester

The following information is for Questions 4?-5

The 1 year risk (i.e. annual incidence) of lung cancer in smokers is 140 per 100,000. The 1 year risk of lung cancer in non?-smokers of the general population is 10 per 100,000.

Calculate and interpret the odds ratio describing the association between smoking and lung cancer.

- Putting the numbers in a 2x2 table format is easiest to calculate an OR  
A=140 B=99,860 OR=AD/BC or  $140 \times 99,990 / 10 \times 99,860 = 14$   
C=10 D=99,990  
Interpretation: over 1 year, smokers are 14 times as likely to develop lung cancer as non?-smokers  
Note: The OR is interpreted in exactly the same way as a RR.

Check the answer of this question online at QuizOver.com:

Question: [Calculate and interpret the odds ratio describing following information](#)

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Interactive Question:

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#### 4.1.5. Calculate the RR of lung cancer in smokers vs. non?-smokers.

Author: Janet Forrester

The following information is for Questions 4?-5

The 1 year risk (i.e. annual incidence) of lung cancer in smokers is 140 per 100,000. The 1 year risk of lung cancer in non?-smokers of the general population is 10 per 100,000.

Calculate the RR of lung cancer in smokers vs. non?-smokers.

- $RR = 140/100,000$  divided by  $10/100,000 = 14$

Note: When the disease is rare (as is lung cancer) the OR approximates the RR.

Check the answer of this question online at QuizOver.com:

Question: [Calculate the RR of lung cancer in smokers following information](#)

Flashcards:

<http://www.quizover.com/flashcards/calculate-the-rr-of-lung-cancer-in-smokers-following-information?pdf=1505>

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#### 4.1.6. What is the estimated annual incidence rate of lung cancer in non?-...

Author: Janet Forrester

The following information is for Questions 6?-7

The 1 year risk (i.e. annual incidence) of lung cancer in smokers is 140 per 100,000.

The 1 year risk of lung cancer in non?-smokers of the general population is 10 per 100,000.

Smoking in bars was banned, in part, because of epidemiologic evidence of ill?-effects of second hand smoke on food service workers. non?-smoking food service workers have a 50% higher risk of lung cancer than non?-smokers of the general population.

What is the estimated annual incidence rate of lung cancer in non?-smoking food service workers?

- If the incidence rate of lung cancer in non?-smokers is 10 per 100,000 at risk per year, and food service workers have a 50% higher rate than this, then food service workers have an annual rate of lung cancer of 15 per 100,000 at risk.

Check the answer of this question online at QuizOver.com:

Question: [What is the estimated annual incidence rate following information](#)

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#### 4.1.7. Calculate and interpret the annual risk of lung cancer attributable...

Author: Janet Forrester

The following information is for Questions 6?-7

The 1 year risk (i.e. annual incidence) of lung cancer in smokers is 140 per 100,000.

The 1 year risk of lung cancer in non?-smokers of the general population is 10 per 100,000.

Smoking in bars was banned, in part, because of epidemiologic evidence of ill?-effects of second hand smoke on food service workers. non?-smoking food service workers have a 50% higher risk of lung cancer than non?-smokers of the general population.

Calculate and interpret the annual risk of lung cancer attributable to second hand smoke exposure in food service workers.

- The attributable risk is the risk difference calculated as  $15/100,000 - 10/100,000 = 5$  per 100,000 at risk per year. In this example, you should think of the rate of lung cancer in non?-smokers of the general population as being the ?background rate?h or lung cancer due to other causes, such a radon exposure.

Interpretation of the attributable risk: Five cases of lung cancer per 100,000 food service workers exposed to second hand smoke could be avoided by banning smoking in bars and restaurants.

Check the answer of this question online at QuizOver.com:

Question: [Calculate and interpret the annual risk following information is](#)

Flashcards:

<http://www.quizover.com/flashcards/calculate-and-interpret-the-annual-risk-following-information-is?pdf=1505>

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4.1.8. Consider the following article.

Meat Intake and Mortality

A Prospec...

Author: Janet Forrester

Consider the following article.

Meat Intake and Mortality

A Prospective Study of Over Half a Million People

Sinha et al. Arch Intern Med. 2009;169(6):562?-571

Background:

High intakes of red or processed meat may increase the risk of mortality.

Our objective was to determine the relations of red, white, and processed meat intakes to risk for total and causespecific mortality.

Methods:

The study population included the National Institutes of Health.AARP (formerly known as

the American Association of Retired Persons) Diet and Health Study cohort of half a million people

aged 50 to 71 years at baseline. Meat intake was estimated from a food frequency questionnaire administered at baseline.

Conclusion:

Red and processed meat intakes were associated with modest increases in total mortality, cancer mortality, and cardiovascular disease mortality.

What study design was most likely used? Explain your reasoning.

- The study was most likely a prospective cohort study. The title states the study was prospective. Meat consumption was measured as it occurred naturally in the study volunteers. No intervention was mentioned.

Check the answer of this question online at QuizOver.com:

Question: [Consider the following article. Meat Intake by Dr. Janet Forrester](#)

Flashcards:

<http://www.quizover.com/flashcards/consider-the-following-article-meat-intake-by-dr-janet-forrester?pdf=1505>

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