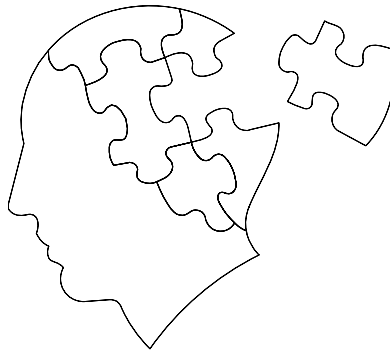


Essential Question 4



Concept Connections

Part 1

Detectives in the Classroom - Investigation 4-5: Concept Connections

Investigation 4-5: Concept Connections is divided into two parts and will take two class periods to complete.

In Part 1, students will identify important concepts that are needed to answer the fourth Essential Question: “What should individuals and societies do when preventable causes of disease are found?” Each Epi Team then creates a **Concept Map** that depicts and explains how the concepts connect to each other.

In Part 2, the Epi Teams will present their **Concept Maps** to the class.

At the conclusion of this investigation, students should have developed the fourth Enduring Understanding of *Detectives in the Classroom*: “When a causal association has been identified, decisions about possible disease prevention strategies are based on more than the scientific evidence. Given competing values, social, economic, and political factors must also be considered.”

Next Slide

Essential Question 4

Risk Management Strategies

Acceptable Risk Considerations

**What should individuals and society do
when preventable causes of disease
are found?**

**Acceptable
Risk**

**Risk
Perception**

Detectives in the Classroom - Investigation 4-5: Concept Connections

During the previous four investigations, students learned how a disease detective tries to answer the fourth Essential Question: “What should individuals and society do when preventable causes of disease are found?”

Briefly review each of the previous investigations in Module 4.

In **Investigation 4-1: Risk Perception**, students discovered the difference between real and perceived risk by putting in rank order the 15 leading injury-related reasons why girls and boys, aged 10 to 14, visited emergency rooms.

In **Investigation 4-2: Acceptable Risk**, students became familiar with the concept of “acceptability of risk.”

In **Investigation 4-3: Acceptable Risk Considerations**, students compared and contrasted acceptable risk considerations with those that have been suggested by others.

And in **Investigation 4-4: Risk Management Strategies**, students developed personal and societal risk management strategies to reduce the level of risk posed by carrying heavy backpacks, critiqued their strategies in terms of their considerations for judging the acceptability of a risk, and proposed their strategy to appropriate stakeholders.

Next Slide

Investigation 4-5 Worksheet

Detectives in the Classroom Name: _____

Investigation 4-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 4 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Descriptive Epidemiology
 - Epidemiology
 - Possible Explanations for an Association
 - Hypotheses
 - Prevent Disease
 - Relative Risk
 - Risk
 - Risk Management Strategy
 - Perception of Risk
 - Stakeholders
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Give each student an **Investigation 4-5: Epi Log Worksheet**.

Next Slide

Epi Teams



Detectives in the Classroom - Investigation 4-5: Concept Connections

Divide the class into Epi Teams of four or five students per team.

Next Slide

Essential Question 4

1

What should individuals and society do when preventable causes of disease are found?

Detectives in the Classroom Name: _____
Investigation 4-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 4 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Descriptive Epidemiology
 - Epidemiology
 - Possible Explanations for an Association
 - Hypotheses
 - Prevent Disease
 - Relative Risk
 - Risk
 - Risk Management Strategy
 - Perception of Risk
 - Stakeholders
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

Write Essential Question 4 at the top of the paper.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Give each Epi Team a large (about 3 ft x 4 ft) piece of paper.

Review the steps to create a **Concept Map**.

Step 1: Write Essential Question 4 at the top of the paper.

Tell students to leave a 4- to 6-inch space at the bottom of their paper.

Next Slide

Connections

2

Detectives in the Classroom Name: _____
Investigation 4-5: Epi Log Worksheet Date: ____/____/____

- Write Essential Question 4 at the top of the paper.
- Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Descriptive Epidemiology
 - Epidemiology
 - Possible Explanations for an Association
 - Hypotheses
 - Prevent Disease
 - Relative Risk
 - Risk
 - Risk Management Strategy
 - Perception of Risk
 - Stakeholders
- Arrange words and phrases to show connections.
- Draw arrows, circles, and boxes to further show connections.
- Describe the connections on the arrows, circles, and boxes.

Write the following words and phrases on index cards:

Detectives in the Classroom - Investigation 4-5: Concept Connections

Step 2: Write the words and phrases on index cards.

Next Slide

Connections

3

What should individuals and society do when preventable causes of disease are found?

Detectives in the Classroom Name: _____
Investigation 4-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 4 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Descriptive Epidemiology
 - Epidemiology
 - Possible Explanations for an Association
 - Hypotheses
 - Prevent Disease
 - Relative Risk
 - Risk
 - Risk Management Strategy
 - Perception of Risk
 - Stakeholders
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

XXXXXX

XXXXXX

XXXXXX

Arrange the words and phrases to show connections.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Step 3: Arrange the words and phrases to show connections.

Next Slide

Connections

4

What should individuals and society do when preventable causes of disease are found?

Detectors in the Classroom Name: _____
Investigation 4-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 4 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Descriptive Epidemiology
 - Epidemiology
 - Possible Explanations for an Association
 - Hypotheses
 - Prevent Disease
 - Relative Risk
 - Risk
 - Risk Management Strategy
 - Perception of Risk
 - Stakeholders
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

XXXXXX
XXXXXX
XXXXXX
Space

Draw arrows, circles, and boxes to further show connections.

Detectors in the Classroom - Investigation 4-5: Concept Connections

Step 4: Draw arrows, circles, and boxes to further show connections.

Next Slide

Investigation 4-5 Worksheet

Detectives in the Classroom Name: _____

Investigation 4-5: Epi Log Worksheet Date: ____/____/____

1. Write Essential Question 4 at the top of the paper.
2. Write the following words and phrases on index cards:
 - Acceptability of Risk
 - Analytical Epidemiology
 - Association
 - Descriptive Epidemiology
 - Epidemiology
 - Possible Explanations for an Association
 - Hypotheses
 - Prevent Disease
 - Relative Risk
 - Risk
 - Risk Management Strategy
 - Perception of Risk
 - Stakeholders
3. Arrange words and phrases to show connections.
4. Draw arrows, circles, and boxes to further show connections.
5. Describe the connections on the arrows, circles, and boxes.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Ask students to complete Steps 1 through 5 on their **Investigation 4-5: Epi Log Worksheet**.

☀ Teacher Alert: Listen to each Epi Team's conversation. Observe their work. Identify misconceptions. Conference as needed.

Next Slide

Concept Connections

Epi Assignment

Complete Concept Map.

Each Epi Team prepares a 5 minute presentation that:

Describes how the concepts depicted in their Concept Maps connect to each other.

Meets the **Presentation Rubric** criteria.

Due: Next Class

Detectives in the Classroom - Investigation 4-5: Concept Connections

With 5 minutes of class remaining, tell students that their Epi Assignment for next class is the following:

1. To complete their **Concept Maps**.
2. To prepare a 5-minute presentation that
 - describes how the concepts depicted in their **Concept Maps** connect to each other,
 - meets the **Presentation Rubric** criteria.

Next Slide

Presentation Rubric			
<u>Criteria</u>	<u>Got It</u>	<u>Getting It</u>	<u>Will Get It Soon</u>
<u>Participation</u>	All Epi Team members participate	Most Epi Team members participate	Some Epi Team members participate
<u>Use of Epi Talk</u>	All are appropriate and accurate	Most are appropriate and accurate	Some are appropriate and accurate
<u>Arrangement of Cards</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Arrows, Circles, and Boxes</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Labels</u>	Clearly describe all concept connections	Clearly describe most concept connections	Clearly describe some concept connections

Detectives in the Classroom - Investigation 4-5: Concept Connections

Review the **Presentation Rubric** to be used when evaluating the presentation.

- Participation: All Epi Team members participate.
- Use of **Epi Talk**: All are appropriate and accurate.
- Arrangement of Cards: Clearly depict all concept connections.
- Arrows, Circles, and Boxes: Clearly depict all concept connections.
- Labels: Clearly describe all concept connections.

Give each student a **Presentation Rubric**.

Allow Epi Teams a few minutes to assign presentation responsibilities.

Next Slide

To Understand

To be able to **explain**, interpret, and apply something, while showing insight from perspective, empathy, and self-knowledge.



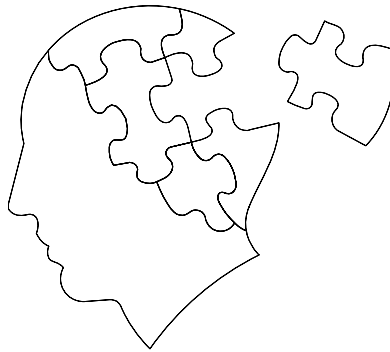
Detectives in the Classroom - Investigation 4-5: Concept Connections

Remind students that they demonstrated their ability to give sophisticated explanations of possible disease prevention strategies when they showed how the different concepts connected to each other to answer the fourth Essential Question: “What should individuals and society do when preventable causes of disease are found?”

This concludes Part 1 of **Investigation 4-5: Concept Connections** and students can now put away their **Epi Logs**.

Next Slide

Essential Question 4



Concept Connections

Part 2

Detectives in the Classroom - Investigation 4-5: Concept Connections

Remind students that in Part 1 of **Investigation 4-5: Concept Connections**, they identified the important concepts that are needed to answer the fourth Essential Question—“What should individuals and society do when preventable causes of disease are found?”—and created a **Concept Map** that depicted and explained how the concepts connect to each other.

Now, in Part 2, the Epi Teams will present their **Concept Maps** to the class.

At the conclusion of this investigation, students will have developed the fourth Enduring Understanding of *Detectives in the Classroom*: “When a causal association has been identified, decisions about disease prevention strategies are based on more than the scientific evidence. Given competing values, social, economic, and political factors must also be considered.”

Next Slide

Presentation Rubric			
<u>Criteria</u>	<u>Got It</u>	<u>Getting It</u>	<u>Will Get It Soon</u>
<u>Participation</u>	All Epi Team members participate	Most Epi Team members participate	Some Epi Team members participate
<u>Use of Epi Talk</u>	All are appropriate and accurate	Most are appropriate and accurate	Some are appropriate and accurate
<u>Arrangement of Cards</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Arrows, Circles, and Boxes</u>	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
<u>Labels</u>	Clearly describe all concept connections	Clearly describe most concept connections	Clearly describe some concept connections

Detectives in the Classroom - Investigation 4-5: Concept Connections

Tell the Epi Teams that their presentation should meet the **Presentation Rubric** criteria. Review the **Presentation Rubric** to be used when evaluating the presentation:

- Participation: All Epi Team members participate.
- Use of **Epi Talk**: All are appropriate and accurate.
- Arrangement of Cards: Clearly depict all concept connections.
- Arrows, Circles, and Boxes: Clearly depict all concept connections.
- Labels: Clearly describe all concept connections.

Next Slide

Epi Teams



Detectives in the Classroom - Investigation 4-5: Concept Connections

Divide the class into Epi Teams of four or five students per team.
Allow Epi Teams 5 minutes to get ready for their presentations.

Next Slide

Epi Team Presentations

What should individuals and society do when preventable causes of disease are found?

Concept Map

Leave Space

Detectives in the Classroom - Investigation 4-5: Concept Connections

Have one Epi Team present.

After the presentation, ask a student from this Epi Team to self-assess the presentation in terms of one of the **Presentation Rubric** criteria.

Next Slide

Self-Assessment

Criteria	Got It	Getting It	Will Get It Soon
Participation	All Epi Team members participate	Most Epi Team members participate	Some Epi Team members participate
Use of Epi Talk	All are appropriate and accurate	Most are appropriate and accurate	Some are appropriate and accurate
Arrangement of Cards	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
Arrows, Circles, and Boxes	Clearly depict all concept connections	Clearly depict most concept connections	Clearly depict some concept connections
Labels	Clearly describe all concept connections	Clearly describe most concept connections	Clearly describe some concept connections

Detectives in the Classroom - Investigation 4-5: Concept Connections

- Participation: All Epi Team members participate.
- Use of **Epi Talk**: All are appropriate and accurate.
- Arrangement of Cards: Clearly depict all concept connections.
- Arrows, Circles, and Boxes: Clearly depict all concept connections.
- Labels: Clearly describe all concept connections.

Compliment when appropriate.

Discuss differences between the teacher's assessment and the self-assessment.

Repeat this process until all Epi Teams have presented and self-assessed their presentations.

Next Slide

Enduring Understanding 1



Essential Question

How is this disease distributed and what hypotheses might explain that distribution?

Enduring Understanding

Health-related conditions and behaviors are not distributed uniformly in a population. Each has a unique descriptive epidemiology that can be discovered by identifying how it is distributed in a population in terms of person, place, and time. Descriptive epidemiology provides clues for formulating hypotheses.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Point out to students that when they completed the investigations in Module 1, they learned the way a disease detective tries to answer the first Essential Question: “How is this disease distributed and what hypotheses might explain that distribution?” They also uncovered a disease detective’s first Enduring Understanding: “Health-related conditions and behaviors are not distributed uniformly in a population. Each has a unique descriptive epidemiology that can be discovered by identifying how it is distributed in a population in terms of person, place, and time. Descriptive epidemiology provides clues for formulating hypotheses.”

Next Slide

Enduring Understanding 2

Essential Question

Is there an association between the hypothesized cause and the disease?



Enduring Understanding

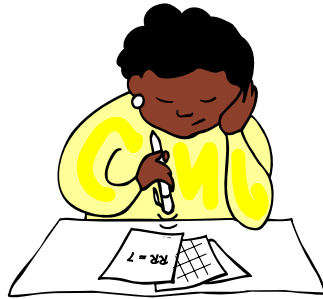
Causal hypotheses can be tested by observing exposures and diseases of people as they go about their daily lives. Information from these observational studies can be used to make and compare rates and identify associations.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Point out to students that when they completed the investigations in Module 2, they learned the way a disease detective tries to answer the second Essential Question: “Is there an association between the hypothesized cause and the disease?” They also uncovered a disease detective’s second Enduring Understanding: “Causal hypotheses can be tested by observing exposures and diseases of people as they go about their daily lives. Information from these observational studies can be used to calculate and compare risks and identify associations.”

Next Slide

Enduring Understanding 3



Essential Question

Is the association causal?

Enduring Understanding

Causation is only one explanation for finding an association between an exposure and an outcome.

Because observational studies are flawed, other explanations must also be considered.

Detectives in the Classroom - Investigation 4-5: Concept Connections

Point out to students that when they completed the investigations in Module 3, they learned the way a disease detective tries to answer the third Essential Question: “Is the association causal?” They also uncovered an epidemiologist’s third Enduring Understanding: “Causation is only one explanation for finding an association between an exposure and an outcome. Because observational studies are flawed, other explanations must also be considered.”

Next Slide

Uncovering Enduring Understanding 4

Essential Question

What should individuals and society do when preventable causes of disease are found?



Enduring Understanding

When a causal association has been identified, decisions about disease prevention strategies are based on more than the scientific evidence. Given competing values, social, economic, and political factors must also be considered.

Detectives in the Classroom - Investigation 4-5: Concept Connections

By doing the investigations in Module 4, now completed, students have been learning the way an epidemiologist, a disease detective, tries to answer the fourth Essential Question: “What should individuals and societies do when preventable causes of disease are found?”

Ask students:

- Have you uncovered an epidemiologist’s fourth Enduring Understanding? “When a causal association has been identified, decisions about disease prevention strategies are based on more than the scientific evidence. Given competing values, social, economic, and political factors must also be considered.”

Next Slide

To Understand

Investigation
4-5 has ended.

To be able to **explain**, interpret, and apply something, while showing insight from perspective, empathy, and self-knowledge.



Detectives in the Classroom - Investigation 4-5: Concept Connections

Remind students that they demonstrated their ability to give sophisticated explanations about possible disease prevention strategies when they showed how the different concepts connected to each other to answer the fourth Essential Question: “What should individuals and society do when preventable causes of disease are found?”

This concludes Part 2 of **Investigation 4-5: Concept Connections** and students can now put away their **Epi Logs**.