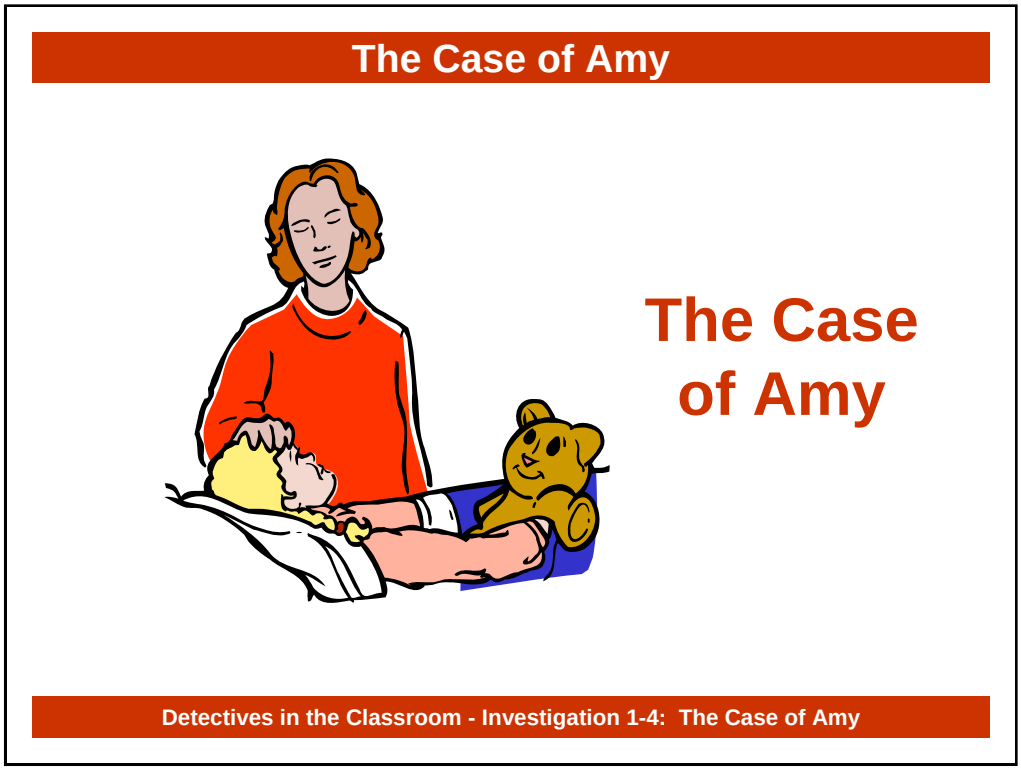
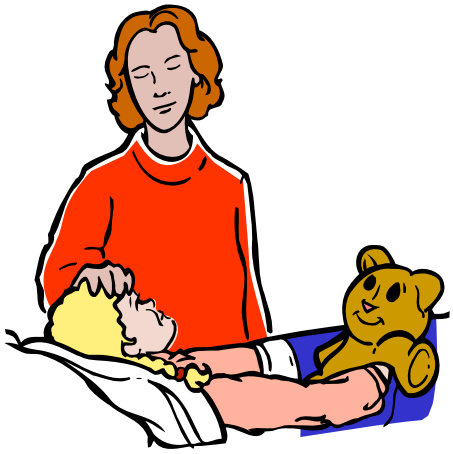


In **Investigation 1-4: The Case of Amy**, students will predict the descriptive epidemiology of a disease and hypothesize whether it was caused by a particular school-based exposure; then, assuming the roles of the various stakeholders, they will critique evidence and conclusions from different perspectives.

Next Slide

Why is Amy sick?



Amy

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Describe the following scenario to the class:

Ms. Thomas arrived home from work at 6:30 PM last night and, much to her surprise, her 13-year-old daughter, Amy, was in bed! Ms. Thomas could not remember the last time Amy had been sick. But now she had a headache, fever, and sore throat, and she felt miserable. After comforting her daughter, Ms. Thomas asked Amy why she thought she was sick.

In spite of the fact that Ms. Thomas cared for her throughout the night, Amy did not feel better in the morning. So at 7:00 AM, Ms. Thomas called her employer to say that she would not be at work because she needed to take care of Amy. She then sat down at the kitchen table to write a letter to Ms. Lopez, the principal of School No. 5. Ms. Thomas was concerned about Amy's health, tired from being up all night, and upset about having to miss a day's pay, because the rent was due the next week.

Jerome, Amy's next-door neighbor and classmate, hand- delivered the note to Ms. Lopez at 8:00 AM.

Next Slide

Dear Ms. Lopez

Dear Ms. Lopez,

My daughter, Amy Thomas, a seventh grade student at School 5, is sick and will not be in school today. She has a headache, fever, and sore throat.

When Amy went to her 6th period Technology Lab, from 12:05-12:50 PM, yesterday, she felt fine. When she left the class she started to feel sick. What happened?

Amy told me that her class was disrupted when 10 new computers were brought into the Technology Lab and placed on the desks along the back wall. When the computer boxes were opened, Amy noticed a strange smell. After the computers were set up, the desks straightened, and the packaging removed, the class was able to continue and Amy used one of the new computers. When she left the Technology Lab, she started to feel sick.

The new computers made Amy sick.

I would like you to remove the computers from the Technology Lab immediately. As a single parent I cannot afford to miss any more days at work.

Sincerely,

Loretta Thomas

PS: Amy has received the Perfect Attendance Award for the past 2 years.

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Give all students a copy of the “Letter to the Principal” to read.

After they have done so, have one student summarize it.

Ask them what they would do if they were Ms. Lopez.

Probe until students have made numerous suggestions. (Call Ms. Thomas, speak to teachers, see if any other children are sick, call the computer manufacturer)

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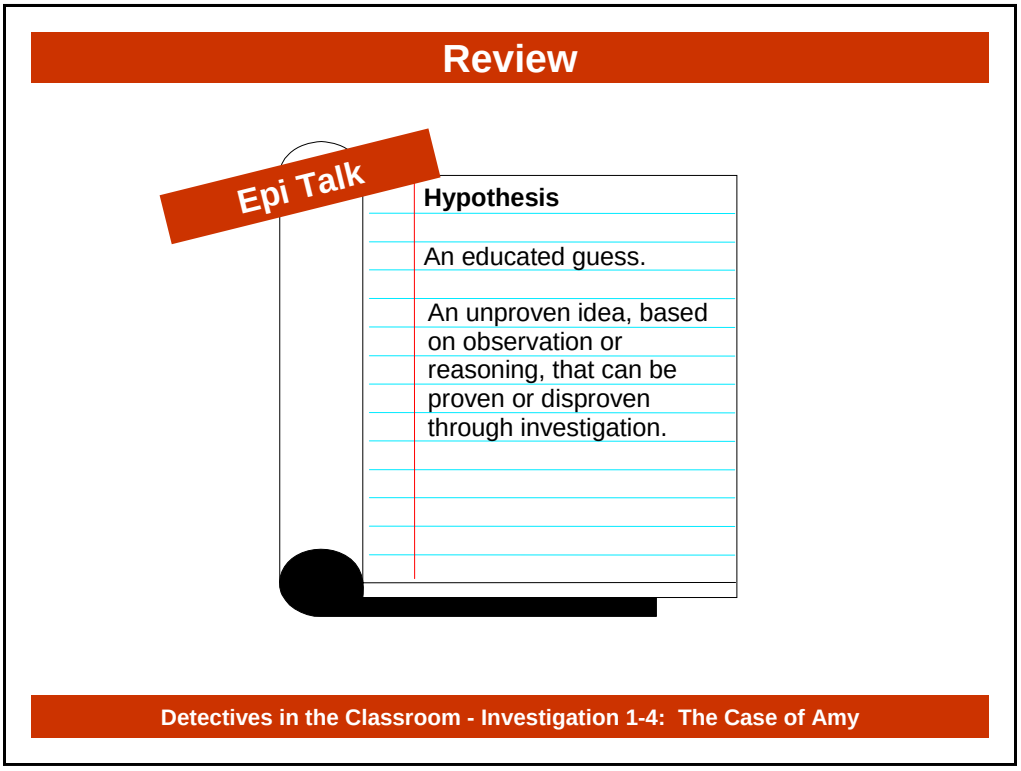

Ask students:

- What is a hypothesis? (An educated guess; an unproven idea, based on observation or reasoning, that can be proven or disproven through investigation)

Next Slide

Dear Ms. Lopez

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When Amy went to her 6th period Technology Lab, from 12:05-12:50 PM, yesterday, she felt fine. When she left the class she started to feel sick. What happened?

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Sincerely,

Loretta Thomas

PS: Amy has received the Perfect Attendance Award for the past 2 years.

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Ask students:

- Does Amy's mother have a hypothesis? (Yes)
- What is Amy's mother's hypothesis? (The new computers caused Amy to be sick.)
- Is Ms. Thomas' hypothesis an *educated* guess? (Yes and no. Yes, because Amy told her mother that the computers made her sick. No, because she has not studied the descriptive epidemiology of the sickness to see if it supports her hypothesis.)

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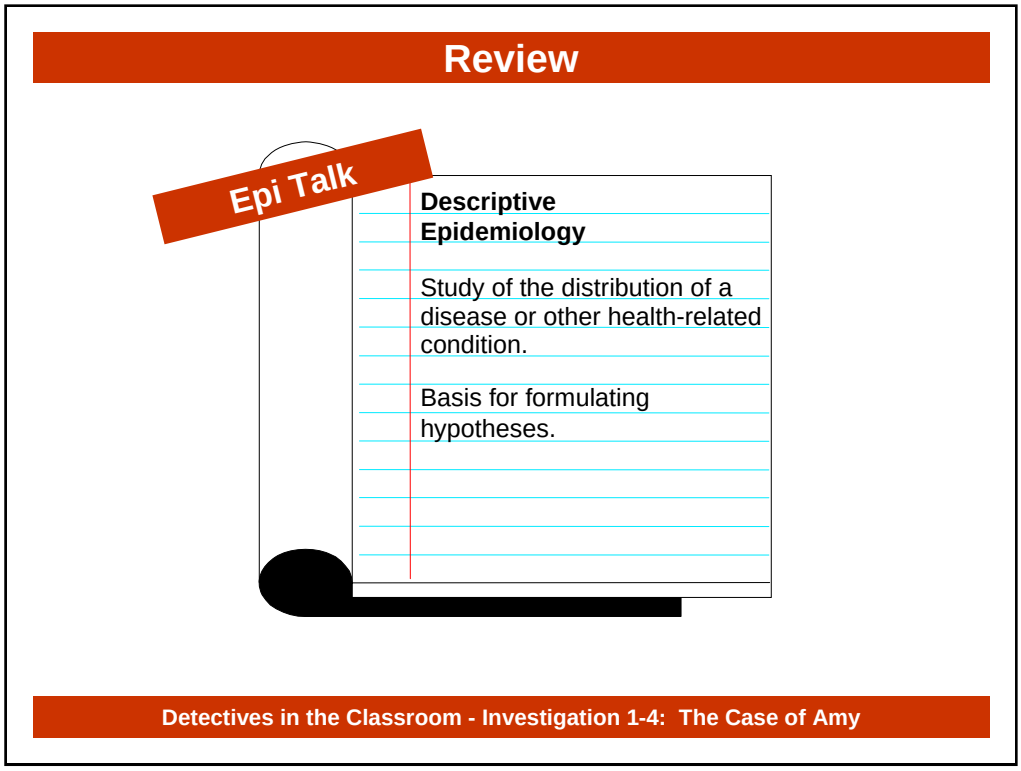

Ask students:

- What is descriptive epidemiology? (Study of the distribution of a disease or other health-related condition. Basis for formulating hypotheses.)

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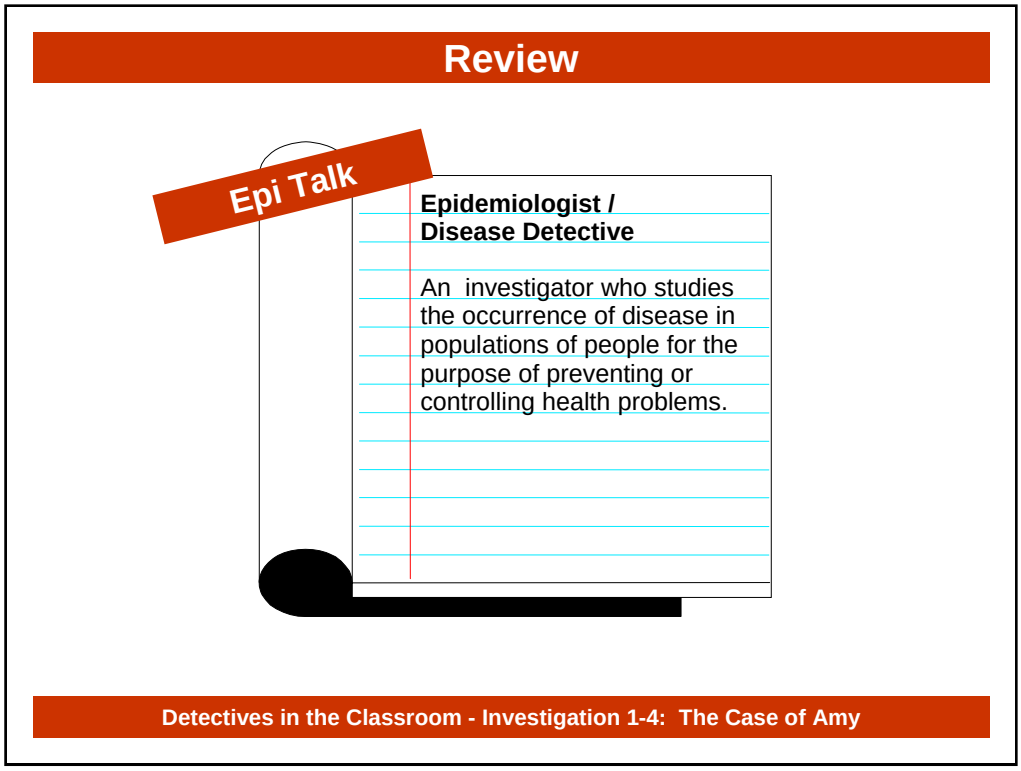

Ask students:

- What is an epidemiologist? (An investigator who studies the occurrence of disease in populations of people for the purpose of preventing or controlling health problems.)

Next Slide

Epidemiologist

Mr. Tyrone Brown

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Tell students that Ms. Lopez had worked very hard to raise money to buy the new computers. She immediately called her good friend, Mr. Tyrone Brown, the city's Public Health Officer and an epidemiologist, to ask for advice. Mr. Brown said he was unaware of any studies that had found an association between computers and illness; however, computers were always changing, and he could not rule out the possibility that the new computers made Amy sick.

Next Slide

Possible Explanations

The new computers caused Amy to get sick.

The new computers' packaging caused Amy to get sick.

Dust in the Technology Lab, that was disturbed when preparing the Technology Lab for the new computers to be installed, caused Amy to get sick.

Amy's sickness was caused by something she ate in the school cafeteria.

Amy's sickness was caused by something unrelated to computers, computer packaging, dust, or cafeteria food.

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Mr. Brown suggested that Ms. Lopez consider five possible explanations.

Ask students:

- What explanations can you offer?

Compare students' suggestions with these hypotheses offered by Mr. Brown:

- The new computers caused Amy to get sick.
- The new computers' packaging caused Amy to get sick.
- Dust in the Technology Lab, disturbed when preparing the Lab for the new computers to be installed, caused Amy to get sick.
- Amy's sickness was caused by something she ate in the school cafeteria.
- Amy's sickness was caused by something unrelated to computers, computer packaging, dust, or cafeteria food.

Ask students:

- What are these possible explanations called? (Hypotheses)

Next Slide

Hypotheses

Amy's sickness was caused by:

- **New Computers**
- **New Computer Packaging**
- **Dust**
- **Cafeteria Food**
- **Something Unrelated to Computers, Computer Packaging, Dust, or Cafeteria Food**

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Ms. Lopez knew that students at her school were learning about the science of epidemiology. She asked her students to tell her, in a meeting in her office at 9:30 AM, what descriptive epidemiologic clues would support each of these hypotheses.

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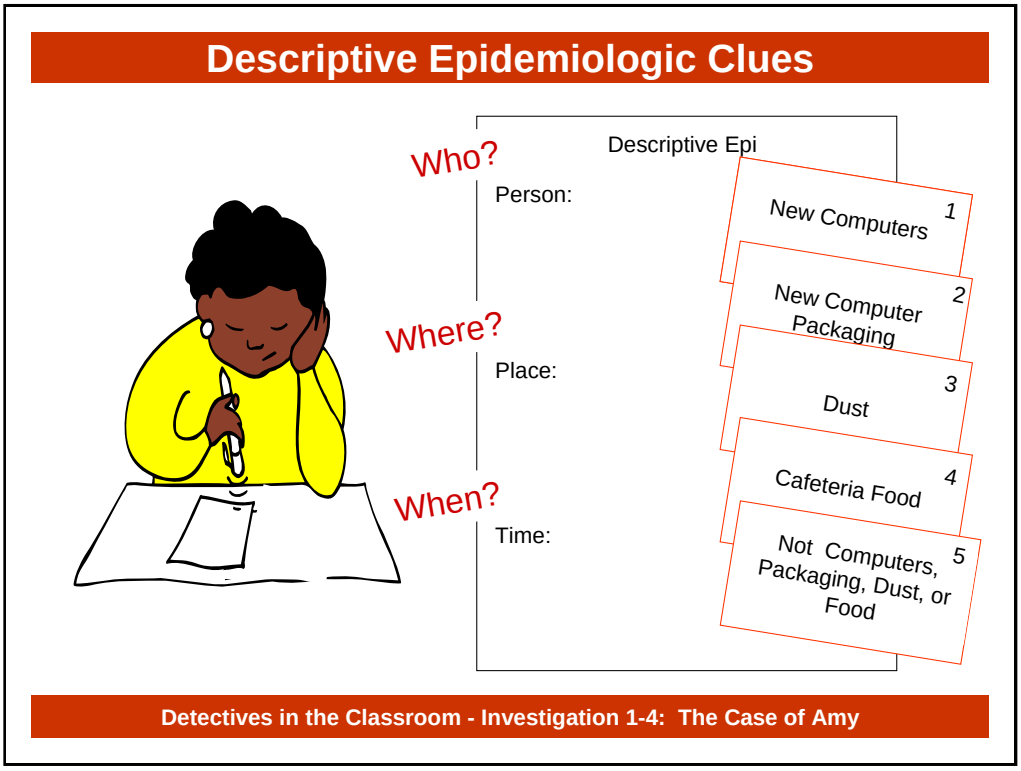

Remind students of **Investigation 1-3: What's My Hypothesis?** in which they considered the descriptive epidemiologic clues that would have been produced if whistles caused a disease.

Ask students:

- Is there any similarity between what you did in **Investigation 1-3: What's My Hypothesis?** and what Ms. Lopez is asking you, as the students in Amy's school, to do here? (Yes. Instead of "Whistles," students could have been given index cards for "New Computers" or "New Computer Packaging" or "Dust" or "Cafeteria Food" or "Not Computers, Packaging, Dust, or Cafeteria Food.")

Emphasize that if any of these five hypotheses was correct, it would create its own unique set of descriptive epidemiologic clues. Each of these five hypotheses would cause different people to get sick, in different places, at different times. Just as a criminal leaves unique fingerprints as evidence, so, too, does the cause of a disease leave unique descriptive epidemiologic clues as evidence.

Next Slide

Epi Teams

Detectives in the Classroom - Investigation 1-4: The Case of Amy

Divide the class into Epi Teams of four or five students per team. Assign each Epi Team one of the five hypotheses.

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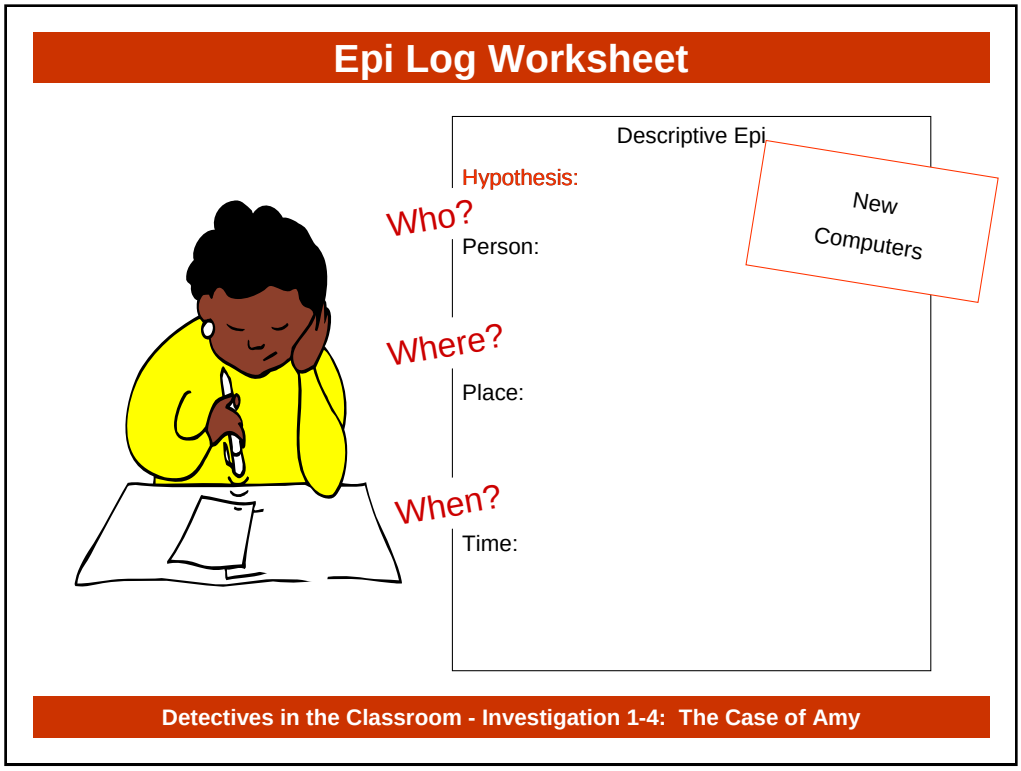

Give all students an **Investigation 1-4: Epi Log Worksheet** and ask them to write their assigned hypothesis at the top of the sheet.

Instruct each student, individually, to complete the **Investigation 1-4: Epi Log Worksheet** with person, place, and time clues that would support his or her assigned hypothesis.

Remind students that they did something similar to this in **Investigation 1-3: Epi Log Worksheet—PPT Sheet**. Each Epi Team is to describe how the disease would be distributed if a certain exposure actually caused the disease. For example, if the new computers caused the disease,

- *Who* would be most likely to get the disease?
- *Where* would the disease be most likely to occur?
- *When* would the disease be most likely to occur?

Next Slide

Descriptive Epidemiologic Clues

Detectives in the Classroom - Investigation 1-4: The Case of Amy

The students in each Epi Team should now share and compare their descriptive epidemiologic clues and prepare a 2-minute presentation for their 9:30 AM meeting with Ms. Lopez.

☼ Teacher Alert: Students can prepare their presentations for homework. All presentations and Epi Team evaluations will then take place during the next class period.

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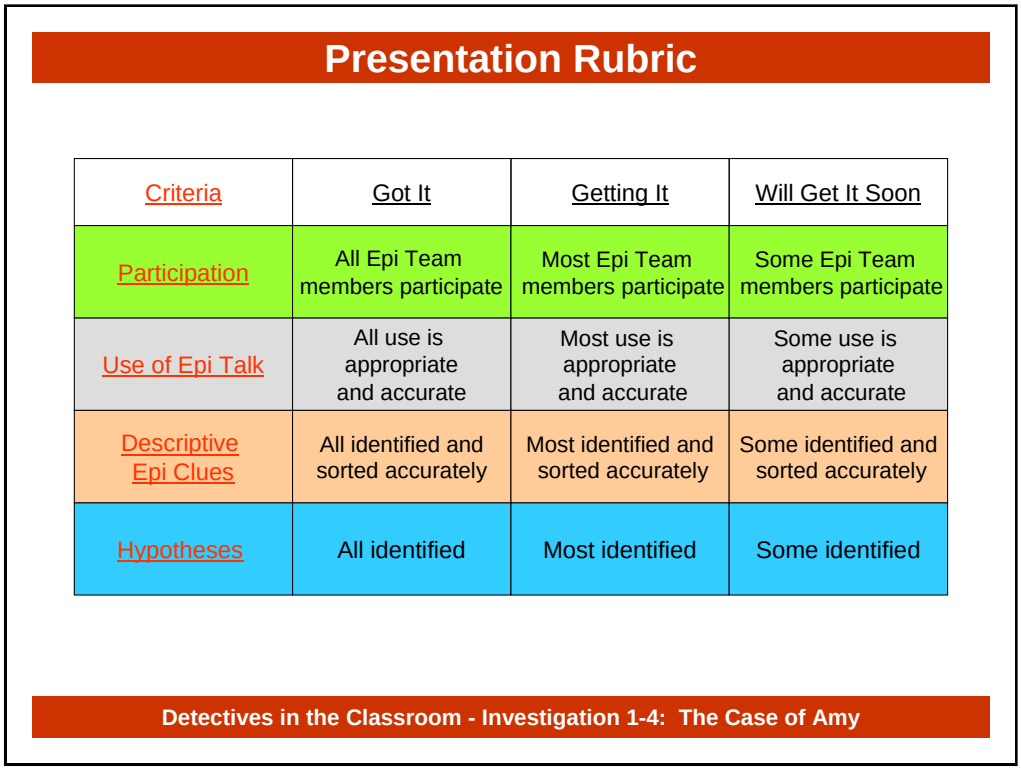

Review the **Presentation Rubric** to be used in evaluating the presentation.

- Participation: All Epi Team members participate.
- Use of **Epi Talk:** All use is appropriate and accurate.
- Descriptive Epidemiologic Clues: All clues are identified and sorted accurately.
- Hypotheses: All hypotheses are identified.

Give each student a **Presentation Rubric.**

Allow Epi Teams 5 minutes to assign roles and prepare for their presentations. Leave this slide on the screen.

Tell students that you will be assuming the role of Ms. Lopez and asking them questions after they make their presentations.

Ask each Epi Team to provide answers to the following questions:

- Do you think your Epi Team's hypothesis is correct?
- How will your Epi Team collect the information to determine if the hypothesis is correct?
- How long will it take your Epi Team to collect the information?

After each Epi Team has presented, ask a member of the Team to self-evaluate the presentation in terms of the **Presentation Rubric**.

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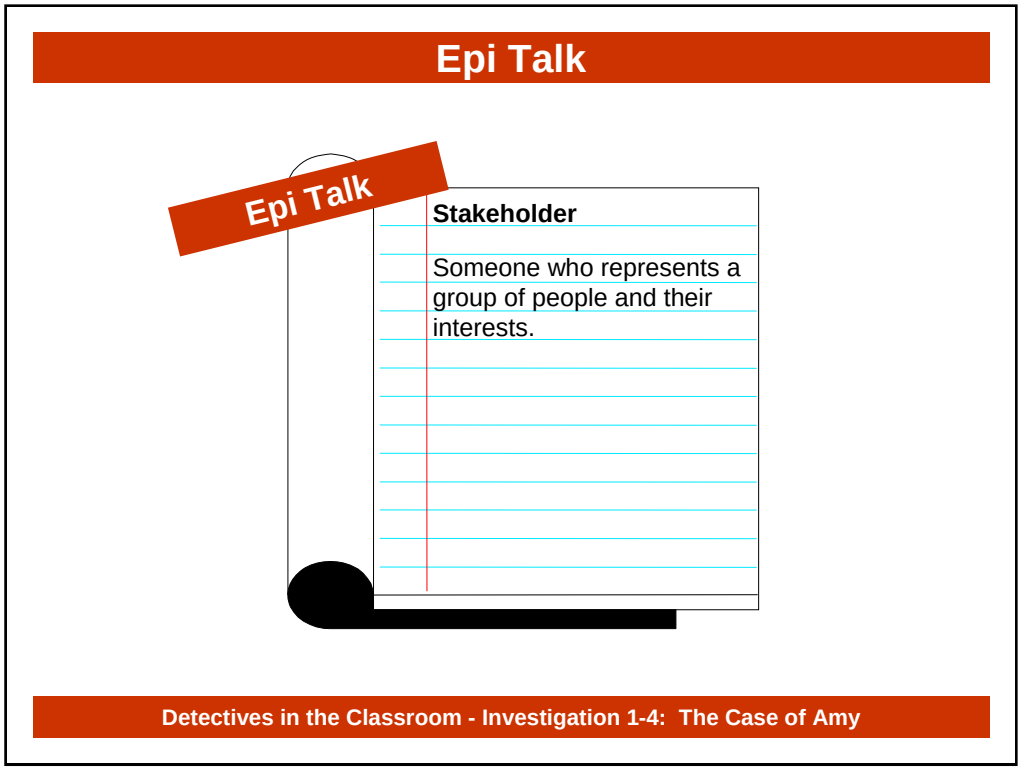

Ask students to find “Stakeholder” in the **Epi Talk** list.

Review its definition.

Now students should identify people or companies who would be interested in the cause of Amy’s illness.

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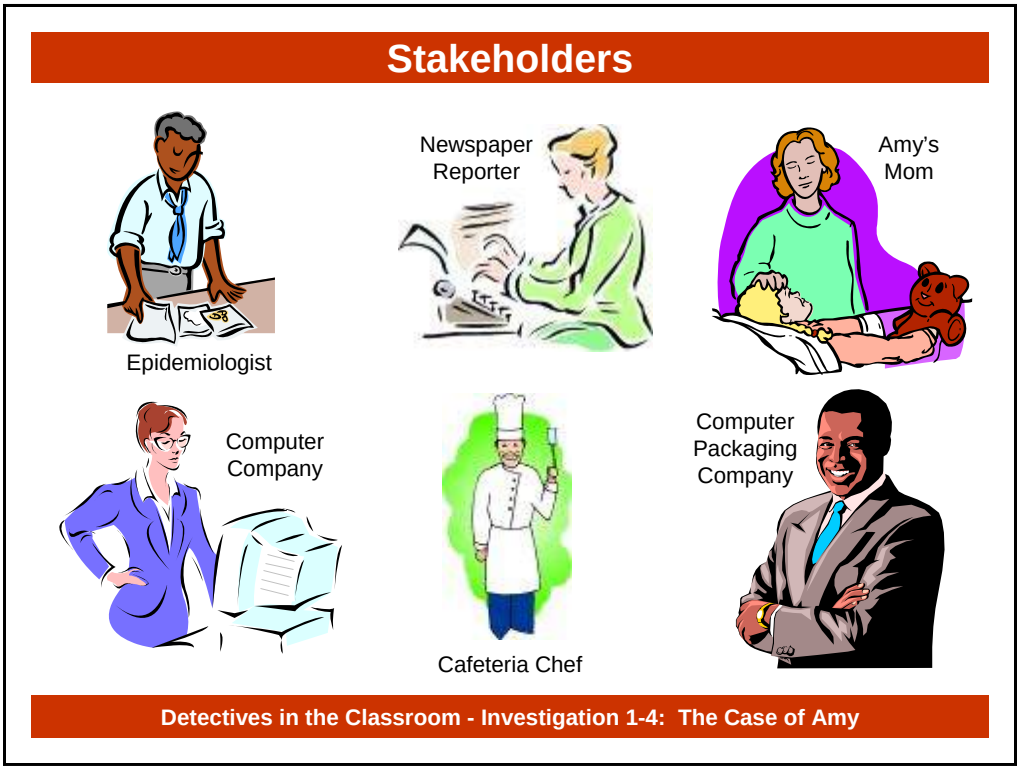

Suggest to students that as Ms. Lopez listened to the students' presentations, she tried to anticipate how she would deal with each of the following stakeholders:

- Mr. Lesnick, the school cafeteria chef
- Ms. Thomas, Amy's mother
- Mr. Tyrone Brown, the city's Public Health Officer and epidemiologist
- Ms. Luisa Rodriquez, president of the computer company
- Mr. Robert Williams, president of the computer packaging company
- Ms. Wilson, a reporter for the city's most influential newspaper

Ask students from each Epi Team:

- Did the descriptive epidemiologic evidence support your hypothesis?
- How do you think each stakeholder might respond?
- If you were Ms. Lopez, what would you say to a particular stakeholder?

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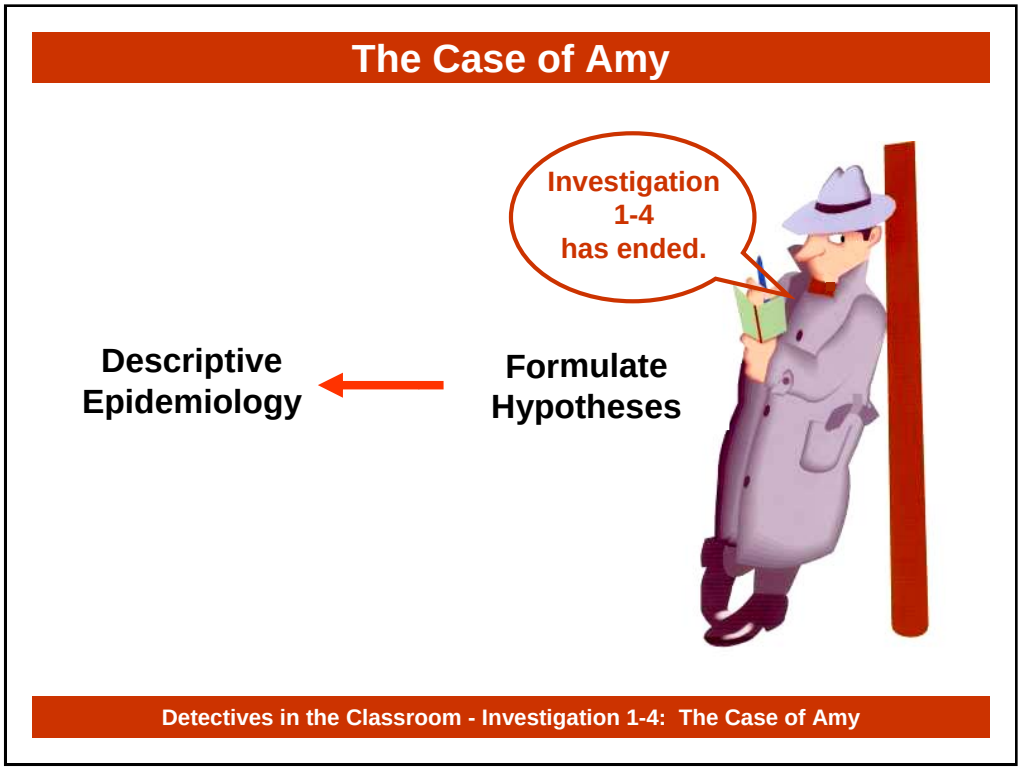

Remind students that in **Investigation 1-1: Why Are These Students Getting Sick?** and **Investigation 1-2: In the News,** they learned to use descriptive epidemiologic clues to formulate hypotheses. In **Investigation 1-4: The Case of Amy**, they thought backwards, from a hypothesis to descriptive epidemiologic clues that would support that hypothesis.

This concludes **Investigation 1-4: The Case of Amy** and students can now put away their **Epi Logs.**