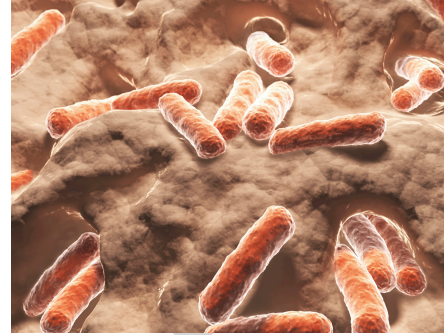


Lesson 15, Part C, Do you trust the test?

Theme: Risk Assessment

A Streptococcal bacterial infection causes a severe sore throat known as strep throat, and it is cured using a particular course of antibiotics. However, a Staphylococcus bacterial infection also causes a sore throat, and it is treated using a different course of antibiotics. Therefore, correctly identifying the cause of a sore throat is crucial to prescribing the correct treatment. Have you ever contracted strep throat? How did you know it was strep throat?



Credit: Thinkstock

Objectives for the lesson

You will understand that:

- A percent can be used to express the likelihood (or probability) of a certain event.
- Selecting the appropriate comparison value and base value is crucial for calculating a percent correctly.

You will be able to:

- Extract relevant information from a two-way table.
- Select the appropriate values to compute probabilities.

Suppose 500 patients visit a walk-in clinic complaining of a sore throat and other symptoms consistent with strep throat. Clinic physicians order a diagnostic test. A positive test indicates that the patient has strep throat. A negative test indicates the patient does not have strep throat. However, medical tests are not 100% accurate, so the results of the test may be wrong. This means the test may be mistaken even when carefully administered.

- 1) Complete the table to show how often the test correctly diagnosed cases of strep throat. Remember that a positive test indicates the patient has strep throat but that the test is not always correct.

Causes of Sore Throat in Patients

	Sore Throat Patients with Streptococcal Infection	Sore Throat Patients with Other Infections/Causes	Total
Positive test result	96		
Negative test result	24		385
Total		380	500

Use the figures or numbers in the table to answer the questions. Report probabilities using percent (%).

- 2) The **sensitivity** of a medical test equals the probability the test is positive when it should be positive. Compute the sensitivity of the test for strep throat using the steps below.

Part A: How many patients have a Streptococcal infection?

Part B: How many of the patients with a Streptococcal infection received a positive test?

Part C: If a patient has a Streptococcal infection, what is the probability that the test will correctly diagnose the patient with a positive result? The answer is the **sensitivity** of the test.

- 3) The **specificity** of a medical test equals the probability the test is negative when it should be negative. Compute the specificity of the test for strep throat using the steps below.

Part A: How many patients do not have a Streptococcal infection?

Part B: How many of the patients without a Streptococcal infection received a negative test?

Part C: If a patient does not have a Streptococcal infection, what is the probability that the test will correctly result in a negative outcome? The answer is the **specificity** of the test.