**Basic Statistics for Infection Preventionists**

**Module 4 – Ratios, Rates, and Proportions (Part II)**

Your have some initial data on a new test for Disease X:



1. Using the table, find the number of patients for each the following concepts:
2. Patients with True Positive = 45
3. Patients with False Positive = 95
4. Patients with True Negative = 855
5. Patients with False Negative = 5
6. Patients with Disease X = 50
7. Patients without Disease X =950
8. Patients with positive test results = 140
9. Patients with negative test results = 860
10. Patients tested = 1000
11. Calculate the sensitivity.

Sensitivity = 45/50 x 100 = 90%

1. Calculate the specificity.

Specificity = 855/950 x 100 = 90%

1. Calculate the positive predictive value.

PPV = 45/140 x 100 = ~32%

1. Calculate the negative predictive value.

NPV = 855/860 x 100 = ~99%

1. What proportion of the patients tested has Disease X? What would happen to the positive and negative predictive values if that proportion increased to 50%?

50 / 1000 x 100 = 5% of the patients tested have Disease X.

If the proportion of patients with Disease X (which is to say the prevalence of Disease X in this population) increased to 50% then the positive predictive value would increase and the negative predictive value would decrease.

NOTE: It was not expected that you do so for this assignment, but if you actually change the number of patients with Disease X to 500 and update the cells of the table accordingly to match the known sensitivity and specificity (see below), you get a positive predictive value of 90% and a negative predictive value of 90%.

