
Prevalence of a disease, $P(D) = 0.001$ (= 0.1%)

Sensitivity of the test, $P(T|D) = 0.99$

Specificity of the test, $P(T^c|D^c) = 0.99$ (here c means “not”)

What is the probability of having disease when you got the positive test results? $P(D|T)$

Note: Use the following equation

$$P(\mathbf{B}|\mathbf{A}) = \frac{P(\mathbf{A}|\mathbf{B})P(\mathbf{B})}{P(\mathbf{A}|\mathbf{B})P(\mathbf{B}) + P(\mathbf{A}|\mathbf{B}^c)P(\mathbf{B}^c)}$$

Then, let's say the person who got the positive test results went to another hospital and got the positive test results again. Then, what would be the probability of having disease this time?

Note: $P(D)$ this time can be $P(D|T)$ based on the previous test results (use the same $P(T|D)$ and $P(T^c|D^c)$, though)