

2) avg. risk of specific cancer = 1%.

Cancerous tumors test - 80%.

Benign tumors - 90%.

Prob. of patient test positive $\begin{pmatrix} C = \text{Cancer prob.} \\ NC = \text{no. Cancer} \end{pmatrix}$

$$P(C) = .01$$

$$P(NC) = 1 - P(C) = .99$$

Conditional Prob,

$$P(+|C) = .80 \quad \text{and} \quad P(-|NC) = .90$$

$$\Rightarrow P(+|NC) = .10$$

$$P(C|+) = \frac{P(+|C)P(C)}{P(+|C)P(C) + P(+|NC)P(NC)}$$

$$= \frac{0.80 \times 0.01}{(0.80 \times 0.01) + (0.10 \times 0.99)} \approx 0.075$$

\therefore Prob. of patient having Cancer if

test positive = 7.5%