

Formulae for positive predictive value (PPV) and negative predictive value

(NPV)

$$\begin{aligned} PPV = P(D + | T +) &= \frac{P(T + | D +)P(D+)}{P(T+)} = \frac{P(T + | D +)P(D+)}{P(T + | D +)P(D +) + P(T + | D -)P(D-)} \\ &= \frac{S\pi}{S\pi + (1 - C)(1 - \pi)}; \end{aligned}$$

$$\begin{aligned} NPV = P(D - | T -) &= \frac{P(T - | D -)P(D-)}{P(T-)} = \frac{P(T - | D -)P(D-)}{P(T - | D +)P(D +) + P(T - | D -)P(D-)} \\ &= \frac{C(1 - \pi)}{(1 - S)\pi + C(1 - \pi)}. \end{aligned}$$

where D is disease status; T is diagnostic test results; π is prevalence of the disease in the population; S is sensitivity of the diagnostic test being considered; and C is specificity of the diagnostic test being considered.