Chapter 4: Screening for Disease

Reproducibility statistics

Rater B

Rater A	+	−	
+	a	b	p_1
−	c	d	q_1
	p_2	q_2	N

$$\kappa = \frac{2(ad - bc)}{p_1 q_2 + p_2 q_1}$$

Despite what the book says, you do not have to convert counts into percents to use this formula. κ quantifies the percent agreement that is above that due to chance. See Table 4.4 (p. 82) for interpretation guidelines.

Validity statistics

	Disease +	Disease −	Total
Test +	TP	FP	TP + FP
Test −	FN	TN	FN + TN
Total	TP + FN (those with disease)	FP + TN (those w/out disease)	N

SEN = (TP) / (those with disease) [note: TP = (SEN)(TP + FN)]
     = (TP) / (TP + FN)

SPEC = (TN) / (those without disease) [note: TN = (SPEC)(FP + TN)]
     = (TN) / (TN + FP)

PVP = (TP) / (those who test positive)
     = (TP) / (TP + FP)

PVN = (TN) / (those who test negative)
     = (TN) / (TN + FN)

True prevalence = (TP + FN) / N   [True prevalence also known as *prior probability*]

See text for Bayesian equivalents for determining predictive value based on prior probabilities and test parameters.