Example 5.8 Multiple tests—series versus parallel interpretation

data = ISA_test

The data in this example are from the ISA_test dataset. The tests we are using are the indirect fluorescent antibody test (IFAT) and the polymerase chain reaction (PCR) test, with clinical disease status (see dataset description Chapter 31) as the gold standard. The observed joint distributions of test results and virus presence are shown below along with the 4 possible test interpretation criteria.

	Number of fish by test-result category				Totals
IFAT result	+	+	0	0	
PCR result	+	0	+	0	
Diseased fish	134	4	29	9	176
Non-diseased fish	0	28	12	534	574
Series interpretation	+	0	0	0	
Parallel interpretation	+	+	+	0	

Se of IFAT only = 138/176 = 0.784

Sp of IFAT only = 546/574 = 0.951

Se of PCR only = 163/176 = 0.926

Sp of PCR only = 562/574 = 0.979

Se of series interpretation = 134/176 = 0.761

Se of parallel interpretation = (134+4+29)/176 = 0.949

Sp of series interpretation = (28+12+534)/574 = 1.000

Sp of parallel interpretation = 534/574 = 0.930