

# Prevention and control of diseases and health conditions

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**ASSIGN  
BUSTER**

Prevention and Control of Diseases and Health Conditions Part The following table demonstrates the outcome of test: In the above table, True positive (a):

Number of patients having the disease and the test is positive

False positive (b): Number of patients does not have the disease but the test is positive

True negative (d): Number of patients does not have the disease and the test is negative

False negative (c): Number of patients having the disease but the test is negative

Total test positives =  $a + b$

Total test negatives =  $c + d$

Total diseased =  $a + c$

Total normal =  $b + d$

Total population =  $a + b + c + d$

Sensitivity =  $TP \div (TP + FN)$

=  $100 \div (100 + 850)$

=  $0.10 = 10\%$

Specificity =  $TN \div (TN + FP)$

=  $2025 \div (2025 + 75)$

=  $0.96 = 96\%$

Predictive Value for a + test (PPV) =  $TP \div (TP + FP)$

=  $100 \div (100 + 75)$

=  $0.57 = 57\%$

Predictive Value for a - test (NPV) =  $TN \div (TN + FN)$

=  $2025 \div (2025 + 850)$

$$= 0.70 = 70\%$$

Source: (Lalkhen & McCluskey, 2008).

Part 2

Question a

$$\text{Sensitivity} = a / (a + c)$$

$$= 86 / (86 + 12)$$

$$= 0.87 = 87\%$$

$$\text{Specificity} = d / (d + b)$$

$$= 352 / (352 + 25)$$

$$= 0.93 = 93\%$$

$$\text{Positive predictive value} = a / (a + b)$$

$$= 86 / (86 + 25)$$

$$= 0.77 = 77\%$$

$$\text{Negative predictive value} = d / (c + d)$$

$$= 352 / (12 + 352)$$

$$= 0.96 = 96\%$$

Source: (Malur et al., 2009)

Question b

$$\text{Sensitivity} = a / (a + c)$$

$$= 156 / (156 + 38)$$

$$= 0.80 = 80\%$$

$$\text{Specificity} = d / (d + b)$$

$$= 1150 / (1150 + 45)$$

$$= 0.96 = 96\%$$

$$\text{Positive predictive value} = a / (a + b)$$

$$= 156 / (156 + 45)$$

$$= 0.77 = 77\%$$

$$\text{Negative predictive value} = d / (c + d)$$

$$= 1150 / (38 + 1150)$$

$$= 0.96 = 96\%$$

Source: (Malur et al., 2009).

#### Question c

False positive screening test result can cause anxiety and additional expenses. Thus, the clinical and managerial implications of false positive screening comprise new screening program which should entail explicit evaluation of the outcome of false positives. Furthermore, organizations must ensure that people establishing and operating screening programs are completely trained in every aspect of medical test.

#### Question d

With respect to false negative screening, organizations must ensure clinical efficiency for the medical services. The central aspect of ensuring efficiency is validity which can be measured through the level of sensitivity, specificity and predictive values.

#### Question e

The prevalence of disease is a vital consideration in screening activities. In this context, it can be stated that as the prevalence increases, the predictive values are affected. However, the increased prevalence of cancer has low influence on sensitivity and specificity (Petticrew et. al., 2000).

#### Question f

In conclusion, it can be stated that recognizing the epidemiology of

transferrable diseases is vital for appropriate administration of medical care. The transferable diseases represent significant demand of screening tests which should be executed carefully in order to develop proper treatment. False screening not only results in increased anxiety, but can also give rise to delays in treatment or faults in the treatment program for patients (Fos & Fine, 2012).

#### References

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Malur, P. R., Desai, B. R., Anita, D., Geeta, D., Bhavana, S., & Pallav, G. (2009). Sequential screening with cytology and colposcopy in detection of cervical Neoplasia. *South Asian Federation of Obstetrics and Gynecology*, 1(3), 45-48.

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