Statistical Measurements in Medical Ultrasound

Appendix A Pre-Lecture Worksheet | Educator Resource

Standard Statistical Metrics

Match each term with its definition. Enter the corresponding letter.

Key Terms

_____ 1. mean

_____ 2. median

_____ 3. range

_____ 4. standard deviation

_____ 5. variance

_____ 6. coefficient of variation

A. standard deviation divided by the mean

B. spread from the smallest to the largest value

C. average value of a set of measurements

D. middle value

E. how much values typically vary around the mean

F. average squared distance of values from the mean

Fill in the Blanks

Name: _____ Date: _____

1. Because sonographic findings influence clinical decisions, test performance should be described using _____ rather than _____ .

2. Statistical evaluation in medical testing is used to quantify how _____ a test is.

3. It also measures how often a test is _____ and how much _____ should be placed in a positive or negative result.

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Fill in the Blanks continued

Type your answers into the shaded fields. Save your completed copy.

List three benefits to the patient.

4. _____
5. _____
6. _____

List three benefits to the practitioner.

7. _____
8. _____
9. _____
10. Sensitivity and specificity summarize test behavior under known truth conditions: how effectively disease is _____ and how reliably non-disease is _____ .
11. PPV and NPV translate test results into practical clinical meaning by estimating how trustworthy a _____ result is in the population being tested.
12. Sensitivity describes how often a test _____ disease when disease is truly present.
13. Specificity describes how well a test _____ disease when disease is truly absent.
14. PPV is the probability that disease is truly _____ when the test result is positive.

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Fill in the Blanks continued

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15. NPV is the probability that disease is truly _____ when the test result is negative.

16. The _____ is the basic framework used to evaluate any diagnostic test, including ultrasound.

17. TP (True Positive): the test is positive, and disease is truly _____ .

18. FP (False Positive): the test is positive, but disease is truly _____ .

19. FN (False Negative): the test is negative, but disease is truly _____ .

20. TN (True Negative): the test is negative, and disease is truly _____ .

21. _____ : A highly SeNsitive test, when Negative, helps rule OUT disease.

22. _____ : A highly SPecific test, when Positive, helps rule IN disease.

23. PPV and NPV depend on prevalence: how _____ the disease is in the tested population.

24. _____ is a statistical test used to determine whether there is a real association between two categorical variables, or whether an observed difference in counts is likely due to random variation.