

Investigations and Tests

- The **ideal test** is **sensitive** – it **detects all** those **with the disease**.
- The **ideal test** is **specific** – it **detects only one condition/disease**.
- There are **no ideal tests**.
 - True +ve indicates the test has worked correctly.
 - Positive Predictive Value = PPV
 - Negative Predictive Value = NPV

Interpret with Care:

- Sensitivity does not tell you the chance of a positive result indicating disease:
 - A 90% sensitivity does not mean that a positive result carries a 90% chance of indicating disease.
 - Sensitivity and specificity just reflect how good the test is in the lab.

Sensitivity and specificity

		Disease present	No disease	
Test positive	True +ve	False +ve	Positive predictive value = proportion of all positives that are true positives	
	False -ve	True -ve		
Test negative	False -ve	True -ve	Negative predictive value = proportion of all negatives that are true negatives	

Sensitivity = proportion of diseased population detected by test	Specificity = proportion of healthy population testing negative
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PPV (Positive Predictive Value) and NPV (Negative Predictive Value) Depend on Disease Prevalence

- **Prevalence** = **proportion of population** with the **condition/disease**.
- **Positive Predictive Value rises** when a **disease** is **present** (and the negative PV falls).
- Tests work really well when the disease is common.

Value of the Test depends on how it is used

- A **test MUST answer** a **specific question** framed by the clinician in the light of history and examination.
- In the **right circumstances**, many **tests** have **PPV >98%**.
- Conversely, **wrong used tests don't work** – you cannot obtain a diagnosis by throwing every test at a patient.

There are no ideal tests – they must be selected (by you) for a purpose.

- **Screening tests**, useful tests are:
 - Cheap, rapid, acceptable test that tells whether a person is likely to have a condition or not.

Useful for diagnosis – only tell you whether a person is likely to have a disease or not. 1st test to decide whether someone should go on for more deeper investigations. May have a low PPB → e.g. BPE → 6PPC.

- **Diagnostic tests**, whose usefulness depends on:
 - Need for test – why is it done?
 - Situation in which used:
 - Incidence of disease.
 - Significance of a wrong result – a low PPV may be acceptable.
 - Ability to define a “cut off” level.



Never Confuse Numerical Precision with Biologically Relevant Accuracy

- The INR is reported to 1 place of decimals but is useful and reproducible to only to about 0.5 or even 1 unit.

Histopathology

- The **gold standard** for **much diagnosis** in medicine – 70-80% of patients' treatment depends on a **histological diagnosis**.
- Is not a TEST, it is a **medical opinion**.
- Can also be of no great value – you need to know which diseases in this course are diagnosed by biopsy and this value if not diagnostic.
 - Dysplasia – pre-cancer state
 - Lichen plasia – keratosis of buccal mucosa