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Stats Concepts

- diagnostic test:
  - any kind of test performed to aid in the diagnosis or detection of disease
- Sensitivity
  - = true positives / true positives & false negatives
  - = true positives correctly identified by test
  - ∴ high sensitivity = ideal
- Specificity
  - = true negatives / true negatives & false positives
  - = true negatives correctly identified by test
  - ∴ high specificity = ideal

↳ can be estimated from case-control studies ie dont need to be abel to estimate prevalance pre-test

  - ie more useful in disease which are less prevalent
- PPV
  - = true positives / true positives & false positives
  - those who test positive that actually have disease
- NPV
  - = true negatives / true negatives and false negatives
  - = those who test negative that don't have disease 'true negative'

↳ Predictive values depend on prevalence of disease and may vary from population to population:

  - need to know estimates of prevalence from cross sectional studies
  - ie much better high when prevalence of disease is more common
  - if disease is very uncommon, would need to have a very very high NPV to say someone doesnt have a disease

- Likelihood ratio for positive test result (LR+) = sensitivity / 1 – specificity
- Likelihood ratio for negative test result (LR-) = 1-sensitivity/specificity
- Posterior odds = prior odds multiplies by likelihood ratio

		Condition (as determined by "Gold standard")		
		Condition Positive	Condition Negative	
Test Outcome	Test Outcome Positive	**True Positive**	**False Positive** (Type I error)	**Positive predictive value** = Σ True Positive / Σ Test Outcome Positive
	Test Outcome Negative	**False Negative** (Type II error)	**True Negative**	Negative predictive value = Σ True Negative / Σ Test Outcome Negative
		Sensitivity = Σ True Positive / Σ Condition Positive	Specificity = Σ True Negative / Σ Condition Negative	