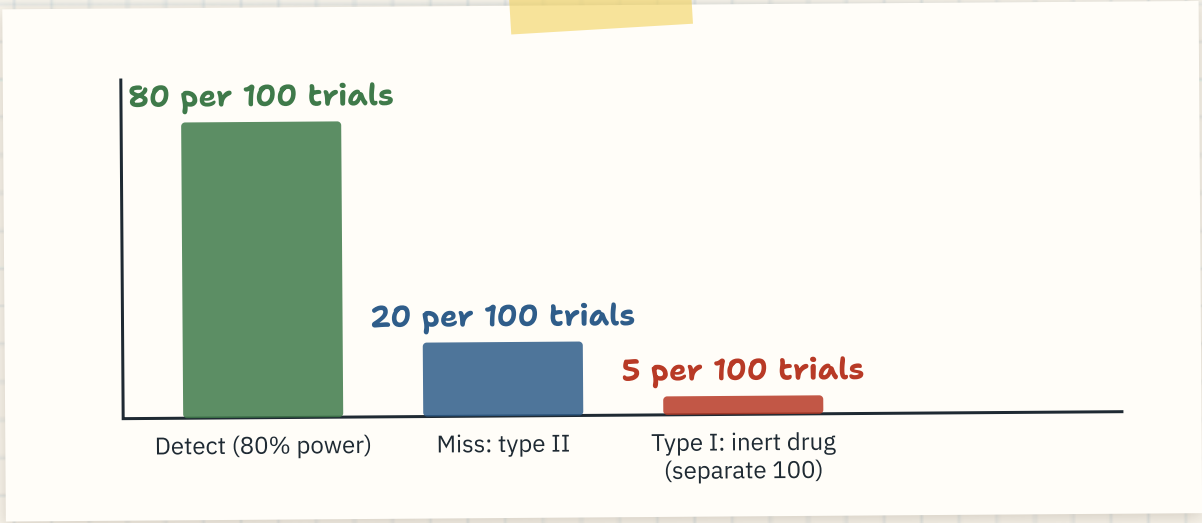
Type I and II errors

Alpha, beta, power and the p-value



POWER

Power = 1 − β

β = P(type II error); usual power 80%

Decision	Null true	Null false
Reject null	Type I (α)	Correct
Fail to reject	Correct	Type II (β)

Truth against decision

Rule of thumb

Type I: rejects a true null, P = α

Type II: misses a real effect, P = β

p below α = significant

Exam traps

- The p-value is not the probability that the null is true.
- p above α does not prove there is no effect.
- Power is 1 − β, not β.
- A higher α raises power but adds type I errors.

Type I and type II errors: alpha, beta, power and the p-value

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/biostats-ethics/type-1-type-2-errors-power-p-values

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
© 2026 Medservatory, a project of ADMR Solutions Ltd. Free to print and share for personal study.