

## Epi Brown-Bag

### A primer on equivalence/non-inferiority vs superiority studies

Sometimes you are not interested in showing that a new treatment is significantly better than a currently available one. It might be that you are **looking for an alternative treatment** which is cheaper, easier to apply or has fewer side effects. In such case you just want to look if it is at least as good as your current treatment. Using something like a t-test for comparing two groups, finding a non-significant p-value and claiming that the two treatments are equal, is WRONG. There is the famous quote from Altman and Bland "[absence of evidence, is not evidence of absence](#)". So, what to do then? In such a situation you should apply an equivalence or non-inferiority analysis (you need to plan this beforehand). In short, define something called  $\delta$ , a difference which you think is clinically irrelevant, and use confidence intervals to check for equivalence or non-inferiority. More details are found here:

1. [Noninferiority and Equivalence Designs: Issues and Implications for Mental Health Research](#)
2. [What is the difference between Superiority vs. Equivalence v. Non-inferiority in clinical trial design.](#)
3. [Superiority and non-inferiority: two sides of the same coin?](#)