

Calculating and using number needed to treat (NNT)

Scenario: Consider 3 patients: a 60-year-old person with mild hypertension who is being treated with a diuretic to prevent stroke over 5 years; a 60-year-old who had a myocardial infarction 1 month previously, has no congestive heart failure and is being treated with a beta-blocker to prevent death over 2 years; and a 60-year-old with acute myocardial infarction treated with streptokinase to prevent death over 5 weeks.

1. Learners guess the risk differences and NNTs for each treatment.
2. Provide event rates in control and treatment groups, and calculate the risk differences (event rates for control group 2.9%, 9.8%, 12.0% respectively; event rates for treatment groups 1.9%, 7.3%, 9.2% respectively; risk differences 1.0%, 2.5%, 2.8% respectively).
3. Explain how to calculate NNT from the risk difference: $NNT = 100/RD$ (NNTs 100, 40, 36 respectively).
4. Compare learners' guesses with the real data.
5. Discuss threshold NNT.

Population	Intervention	Outcome
60 year old with mild hypertension (blood pressure 150/95 mm Hg)	Diuretics	Stroke over 5 years
60 year old, one month post myocardial infarction with no heart failure	Beta blockers	Death over 2 years
60 year old presenting with acute myocardial infarction	Streptokinase	Death over 5 weeks

Summary Points:

- NNT is a clinically useful measure of effectiveness.
- NNT is easily calculated from risk difference.
- Risk difference = control event rate – treatment event rate.
- If the risk difference is expressed as a proportion, divide into 1; if expressed as a percentage, divide into 100.
- Physicians often overestimate the effectiveness of treatments and underestimate the corresponding NNTs.