

# Number needed to treat

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**H**undreds of relevant studies of new or existing therapies are published each year. Interpreting the results in a way that is useful to both you and your patients is an important skill.

Consider the recently published Heart Protection Study,<sup>1</sup> which assessed the effect of simvastatin on specific cardiovascular outcomes and mortality by comparing it with placebo among 20,536 adults with pre-existing cardiovascular disease. **Table 1** summarizes the effect of simvastatin, 40 mg once daily, on all-cause mortality after 5 years.

The proportion of patients in the simvastatin group who died was 1328/10,269 or 0.129 (12.9%); the proportion of the placebo group who died was 1507/10,267 or 0.147 (14.7%). The evidence suggests simvastatin is superior in reducing mortality. But how significant is the difference?

One way to translate these results into a more useful form is to determine the *number needed to treat* (NNT). The NNT in this case refers to the number of people one would need to treat with simvastatin to prevent 1 death. The first step is to determine the absolute risk reduction (ARR), which is simply the difference in the proportion of outcomes in the two treatment groups. In this case:  $ARR = 0.147 - 0.129 = 0.018$ .

The NNT is simply the inverse of the ARR. In this case  $NNT = 1/0.018 = 56$ . Therefore, 56

**TABLE 1**

## Effects of simvastatin on all-cause mortality

Treatment	Patients	Deaths in 5 years
Simvastatin 40 mg	10,269	1328
Placebo	10,267	1507

people with cardiovascular disease need to be treated with simvastatin to prevent 1 death in 5 years.

Is this reasonable? There is no absolutely correct answer. An appropriate NNT depends on the risks and benefits of treatment. A higher NNT is tolerable even with significant adverse effects if the treatment prevents a serious outcome such as heart disease or death. Migraine, by contrast, is not life-threatening. Treating 56 migraine sufferers to cure a single headache is unreasonable. The NNT for treatment of migraine with subcutaneous sumatriptan vs placebo is about 2.<sup>2</sup>

### REFERENCES

- Collins R, Armitage J, Parish S, Sleight P, Peto R. MRC/BHF Heart Protection Study of cholesterol-lowering with simvastatin in 5963 people with diabetes: a randomised placebo-controlled trial. *Lancet* 2003; 361:2005–2006.
- Sumatriptan in acute migraine. Available at: [www.jr2.ox.ac.uk/bandolier/booth/Migraine/SumaTH.html](http://www.jr2.ox.ac.uk/bandolier/booth/Migraine/SumaTH.html). Accessed on July 27, 2003.

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