

Relatively absolute

Continuing your essential guide to statistical terms, **Chris Cates** explains how risk can be described in different ways

Chris Cates

MA, FRCGP, DRCOG, General Practitioner, Watford

The following table shows the results of a randomised, double-blind, placebo-controlled trial of chloramphenicol eyedrops in children with conjunctivitis. Of those who completed follow-up for a week, 86% were clinically cured with chloramphenicol and 83% with placebo.

	Chloramphenicol	Placebo
Cured	140 (86.4%)	128 (82.6%)
Failure	22 (13.6%)	27 (17.4%)
Total	162	155

These results show a difference between the two groups (found by subtracting the placebo cure rate of 82.6% from the chloramphenicol cure rate of 86.4%). This was reported in the paper as a risk difference of 3.8% (95% confidence interval of -4.1% to 11.8%). This can also be described as an absolute risk reduction of 3.8% (by subtracting the failure rates, giving the same answer). The graph also shows this small absolute risk reduction – there is no great divergence of the curves.

However, risk reductions are not always reported as absolutes in this way. It is also possible to describe the results as a ratio of the cure or failure rates. Here, the risk of not being cured with chloramphenicol would be 13.6% divided by 17.4% — a risk ratio of 0.78. If you were keen to encourage the use of chloramphenicol drops, this translates into a relative risk reduction of 22%, which sounds much more impressive (calculated as $[1 - \text{risk ratio}] \times 100\%$).

The contrast between these two ways of reporting the results is sharpest for rare events. If a treatment reduced failure rates from 5% in the placebo group to 1% in the

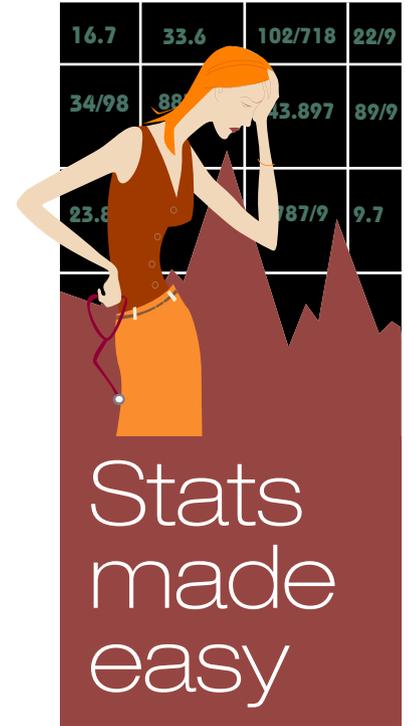
treated group, for example, what would be the absolute and relative risk reductions? (Find the answer at the bottom of the page.)

Next month, I will discuss numbers needed to treat (NNT).

REFERENCE

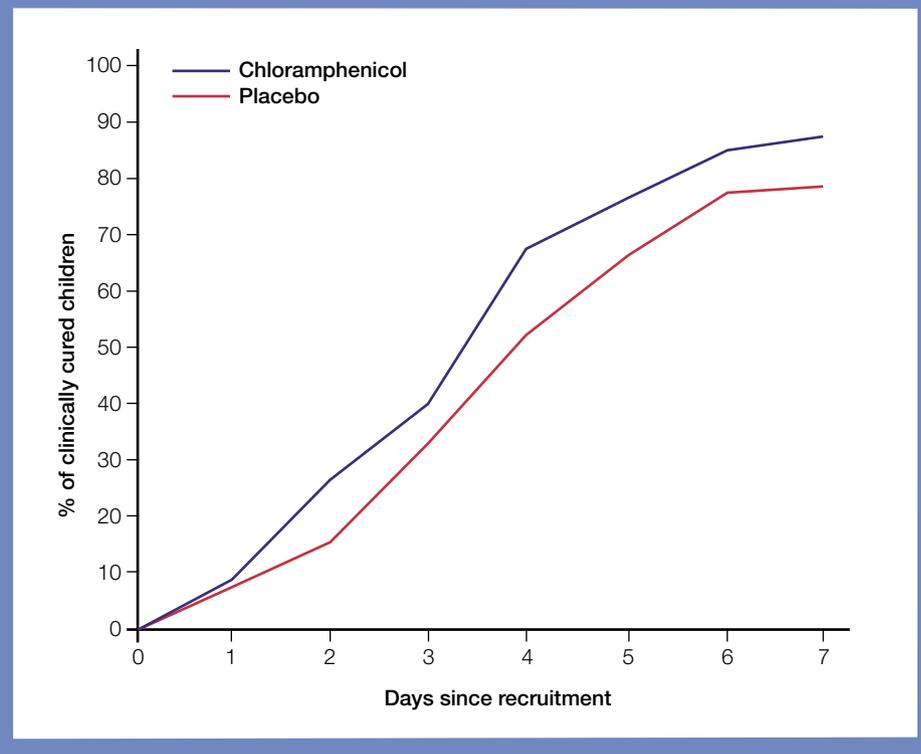
1. Rose PW, Harnden A, Brueggemann AB et al. Chloramphenicol treatment for acute infective conjunctivitis in children in primary care: a randomised double-blind placebo-controlled trial. *Lancet* 2005; **366**: 37–43.

Dr Cates runs a website on evidence-based medicine — go to www.nntonline.net



Graph of absolute difference

Cumulative proportion of children cured during first week of treatment¹



Relatively speaking, the reduction is big, but in absolute terms, small. Relative risk reduction: 80% (since the risk ratio is one fifth). Absolute risk reduction: 4%.

ANSWER