

No Need To be confused

Perhaps the most useful way to give the balance of benefit and harm, numbers needed to treat is the term explained this month

Chris Cates

MA, FRCGP, DRCOG, General Practitioner, Watford

We saw last month that chloramphenicol increased the clinical cure rate for children with conjunctivitis after 1 week, with a risk difference of 3.8% (95% confidence interval of -4.1% to 11.8%), as shown in the following table.¹

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

These results from a single trial can easily be turned into a number needed to treat for one child to benefit, or NNT(B), by taking the inverse of the risk difference of 3.8%. For one extra child to be clinically cured, the NNT(B) is $1/3.8\%$ or $1/0.038 = 27$.

See the box, right, for a visual representation of NNT(B). A hundred children are represented by coloured faces. The 83 green faces are children who got better whether or not they received chloramphenicol, while the 13 red faces are those who were not cured either way. Only the four yellow faces represent the number of children who benefit in a group of 100 patients all given chloramphenicol rather than placebo. So for each one of these yellow faces, 27 children need to be treated.

Similarly, the confidence interval for the NNT can be found from the inverse of each end of the confidence interval for the risk difference. In the example here, the NNT(B) at best could be as low as $1/0.12 = 9$. But, at worst, the treatment might result in fewer children being cured, resulting in a number needed to treat for one to be harmed, or NNT(H), of $1/0.04 = 25$. In this case, since the confidence interval includes

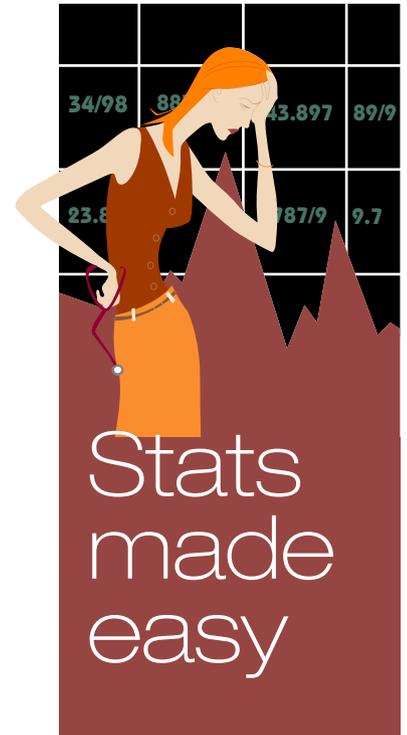
the possibility of harm as well as benefit, the NNT(B) may just be reported as not significant (as in the box).

Since it is not possible to treat fractions of a patient, NNT is conventionally rounded up to the next whole number. It can range from 2 to infinity; a low NNT(B) indicates that more patients enjoy a treatment benefit, but a low NNT(H) means more patients suffer an adverse event.

Next month, I will discuss the calculation of NNTs from systematic reviews.

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.



The faces of NNT

Visual representation of chloramphenicol benefit

With treatment

NNT:
27

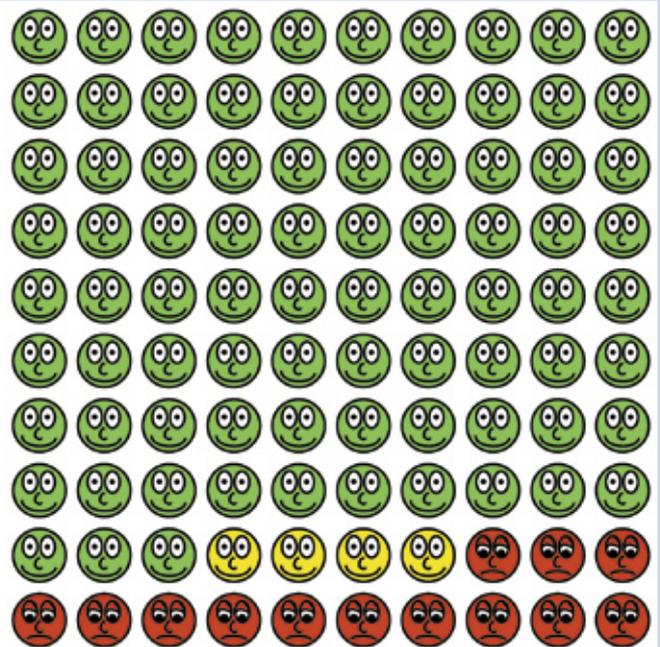
95% confidence
interval:
Not significant

Key

 Good outcome

 Bad outcome

 Better with
treatment



Dr Cates runs website on evidence-based medicine, where you can use the Visual Rx, a free online NNT calculator that gives readouts like this one. Go to www.nntonline.net