Concerning: ‘The number needed to treat needs an associated odds estimation’

Sirs,

Aino et al. propose presenting the odds of one or more successes as a useful addition to the number needed to treat (NNT) when applying the results of studies to groups of patients. Their approach is flawed, and is more likely to confuse than clarify. This statistic should not be routinely used for summarizing treatment effects.

The paper claims that the odds of one or more successes for NNTs of 10 and 100 differ by a very small amount, and that decision-makers have therefore been wrong to think of an NNT of 10 as very different from an NNT of 100. This conclusion is erroneous.

The comparison they make is between the odds of one or more successes for an NNT of 10 applied to a group of 10 patients and the odds of one or more successes computed for an NNT of 100 applied to a group of 100 patients. Their finding that these odds are very similar is only true because as well as changing the effect size (NNT) they change the size of the sample to which the results are applied. NNTs, or any other treatment effect, can be applied to any number of patients.

The Table shows probabilities of no net benefit for NNTs of 10 and 100 in samples of 10 and 100, and the corresponding odds of one or more successes. The values are computed using the standard binomial distribution, as used by Aino et al. Comparing NNTs by looking across the rows, the probability of no events differs substantially as the NNT changes for a fixed sample size. So, for example, if we applied the results to the next 100 patients, the probability of no net benefit with an NNT of 10 is 0.000027, increasing to 0.366 as the NNT increases to 100. This difference is certainly not ‘a small amount’, and an NNT of 10 is very clearly ‘better’.

In practice, the clinician or policy-maker may wish to apply an NNT to a population size of some local relevance, such as the number of patients they expect to see in a year with a particular condition. There is no particular reason why one should present NNTs of 4, 10 and 100 as if they are applied to groups of 4, 10 and 100 respectively. If anything, this makes it harder to compare their meaning rather than easier.

References