Calculating confidence intervals

Results of clinical trials are usually given as ‘point estimates’, but are the results of one trial only which represent an approximation of the ‘true’ result. A 95% confidence interval gives a range within which the ‘true’ value is likely to lay, 95% of the time.

If a confidence interval includes a value that represents NO DIFFERENCE between the intervention and control arms, this means that any difference between the arms is not statistically significant at a level of p=0.05.

Confidence intervals may not always be given in a clinical research paper. However, sometimes it may be useful in making a decision to calculate the confidence interval yourself.

There are two simple ways to calculate a confidence interval:

1. If you have been given the standard error of the Relative Risk Reduction or Relative Risk, the confidence limits are +/- (2 x standard error).

2. If you have the Control and Experimental Event Rates, the formula for the 95% confidence interval is as follows:

   +/- 1.96 [(CER x (1-CER)/n(control) + EER x (1-EER)/n(experimental)]

   Where n(control) and n(experimental) are the numbers of patients in those respective arms.

The 95% confidence interval for the NNT = 1/limits of CI for Absolute Risk Reduction.

Additional Resources:
The University of British Columbia (www.ubc.edu) has an online ‘Clinical Significance Calculator’ which will quickly calculate ARR, RRR, OR, and NNT together with their 95% confidence limits given the EER, CER, and number of patients in each arm.

UBC Clinical Significance Calculator: http://spph.ubc.ca/sites/healthcare/files/calc/clinsig.html

An excellent discussion of confidence intervals can be found on Bandolier at: http://www.medicine.ox.ac.uk/bandolier/learnzone.html