Missing values in clinical trials: handle with sensitivity!

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Missing data are inevitable in clinical trials. However, as a recent review of the literature shows (Wood et al, 2004) complete case analysis is still common with repeated measures outcome data, and sensitivity analyses are infrequently performed.

We compare principled and unprincipled methods for handling missing data, reviewing the shortcomings of completers analysis and Last Observation Carried Forward (LOCF) (Carpenter, 2004).

We then discuss methods for sensitivity analysis, reviewing Bayesian approaches (Carpenter 200, White et al, 2004) and proposing a new approach involving weighting multiple imputations.

The talk will include a short demonstration of macros for the MLwiN software package.

References:

Carpenter, J. Pocock, S and Lamm C. J. (2002): Coping with missing data in clinical trials: a model based approach applied to asthma trials. Statistics in Medicine, 21, 1043-1066.

Carpenter, J. Kenward, M. Evans, S. and White, I. (2004): Letter to the editor: Last observation carry forward and last observation analysis. Statistics in Medicine, 23, 3241-3244.

White, I. Carpenter, J. R. Evans S. and Schroter, S. (2004): Eliciting and using expert opinions about dropout bias in randomised controlled clinical trials. Submitted to Clinical Trials. Download from www.missingdata.org.uk <http://www.missingdata.org.uk>.

Wood, A. M., White, I. R. and Thompson, S. G. (2004): Are missing outcome data adequately handled? A review of published randomized controlled trials in major medical journals. Clinical Trials, 1, 368-376.