
A Meta-Analysis of Cognitive Outcome following Coronary Artery Bypass Surgery: Time for a New Consensus?

Francesca Cormack*[†], Alex Shipolini¹, Cassandra Richardson², Wael Awad¹, David McCormack¹, Malcolm Underwood³, Torsten Baldeweg⁴, and Alexandra Hogan^{1,4,5}

¹Barts and The London, NHS Trust / Queen Mary University of London – United Kingdom

²Brighton and Sussex Medical School – United Kingdom

³The Chinese University of Hong Kong, Faculty of Medicine, Prince of Wales Hospital, Division of Cardiothoracic Surgery – China

⁴Developmental Cognitive Neuroscience Unit, UCL Institute of Child Health (ICH) – University College of London (UCL) – University College London Gower Street London WC1E 6BT, United Kingdom

⁵University College London Hospital, NHS Trust – United Kingdom

Abstract

Coronary artery bypass surgery ('CABG') is the established treatment for complex coronary artery disease not amenable to percutaneous coronary intervention (PCI). There is a widely held belief that cognitive decline may present post-operatively and may persist in the longer term. A consensus statement of core neuropsychological tests was published in 1995 with the intention of guiding investigation into this issue. Approximately fifteen years later, we have carried out a meta-analysis evaluating the evidence for cognitive decline post-CABG in those studies that have applied the consensus statement test battery. Twenty-eight published studies, accumulating data from up to 2,043 patients undergoing CABG, met our inclusion criteria. Results were examined at 'very early' (less than 2 weeks), 'early' (3 months) and 'late' (6-12 months) time periods post-operatively. Two of the four core tests revealed an initial very early decrease in psychomotor speed that was not present at subsequent testing; measures of memory and executive function did not show decline at any time point. In fact the omnibus data suggest subtle improvement in function relative to pre-operative baseline testing. This is contrary to the more negative interpretation of results of some individual publications included in our review which may reflect poor outcomes in a few patients and/or methodological issues. Based on our data, we make suggestions for further research into cognitive outcome after CABG, thus aiming to extend and help modernize the work of the original consensus statement group.

*Speaker

[†]Corresponding author: francesca.cormack@mrc-cbu.cam.ac.uk