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LETTER TO EDITOR LANCET NEUROLOGY

Assessing outcome after TBI: Throwing the baby out with the bathwater?

In their wide ranging and impressive review of TBI, Maas et al¹ recommend the development and validation of multidimensional outcome constructs that quantify overall burden of disability from TBI. Their finding that there are already nearly 1000 instruments to consider is only one of many challenges that need to be overcome to achieve this aim.

The assessment of outcome after TBI is complicated by influences of pre-injury as well as injury factors and the impact and response to the environment whether psychological, social or physical at various stages of recovery. Hence, many measures (eg cognition or quality of life), that might be within a 'package' aimed to improve sensitivity, are by their nature strongly influenced by socio-demographic and psychological factors and fundamentally lack specificity in detecting consequences of the initial brain injury. Practical considerations that include time, expense and completeness of follow up are vital in both clinical and research contexts, for any such tool to have utility. Hence a balance has to be found between attempting to build a picture of the complex variable array of factors responsible for the state of an individual or using an overall index of survival and social handicap to characterise, classify and compare groups. The option of selecting from a range of recommended and validated tools² to answer questions specific to the clinical or research focus in addition to a global overview should not be overlooked. New approaches being investigated include the development of formative measures composed of indicators that together *determine* the construct of outcome³.

While the feasibility of achieving the aspiration of Maas et al is being explored, the findings from new tools need to be related to information gained from the 'reflective' global indices that have been used extensively over four decades⁴. We, therefore, welcome their recommendation to continue concurrent use of the GOS and GOSE. In a recent overview these scales showed significant differences in outcome in 29% of 112 different RCTs in which they were used as an end point⁵. Moreover, the GOS has proved effective in follow up in middle and low income countries where, as the Lancet commission importantly emphasise, 90% of deaths due to TBI occur. The merits of reliably detecting therapeutically relevant

effects using refined vs simple indices with sufficient participants and state of the art statistical methods will be an important aspect of evaluation.

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