

**Statistical analysis plan for the family-led rehabilitation after stroke in  
India (ATTEND) trial: a multicentre randomised controlled trial of a new  
model of stroke rehabilitation compared to usual care**

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We report no relevant conflicts of interest

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**Abstract**

**Background:** In low- and middle-income countries, few patients with receive organised rehabilitation after stroke, yet the burden of chronic diseases such as stroke is increasing in these countries. Affordable models of effective rehabilitation could have a major impact. The ATTEND trial is evaluating a family-led caregiver delivered rehabilitation program after stroke.

**Objective:** To publish the detailed statistical analysis plan for the ATTEND trial prior to trial unblinding.

**Methods:** Based upon the published registration and protocol, the blinded steering committee and management team, led by a trial statistician, have developed a statistical analysis plan. The plan has been informed by the chosen outcome measures, the data collection forms and knowledge of key baseline data.

**Results:** The resulting statistical analysis plan is consistent with best practice and will allow open and transparent reporting.

**Conclusions:** Publication of the trial statistical analysis plan reduces potential bias in trial reporting, and clearly outlines pre-specified analyses.

As infectious disease has been brought under increasing control, non-communicable diseases are on the rise, with stroke, in particular, increasing in incidence and subsequent burden. The majority of those with stroke live in low and middle-income countries, and these countries have few organised stroke services.[1] In India, for example, most stroke patients do not have access to formal rehabilitation.[2] In rural areas of India, few patients get to hospital and most do not receive appropriate secondary preventative treatment.[3]

Economic drivers are clearly important as the per capita Gross Domestic Product is more than thirty times greater in countries such as the USA or Australia, as compared to India.[4] Affordable healthcare should therefore be a public health priority. The ATTEND trial of family led rehabilitation after stroke is an international attempt to address this priority as recommended by the World Bank and World Health Organisation report on Disability.[5]

ATTEND is an individual subject randomised controlled trial involving the training of the patient and nominated carer in key aspects of stroke rehabilitation, with an emphasis on repeated performance in task-specific activities. The intervention was piloted,[6] and then refined with input from the steering committee and project research team in Indian.

ATTEND uses a pragmatic design and the protocol has been published.[7] In brief, it is a randomised controlled trial across 14 sites in India. Patients are eligible if they are adults (aged 18 years or older) who were admitted to hospital with a recent (<1 month) stroke (ischaemic, haemorrhagic or

undifferentiated) and had residual disability with a reasonable expectation of survival. Participants need to have had a nominated caregiver and be willing to adhere to the follow-up arrangements. After consent has been obtained from both the patient and caregiver, they were randomised through a secure web-based randomisation system to either intervention or control. The intervention was started in hospital, with an aim of participants receiving it for one hour each day until discharge, delivered by a trained stroke coordinator (usually with a physiotherapy background). Part of the intervention involved discharge planning. After discharge, the patient and carer were supported by up to five home visits by a stroke coordinator who provided them with an illustrated ATTEND manual outlining key activities. The details of the intervention have been kept confidential until the trial follow-up period has been completed to reduce the risk of contamination between intervention and control patients. Overall, the intervention was developed from new models of care emerging in India, incorporating aspects of the best evidence for stroke rehabilitation and good practice summarised in an intervention guide for the stroke coordinators. Control patients received usual care. Baseline, demographic and initial follow-up data were collected at hospital discharge. Outcomes were collected at 3 months and 6 months post-randomisation by blinded assessors employed at each site. The primary outcome is the mRS at 6 months to reflect the lasting effects of the intervention on disability. The 3-month data will be used to explore trajectories of recovery and to minimise dropouts (for example, if a patient cannot be found at 3-months there will be another 3 months to try and locate the patient for the primary outcome). The main outcome was a dichotomous outcome on the modified Rankin Scale

(mRS) score of 0-2 versus 3-6, with an ordinal analysis as a key secondary outcome. Other outcomes include basic activities of daily living, quality of life, carer burden, anxiety and depression, and extended activities of daily living. Length of stay, place of residence and return to work will also be collected, as part of a larger planned economic analysis.

The trial is funded by the National Health and Medical Research Council of Australia and recruitment commenced in January 2014 and was successfully completed (1250 participants) in early 2016. In keeping with best practice, the trial is registered and the protocol published.[7] Prior to unblinding, we present the statistical analysis plan (see supplement) which helps prevent undue emphasis on data dependent analyses and reduces potential bias in future reporting. The preliminary results are expected to be announced at the World Stroke Congress in Hyderabad in October 2016.

Results from ATTEND trial have the potential to have major impact as the costs are likely to be modest, and therefore affordable to those not only in India but in other low- and middle income countries. If successful in the context of stroke, further work exploring similar models (a “polypill” of rehabilitation) would be important for other acutely disabling conditions such as hip fracture, spinal cord injury, burns and brain injury given the burden of disease in low and middle-income countries.

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