Background Globally, 250 million children under 5 years of age are at risk of not achieving their developmental potential. One of the rate-limiting steps to the scalability of child developmental assessments is the reliability on specialist professionals. The INTERGROWTH-21st Project has developed a neurodevelopment Package for rapid, holistic, and robust assessment of young children.

Objectives
i. To describe the development, characteristics and implementation of the INTERGROWTH–21st Neurodevelopment Package
ii. To explore whether field workers from Brazil, India, Italy, Kenya and the UK can (a) administer and (b) score the INTER–NDA component of the Package comparably with healthcare professionals.

Methods The INTERGROWTH–21st Neurodevelopment Package measures (i) visual acuity and contrast sensitivity (using the Cardiff Cards) (ii) cortical auditory processing, using the auditory novelty odd-ball paradigm administered through gel-free, wireless electroencephalography (iii) cognition, language skills, motor skills, behaviour, attention and social-emotional reactivity using the 53-item INTER-NDA and (iv) sleep using actigraphy; in 22 to 26 month olds. Data are collected through a tablet-based application, the NeuroApp.

The agreement between the INTER-NDA and the BSID-III was evaluated in a sample of 81 infants from Oxford, UK. To determine whether non-specialists can implement the INTER-NDA, protocol adherence and INTER-NDA domain scores were compared between field workers and healthcare professionals.

Results

The administration times of the Package and the INTER-NDA are 45 and 15 min respectively. To date, more than 2500 children in Brazil, India, Italy, Kenya, Pakistan, South Africa, Thailand and the UK have been assessed. Interclass correlation coefficients between the BSID-III and the INTER-NDA for cognitive, motor and behaviour domains were between 0.745 and 0.883 (p<0.001), with little to no bias in the Bland-Altman analysis. INTER-NDA protocol adherence is 92.9% and 89.8% for healthcare professionals and field workers respectively. There are no significant differences in INTER-NDA scores between the groups.

Conclusions The INTERGROWTH–21st Neurodevelopment Package is a rapid, multi-dimensional ECD instrument. The INTER-NDA component shows good agreement with the BSID-III for the 2 year age group, despite its short administration time, and can be administered effectively by non-specialists.