Event Related Potentials (ERPs) as a measure of cognitive function

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Background:

• Malaria affects 300-400 million people worldwide causing over 1 million deaths (WHO, 2000)

• Morbid consequences are often overlooked in face of high mortality rates
Statement of the problem:

- Difficulty in assessing children
- Lack of culturally appropriate tests
Event related potentials (ERPs)

- Non-invasive method
- Visual and auditory
- P 300 wave
General Objective:

• To demonstrate that ERPs can be used to assess cognitive function in rural Kenya
Specific Objectives:

• To compare the assessment of cognitive processes using ERPs with locally adapted neuropsychological tests
• To assess the sensitivity of ERPs to detect neuro-cognitive impairment
• To determine the ability of ERP measures in predicting neuro-cognitive performance 24 months later
Hypotheses:

- ERPs are sensitive to neuro-cognitive impairment
- ERP analysis will distinguish between groups
- ERPs are predictive of future cognitive performance
Study Design:

- Frequency-matched controls
- Children between 3 months – 9 years in Kilifi District who meet inclusion criteria
- Subjects from 6-9 years will take both neuropsychological and neurophysiological tests
Study Design (cont’d)

• Cases and controls from 3 months and 5 years will have ERP measures taken
• ERP measures of cases will be repeated 24 months later
Data management and Analysis

• Neuroscan version 4.3 will process neurophysiological data, then convert it to ASCII for further processing using SPSS for Windows
• Neuropsychological data will be coded and analyzed using SPSS for Windows
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