Abstract Title: A Phone App to Diagnose Epileptic Seizures: A Useful Tool to Reduce the Epilepsy Treatment Gap in Poorer Countries

Press Release Title: New Apps May Help Detect Seizures, Treat Strokes

Objective: To devise and test a phone app to enable non-doctors to diagnose epileptic seizures.

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Background: If the epilepsy treatment gap in the developing world is to be closed, health professionals other than doctors must be involved with epilepsy management. To do this, they will need some tools to help them. The diagnosis of episodes of altered consciousness as epileptic seizures is key to the management of epilepsy. Traditionally done by doctors and time-consuming, this relies on asking questions and analyzing the replies. It should be possible to design a tool to do this using a Bayesian approach. This would enable the diagnosis to be made by non-doctors and save precious medical time.

Design/Method: Sixty-seven consecutive patients attending epilepsy clinics at Dhulikhel Hospital, Nepal and its outreach centers were asked a series of about 26 questions about their episodes. A diagnosis of “epileptic seizure (E)” or “not epileptic seizure (NE)” was reached clinically. Retrospectively, for each question the Likelihood Ratio (LR) of having E or NE was calculated and the most informative LRs identified. These were then used sequentially and incorporated into a mobile phone app. This was then validated in two different populations in Nepal and India and compared with the independent clinical diagnosis.

Results: Of the 67 patients originally seen, 51 had E giving a pre-test probability of 0.76. Eleven questions were identified with an LR>3 and incorporated into the app. The app was then validated in 132 patients from two different populations. Non-doctors were able to use it with minimal training. The app separated those with E and NE with near-complete reliability.

Conclusions: A phone app has been designed to diagnose epileptic seizures and works well in practice. It should be particularly useful where medical input is scarce or non-existent.

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