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Improving recognition of severe illness and patient pathways in primary health services using mHealth technology in urban Blantyre, Malawi

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Abstract

Hospital-based studies suggest that late presentation at tertiary level is a driving factor for mortality from severe febrile illness in resource-poor contexts. Recent research into health seeking pathways in Malawi identified primary level barriers linked to service provision and misdiagnoses. In Malawi an Emergency Triage, Assessment and Treatment (ETAT) package, approved by the World Health Organisation (WHO) has been introduced at tertiary level and is being rolled out to district and primary clinics. mHealth technologies are likely to sustain quality in implementing clinical protocols, particularly when community-based health providers with limited formal training are increasingly working to offset primary level staff shortages.

We aimed to develop and evaluate feasibility and acceptability of a prototype primary care level intervention to improve triage, assessment and referral of children with severe illness in Blantyre and to investigate whether this facilitates systematic and timely recognition and response to severe illness.

All paediatric cases within five primary clinics in urban Blantyre were triaged and assigned Red for Emergency, Amber for Priority and Green for Queue using the mHealth triage algorithm. Phones were assigned to triage, to clinicians and the A&E department within the local tertiary, referral hospital (Queen Elizabeth Central Hospital (QECH)) for monitoring patient referrals.

We conducted a rigorous evaluation using a combination of quantitative and qualitative approaches, both pre- and post and, using the phone as a monitoring tool, in parallel to the intervention.

Seventy-four healthcare staff were trained across five urban primary clinics. A total of 41,358 patients were assessed using the mHealth triage algorithm from December 2012 to May 2013, of whom 1.56% were referred to QECH. Rates of concordance between triage and clinician assessment showed a good level of agreement above chance (Kappa value = 0.71). Pre- and post-Patient Journey Modelling tools identified positive changes in patient flows. Overall patient and health worker satisfaction was high with indirect impact on quality of

clinical assessment amongst health workers based at intervention clinics but not directly involved in the intervention.

This study has shown that mHealth technologies have the potential to improve primary level health services in resource-poor contexts with high patient numbers and overburdened health staff. Working in collaboration with the Ministry of Health the data we present will inform the development of a cluster-randomised trial to rigorously evaluate the role of mHealth in the implementation of ETAT. This will aid policy decisions around ETAT implementation at primary health level.