Cost Effectiveness of Pre-Referral Antimalarial Treatment in Severe Malaria among Children in Sub-Saharan Africa

Vivian Rakuomi[1], Faith Okalebo[1], Stanley Ndwigah[1] and **Levi Mbugua*[2]**
[1]University of Nairobi
***[2]Department of Statistics and Actuarial Sciences The Technical University of Kenya**

Abstract

Background:

In 2013, 78% of malaria deaths occurred in children aged 5years and below, in sub-Saharan Africa. Treatment of severe malaria requires a health facility with inpatient care. However, in most sub-Sahara African coun-tries, access to health facilities is a major problem. Pre-referral antimalarial treatments aim to delay the progress of severe malaria as patients seek to access health facilities. Rectal artesunate can be administered in the community as a pre-referral treatment in rural hard-to-reach areas. In Kenya, though pre-referral rectal artesunate has been included in the National Guidelines for pre-referral treatment, it is yet to be implemented in the public healthcare system. It is important, therefore, to establish its cost-utility compared to current parenteral treatments. This study evaluated the cost-utility of provision of pre-referral treatments by community health workers compared to similar services at a primary health facility.

Methods:

This was a decision model-based cost-utility analysis, comparing pre-referral antimalarial treatments provided by: community health workers (CHWs), primary health facility, direct access to a tertiary health facility and no access to treatment. A theoretical cohort, of 1000 children, who were below 5years old; residing in rural hard-to-reach areas, was taken as the reference population. Data was collected through key informant interviews, to assess the costs, while key measures of effectiveness, were obtained from existing studies. The key measure of outcomes was Disability Adjusted Life Years (DALYS) averted. Probabilistic sensitivity analysis was carried out to assess the robustness of the model.

Results:

Provision of rectal pre-referral treatment by community health workers was estimated to avert 13,276 DALYs, at a cost of $68,428 for a cohort of 1000 children. Provision of rectal pre-referral treatment at a primary health facility was estimated to avert 9993 DALYs, at a cost of $73,826 for a cohort of 1000 children, while going directly to a tertiary health facility was estimated to avert 15,801 DALYs, at a cost of $114,903 for a cohort of 1000 children. The incremental cost effectiveness ratios for provision of pre-referral treatment by community health care and primary health workers were $5.11 and $7.30 per DALYs averted respectively.

Conclusion:

Use of CHWs was more cost effective than provision of pre-referral treatments at a primary health facility especially, with high referral compliance. Rectal artesunate can easily be administered by community health workers, unlike parenteral pre-referral interventions.

Keywords:

Cost-effectiveness, Decision analysis, Modeling, Disability Adjusted Life Years

Cost Effectiveness and Resource AllocationVol.15 (14) pp.1-11 (2017)
See more at: https://resource-allocation.biomedcentral.com/track/pdf/10.1186/s12962-017-0076-5