

CHANGES IN SUSCEPTIBILITY TO LIFE THREATENING INFECTIONS FOLLOWING TREATMENT FOR COMPLICATED SEVERE MALNUTRITION IN KENYA.

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Abstract

Background: The aim of treating childhood Severe Acute Malnutrition (SAM), besides anthropometric recovery and preventing short-term mortality, include reducing risks of subsequent serious infections. The dynamics of the risk of serious illness changes during rehabilitation is unknown, but could inform improving design and scope of interventions. In this study, we investigate changes in the risk of life-threatening events (LTEs) in relation to anthropometric recovery from SAM.

Methods: Secondary analysis of a clinical trial including 1,778 HIV-uninfected Kenyan children (2-59 months) with complicated SAM, enrolled following the inpatient stabilization phase of treatment, and followed for 12 months. The main outcome was LTEs, defined as infections requiring re-hospitalization or causing death. We examined anthropometry measured at months one, three and six after enrolment in relation to LTEs occurring during the 6 months following each of these time points.

Results: During 12 months, there were 823 LTEs (257 fatal), predominantly severe pneumonia and diarrhea. At months one, three and six, 557(34%), 764(49%) and 842(56%) children had weight-for-height z-score (WHZ) \geq -2 respectively which, compared to WHZ<-3, was associated with lower risks of subsequent LTEs: adjusted hazard ratios 0.50(95%CI 0.40-0.64), 0.30(95%CI 0.23-0.39) and 0.23(95% CI 0.16-0.32) respectively. However, children with WHZ \geq -2 at one, three and six months still had 39(95%CI 32-47), 26(95%CI 22-32) and 15(95%CI 12-20) LTEs per 100 child-years of observation during the following six months. WHZ at study enrolment predicted subsequent WHZ, but not the risk of LTEs. Changes in height-for-age z score did not predict LTEs.

Conclusion: Anthropometric response was associated with rapid and substantial reduction risk of LTEs. However, reduction in susceptibility lagged behind anthropometric improvement. Disease events, alongside anthropometric assessment may provide a clearer picture of the effectiveness of interventions. Robust protocols for detecting and treating poor anthropometric recovery, and addressing broader vulnerabilities that complicated SAM indicates may save lives.