

Abstract

BACKGROUND:

The existing case fatality estimates of inpatient childhood pneumonia in developing countries are largely from periods preceding routine use of conjugate vaccines for infant immunization and such primary studies rarely explore hospital variations in mortality. We analysed case fatality rates of children admitted to nine Kenyan hospitals with pneumonia during the era of routine infant immunization with Hib conjugate vaccine to determine if significant variations exist between hospitals.

METHODS:

Pneumonia admissions and outcomes in paediatric wards are described using data collected over two time periods: a one-year period (2007-2008) in nine hospitals, and data from a 9.25-year period (1999-March 2008) in one of the participating hospitals. Hospital case fatality rates for inpatient pneumonia during 2007 to 2008 were modeled using a fixed effect binomial regression model with a logit link. Using an interrupted time series design, data from one hospital were analysed for trends in pneumonia mortality during the period between 1997 and March 2008.

RESULTS:

Overall, 195 (5.9%) children admitted to all 9 hospitals with pneumonia from March 2007 to March 2008 died in hospital. After adjusting for child's sex, comorbidity, and hospital effect, mortality was significantly associated with child's age ($p < 0.001$) and pneumonia severity ($p < 0.001$). There was evidence of significant variations in mortality between hospitals (LR $\chi^2 = 52.19$; $p < 0.001$). Pneumonia mortality remained stable in the periods before (trend -0.03, 95% CI -0.1 to 0.02) and after Hib introduction (trend 0.04, 95% CI -0.04 to 0.11).

CONCLUSIONS:

There are important variations in hospital-pneumonia case fatality in Kenya and these variations are not attributed to temporal changes. Such variations in mortality are not addressed by existing epidemiological models and need to be considered in allocating resources to improve child health.