Kenya: pneumonia and pneumococcal disease

Childhood pneumonia is a major public health issue for Kenya. In 2008, pneumonia was the second leading cause of death among under fives, claiming over 30,000 childrens' lives, equivalent to 16% of child mortality in Kenya.[1]

Pneumococcal disease which is caused by the bacteria *Streptococcus pneumoniae*, also known as pneumococcus, is the number one vaccine preventable cause of death among under fives globally. Serious pneumococcal infections include pneumonia, meningitis, and sepsis. Young children, particularly infants, are the most vulnerable to the bacterium with those suffering from malnutrition, low birth weight, living with HIV/AIDS and not exclusively breastfed until six months of age at greatest risk. Yet pneumococcal disease can be prevented with vaccines.

New vaccines against pneumococcal diseases

Up to seven million child deaths could be prevented by 2030 with increased access to the new vaccines against pneumococcal disease. Thanks to the Advance Market Commitment (AMC), an innovative finance mechanism pioneered by the GAVI Alliance, two vaccines (PCV10 and PCV13) against pneumococcal disease have been approved so far for introduction in GAVI eligible countries.

Current vaccine coverage in Kenya

In 2007, vaccine coverage against measles, pertussis, and *Haemophilus influenzae* type b (Hib) – an important cause of childhood pneumonia – was approximately 80%.[2]

A recent Johns Hopkins' Bloomberg School of Public Health study[3] reported on progress in prevention and control of pneumonia in the top 15 countries that account for nearly three-quarters of all child pneumonia deaths worldwide. The study concluded that Kenya's coverage level on all target interventions is currently 48%.[1] This figure is expected to substantially increase with the national roll-out of the pneumococcal vaccine.[4] Systems are in place in Kenya to implement and monitor the efficacy of pneumococcal vaccines effectively.

Kenya Facts

Total population:	**38,765,000**
Population of children under 5 years of age:	**6,540,000**
Mortality rate of children under 5 years of age:	**128/1,000 live births**
Total number of under-5 deaths:	**188,928**
Gross National Income (GNI) per capita:	**US$ 770**

[1] Black RE, Cousens S, Johnson HL, et al. Global, regional, and national causes of child mortality in 2008: a systematic analysis. Lancet: 12 May 2010; 375: 1969-87.

[2] UNICEF. State of the World's Children 2009. Available at: http://www.unicef.org/sowc09/docs/SOWC09-FullReport-EN.pdf. Accessed: December 22, 2010.

[3] http://www.jhsph.eu/bin/k/m/pneumoniareportcard.pdf

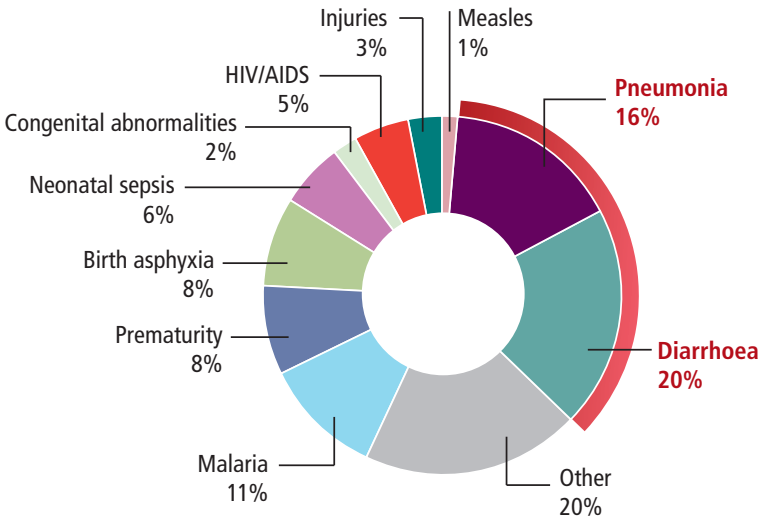
[4] IVAC. Pneumonia Report Card. Available at: http://www.jhsph.edu/bin/k/m/pneumoniareportcard.pdf. Accessed: December 26, 2010.

The burden of pneumonia for those living with HIV/AIDS

A child born in a low-income country is 17 times more likely to die before reaching the age of five compared to a child in a high-income country.[5] Studies have also shown that children with HIV/AIDS are 40 times more likely to contract pneumonia than HIV-negative children and may be more likely to contract antibiotic-resistant strains of the disease.[6,7] In fact, pneumonia is the most common infection leading to hospitalisation among HIV-infected children.[8]

In Kenya, an estimated 180,000 children under the age of 15 live with HIV/AIDS. Promoting pneumonia prevention through vaccination is essential to reducing Kenya's child and adult mortality.

Causes of under-five child deaths in Kenya*



* Black RE, Cousens S, Johnson HL, et al. Global, regional, and national causes of child mortality in 2008: a systematic analysis. Lancet: 12 May 2010; 375: 1969-87.

Pneumococcal vaccines are a wise investment

The economic burden caused by pneumococcal infection can be significant and have negative repercussions at the family and national levels, and on health systems.[9] In Kenya, families often have to bear the greater part of health cost themselves.

Preventing the majority of these financially and physically destructive infections through the use of available vaccines is much cheaper than hospitalising a sick child. The acceleration of pneumococcal vaccine access for developing countries by GAVI and its partners will not only save the lives of Kenyans, it will also promote health and thereby contribute to a growing economy and overall poverty reduction.

Introducing the pneumococcal vaccines in Kenya

Since 2000, the Kenya Medical Research Institute (KEMRI)/Wellcome Trust Research Programme has run an epidemiologic and demographic surveillance system that monitors significant events and migrations around three hospitals in Kilifi, Kisumu and Kibera.[10] Kenya's extended programme on immunisation has also proven to be successful in establishing a routine immunisation programme and increasing vaccine coverage among the population. The country will be introducing the 10-valent pneumococcal vaccine into its routine immunisation programme in early 2011. This introduction is expected to cover more than 70% of the invasive pneumococcal diseases afflicting African children.[4]

[5] United Nations Department of Economic and Social Affairs, Population Division. World Population Prospects: the 2008 Revision [CD-ROM edition]. May 2009.

[6] Bliss SJ, O'Brian KL, Janoff EN, et al. The evidence for using conjugate vaccines to protect HIV-infected children against pneumococcal disease. *Lancet Infect Dis.* 2007; 8:67-80.

[7] Madhi SA, Petersen K, Madhi A, Wasas A, and Klugman KP. Impact of human immunodeficiency virus type 1 on the disease spectrum of *Streptococcus pneumoniae* in South African children. *Pediatr Infect Dis J.* 2000;19(12):1141-1147.

[8] Gray DM, Zar HJ. Community-acquired pneumonia in HIV-infected children: a global perspective. *Curr Opin Pulm Med.* 2010:16:208-216.

[9] Sinha A, Levine O, Knoll MD, Muhib F, and Lieu TA. Cost-effectiveness of pneumococcal conjugate vaccination in the prevention of child mortality: An international economic analysis. Lancet. 2007;369(9559):389-396.

[10] Moisi JC, Kabuka J, Mitingi D, Levine OS, and Scott JAG. Spatial and socio-demographic predictors of time-to-immunization in a rural area in Kenya: Is equity attainable? Vaccine. 2010; 28:5725-5730.

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