

Meningitis and Septicaemia 2019
November 5-6, 2019, British Museum, London.

Estimating global burden of pneumococcal, Hib, & meningococcal infection

Dr Maria Knoll, Johns Hopkins Bloomberg School of Public Health

Historically Hib and pneumococcus were the dominant pathogens responsible for endemic meningitis globally. Introduction of Hib and pneumococcal conjugate vaccines (PCV) have reduced meningitis cases and deaths due to these pathogens over the last decade in children <5 years of age. The recent introduction of meningococcal A conjugate vaccine in the African meningitis belt has virtually eliminated epidemic and endemic meningococcal A disease in that region. Recently, meningococcal meningitis global disease burden (cases and deaths) has been estimated for children 1-59 months of age from 2000-2015 using similar methods as for Hib and pneumococcal meningitis (Wahl B, et. al, Lancet 2018). Briefly, WHO and Maternal and Child Epidemiology Estimation (MCEE) meningitis mortality (Liu L, et. al, Lancet 2016) was apportioned using pathogen distribution in cases and pathogen-specific case fatality ratios. Estimates accounted for HIV prevalence, access to care, vaccine use and proportion vaccine-type serotype/serogroup. In 2015, for the first time, global endemic meningitis due to Hib (7,200 deaths and 31,400 cases) was estimated to be lower than for meningococcus (11,600 deaths and 38,400 cases). Pneumococcus was still the dominant pathogen causing endemic meningitis (37,900 deaths and 83,900 cases) but is continuing to fall as more children <5 years in high mortality countries have received PCV. On average over the 15-year time period, meningitis outbreaks (all causes combined) in the Africa meningitis belt region caused as many deaths as the global total estimated for endemic meningococcus meningitis. Global endemic meningococcal meningitis deaths fell 32.3% from 2010 to 2015 following introduction of MenA conjugate vaccine in the meningitis belt compared to 15.6% the previous 5 years (2005 to 2010). Hib, pneumococcus and meningococcus combined accounted for an estimated 51% of endemic meningitis deaths globally in 2015, with the remaining due to epidemic disease (14%, primarily due to non-A meningococcus and pneumococcus) and other (largely unknown) bacterial etiology (35%; excluding TB). The year 2015 was the first time other (unknown) bacterial etiology of endemic meningitis deaths exceeded that estimated for any of these three bacterial pathogens, making unknown etiology now the single largest group of meningitis deaths.