Vaccines preventing pneumococcal disease protect African children with sickle-cell disease

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A new study released this week in The *Lancet Infectious Diseases* finds that African children who contract pneumococcus - a bacterial infection that causes pneumonia, meningitis and sepsis - are 36 times as likely to have sickle-cell disease, a blood disorder prevalent in African children that increases the risk for infectious diseases and early death. The study underscores the critical need for use of pneumococcal conjugate vaccines (PCV) among populations predisposed to sickle-cell disease, most notably those in sub-saharan Africa.

"Our findings clearly show that African children with sickle-cell disease are at increased risk of bacterial illness compared with their peers without sickle-cell disease, with the pneumococcus being of particular concern," said Dr. Keith P. Klugman, contributing author and professor and William H. Foege Chair in Global Health at the Rollins School of Public Health.

Africa is home to the vast majority of the world's sickle-cell disease cases. Sickle-cell disease is inherited by a child from both parents and is caused by abnormal hemoglobin, a blood protein that distorts the shape of red blood cells and delivers less oxygen to tissues. The disease weakens the immune system and puts its victims at risk for serious bacterial infection and childhood death. Data examined from studies in the Democratic Republic of the Congo, Nigeria, Kenya and Senegal - countries with the highest sickle-cell disease burden - clearly

demonstrate an increased risk of serious bacterial infection, especially invasive pneumococcal disease, in African children with sickle-cell disease.

"In combination with early diagnosis and treatment of sickle-cell disease, routine, country-wide immunization against pneumococcus is the best strategy to improve quality of life for all African children, particularly those with sickle-cell disease," said Orin Levine, contributing author, executive director of the International Vaccine Access Center (IVAC) at The Johns Hopkins Bloomberg School of Public Health and co-chair of the Pneumococcal Awareness Council of Experts (PACE). "Millions of lives can be saved by improving access to pneumococcal conjugate vaccines."

One-third of all indigenous inhabitants of Sub-Saharan Africa carry the sickle cell gene, and approximately, 230,000 African children are born with sickle-cell disease each year. Because routine access to medical care is out of reach for many children in the region, the average life expectancy for those afflicted with sickle cell disease in Africa is less than 20 years. In many developed countries where comprehensive care including pneumococcal vaccination and aggressive treatment are available, life-expectancy for sickle cell patients is 45-55 years. Since PCV was first introduced in 2000 in the United States, invasive pneumococcal infections in children with sickle-cell disease declined 68 percent in children under 10 and by 90 percent in children under five.

"The one-two punch of sickle-cell disease coupled with pneumococcal disease is devastating in Africa making protecting Africa's children through vaccination an urgent priority," said Ciro A. de Quadros executive vice president of the Sabin Vaccine Institute and co-chair of PACE. "We urge the leaders of African countries to make routine vaccination against pneumococcal disease a priority."

Pneumococcal disease is a bacterial infection that causes life-threatening pneumonia, meningitis and sepsis. Every year, pneumococcal disease takes the lives of nearly 1.6 million people, nearly half of whom are young children in the developing world, where vaccines to prevent the disease are not yet in widespread use. The lack of access in these countries has been due primarily to obstacles in awareness, policy guidance and available financing for low-income countries.

Safe and effective vaccines currently exist to prevent pneumococcal deaths. In 2006, the World Health Organization (WHO) recommended that all countries include PCV in their national immunization programs, especially in countries where childhood mortality is high. The WHO recommendation guides country policy-making on the prioritization of measures to address childhood pneumococcal disease.

More information: To view the full study, please visit www.thelancet.com/journals/lan … rticle/PIIS1473-3099%2810%2970055-4/fulltext#article_upsell

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