

Understanding influenza vaccine effectiveness in Senegal

Each year, influenza causes approximately 250,000 to 500,000 deaths worldwide and three to five million cases of severe illness.¹ Epidemics and outbreaks of influenza have the potential to cause millions of deaths globally, with pandemics—worldwide epidemics—generally occurring about every 40 years.

The disease burden of influenza is substantial, but largely overlooked in many countries. In temperate regions of the world, influenza occurs in seasonal patterns. Less is known about influenza in tropical regions except that influenza can circulate year-round, with one or more peaks occurring per year. Influenza surveillance data generated by Senegal's National Influenza Center indicate that the disease's peak in the country tends to coincide with the warm rainy season.² Throughout the tropical world, available data suggest that influenza-related morbidity may be underappreciated and substantial. Since influenza disease burden and patterns are not well understood in tropical regions, particularly in most countries in Africa, it is difficult for national and global public health officials to develop optimal influenza control strategies.

Assessing effectiveness in African children

Effective influenza vaccines have been available for decades, but they have not been well-studied or used extensively in tropical developing countries. PATH, Institut de Recherche pour le Développement (IRD), and Institut Pasteur de Dakar are partnering, under authorization from the Ministry of Health and Medical Prevention, to assess the effectiveness of a seasonal inactivated influenza vaccine among children in Senegal. With funding from the US Centers for Disease Control and Prevention, this Phase 4, post-licensure study will last approximately three years and will use vaccines that have been approved and used in many countries, including Senegal, France, and the United States.

Investigators will vaccinate children six months to ten years of age from IRD's Demographic Surveillance System field site near Niakhar, Senegal. The main objective of the study is to determine if the influenza vaccine, which has already been proven safe and effective for children in many countries around the world, will protect children in Senegal and other tropical regions of Africa.

Villages will be randomly selected for participation. Children from half of the villages in the study area will receive seasonal inactivated influenza vaccine, and



Photo: Siri Wood

children from the other half of the villages will receive a comparator vaccine, inactivated polio vaccine (IPV). An advantage of using IPV as a control vaccine instead of a placebo is that IPV should boost children's immunity to polio, thus providing these children a good benefit for participating in the study.

Children are often the most common transmitters of influenza. Investigators hypothesize that a sufficient proportion of children vaccinated against influenza could reduce overall transmission of the disease in their villages and provide indirect protection to unvaccinated community members. Demonstrating this will be important because it would indicate that entire populations could benefit from vaccinating only a proportion of the population—children.

This study is an important step toward understanding the extent of the influenza burden in Africa and the potential of current vaccines to reduce the number of deaths from influenza each year in the developing world.

References

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