

**State of the World's Children, 2008 – vaccination highlighted as success story but much more to be done.**

**LONDON, UK---22 January 2008---ExpertREACT.** Recently the United Nations Children's Fund (UNICEF) published a comprehensive review of the state of children's health throughout the world (1). It highlighted that in 2006, 9.7 million children below the age of 5 died, which equates to approximately to 26,000 deaths per day. Under nutrition was cited as the reason for around half of the deaths. Importantly, forty percent of the deaths occurred during the first month of life (neonatal period) where severe infections such as pneumonia were common. **VacZine Analytics** believes the report findings reiterate the need for increased availability of Western vaccines along with new research into immune protection during the neonatal period.

Childhood mortality is an unfortunate part of daily life in many less developed nations. Although rates of under-five deaths per 1,000 deaths have declined by a quarter between 1990 and 2006, current rates especially in Sub-Saharan Africa remain unacceptably high. In this region around 1 child in every 6 dies before the age of five. The recent report indicates that although a large proportion of deaths are due to under nutrition, infectious diseases still exert a huge impact. These include malaria, diarrhoeal diseases e.g. rotavirus, measles and pneumonia caused by *Streptococcus pneumoniae* and *Haemophilis influenzae*. In order to improve the outlook for children in the poorest regions the report calls for the enhanced adoption of basic health interventions, which include early and exclusive breastfeeding, vitamin A supplementation, and the use of insecticide treated mosquito nets. Importantly, childhood immunization is a cornerstone of this strategy.

Vaccination as a means to reduce childhood death in the developing has been a huge success story to date. For example, in 1974 – the expanded program on Immunization (EPI) was launched with the aim of protecting children in their first year of life against six target diseases – diphtheria, tetanus, pertussis (whooping cough), polio, measles and tuberculosis. Now around the world it is estimated that coverage of this vaccine series has reached around 75%. Another success story has been the measles initiative which is a partnership launched in 2001 through mainly UNICEF and WHO. As a result of this initiative more than 217 million African children have been vaccinated between 2001-2005 averting close to 7.5 million deaths from the disease.

Despite the vaccine success stories much more needs to be done in the way of preventative vaccination. The latest UNICEF report highlights that still a large number of childhood deaths, whether in the first 5 years of life or within the neonatal period, are due to infectious diseases caused pathogens not covered by current vaccines or not yet available in the developing world. *Streptococcus pneumoniae* and *rotavirus* are two key examples for which in the West a vaccine precedent now exists. Both pathogens are estimated to be responsible for 16% and 28% of the 2.5 million vaccine preventable deaths respectively (WHO Figures). To their credit Western manufacturers of rotavirus vaccines Rotateq (Merck & Co) and Rotarix (GSK) are cooperating with initiatives such as the Rotavirus Vaccine Program (RVP) (3) to find ways of testing then distributing the new rotavirus vaccines quicker to the developing world. Historically this has not been a rapid process when considering that widespread distribution of hepatitis B vaccines took an estimated 10-15 years.

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Wyeth who manufacture the vaccine Prevnar (PCV-7) that prevents invasive pneumococcal disease in children have also been cooperating with GAVI (Global Alliance for Vaccines and Immunization) (2) to distribute the vaccine to GAVI fund eligible countries in the developing world. Although these efforts are commendable it is of important note that Western vaccines are designed for the West. Some do not always contain antigens to common pathogen serotypes or strains that circulate in poorer parts of the world, nor are they tested in populations that reside in these regions.

The last important observation when considering the latest report from UNICEF is the high proportion of childhood deaths that occur in the neonatal period. The report indicates that 26% of neonatal deaths are due to infectious diseases. It is therefore a matter of science whether a vaccine-based approach can protect the neonate during this period where often maternal immunity by transplacental transfer of antibodies to the foetus can play a role. For example, the 2 or 3 dose schedules of current rotavirus vaccines Rotarix and Rotateq cannot usually be completed before 3.5 to 6 months although an estimated 5-10% of rotavirus deaths in the developing world occur before 3 months. This leaves a "window" of vulnerability. Although there is currently research directed to neonatal vaccines, in light of the recent report, VacZine Analytics believes this along with maternal immunization are research areas, which should not be neglected.

(1) The State of the World's Children 2008, United Nations Children's Fund (UNICEF), December 2007. Available at <http://www.unicef.org/sowc08/report/report.php> (accessed January 2008)

(2) The Rotavirus Vaccine Program. [www.rotavirusvaccine.org/](http://www.rotavirusvaccine.org/)

(3) The GAVI Alliance. <http://www.gavialliance.org/>

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**About VacZine Analytics:**

VacZine Analytics is a new strategic research agency based in the United Kingdom. Its aim is to provide disease and commercial analysis for the vaccine industry and help build the case for developing new vaccines.

