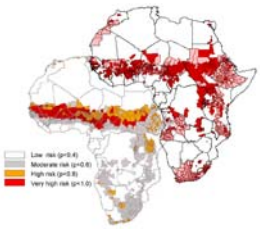
Consultative Group on

Meningitis Environmental Risk Information Technologies



The MERIT Project

The Meningitis Environmental Risk Information Technologies (**MERIT**) Project is a collaborative effort of the World Health Organization (WHO) and members of the environmental, public health and epidemiological communities.

The project is extending current capabilities to more effectively combine environmental information with knowledge of epidemic meningococcal meningitis. It is expected that this will have an immediate impact on public health outcomes in Africa through increasing the effectiveness of meningitis prevention and response control strategies.

What does the meningitis problem in Africa look like today?

Meningococcal meningitis is one of the most feared epidemic diseases in Africa because of its rapid onset, high fatality rates and long-term disabilities, such as brain-damage and deafness, affecting many survivors. In 1996-1997 devastating epidemics affected 250,000 people with 25,000 fatalities.

Current control strategies based on reactive vaccination have not been fully satisfactory in reducing the burden of the disease within the 'Meningitis Belt' – an area in Sub-Saharan Africa stretching from Senegal in the west to Ethiopia in the east.

New efforts are underway to provide long-term protection to at-risk populations of around 350 million, establishing the means to avoid devastating regional epidemics involving hundreds of thousands of cases and tens of thousands of deaths. This will be possible in large part due to the development of an effective long-lasting conjugate vaccine which targets the dominant strain (Group A) of the bacteria which causes meningococcal meningitis and is associated with epidemics.

Understanding meningitis epidemics

The bacteria which cause meningitis epidemics are transmitted from person-to-person through droplets of respiratory or throat secretions, often through coughing or sneezing. However, carriage of the bacteria in the nose and throat is common and often benign. Only when the bacteria invades the blood stream does it become pathogenic.

Surveillance systems for epidemic meningitis in Africa have greatly improved since 1992. In 13 countries located in the 'Meningitis Belt', epidemiological and laboratory data are now collected on a weekly basis at the district level. This data is then compiled and analysed at the regional level by the WHO Multi-Disease Surveillance Center in Ouagadougou.

Increasing our understanding of what drives these epidemics is important (see Box over page).

A high priority now is to combine existing knowledge with new information requirements identified by the health community to enhance current prevention and control activities.

Developing a solution

Created in 2001, the Meningitis Vaccine Project (MVP) www.meningvax.org aims to use the new conjugate vaccine *'to eliminate epidemic meningitis as a public health problem in Sub-Saharan Africa'*.

In 2008, a ten-year vaccination programme will begin in the 'Meningitis Belt' to protect the 350 million plus people at risk from epidemics. In the first phase, priority will be given to children and young adults in hyper-endemic areas; in subsequent years the vaccine will be provided through the routine childhood immunization programme (EPI). With around 50-60 million doses of the new vaccine produced each year, decisions on prioritization will continue over the next decade.

Successful identification of populations most at-risk in general (based on historical experience) or on a year-to-year basis (based on changes in epidemic risk forecast indicators) is of vital importance if prevention and control efforts are to be targeted to maximize benefit.

Epidemic Drivers & Environmental Risk Indicators

Meningitis epidemics can be influenced by the arrival of new strains of the bacteria, carriage rates, immune status, social behaviour, population movements, living conditions, current health, and the climate — notably hot, dry, and dusty conditions which irritate the throat and appear to make invasion easier. The environmental risk indicators appear to influence the spatial and seasonal distribution of epidemic outbreaks, while climate variability on a year-to-year basis may also impact the timing and occurrence of epidemics.

Taken together, all these factors can be used to predict populations at elevated risk of epidemics.

What is needed now?

Through the MERIT project, opportunities exist to integrate valuable information into meningitis prevention and control activities through the development of:

- Risk maps of the current situation and future scenarios, based on projected changes in climatic and environmental factors;
- Early warning systems; and
- Improved impact assessment methodologies for prevention efforts.

For example, combining routine epidemic surveillance data including information on previous epidemic history and control measures, with information on historical or current climatic and environmental conditions may improve the targeting of preventative and reactive vaccination efforts.

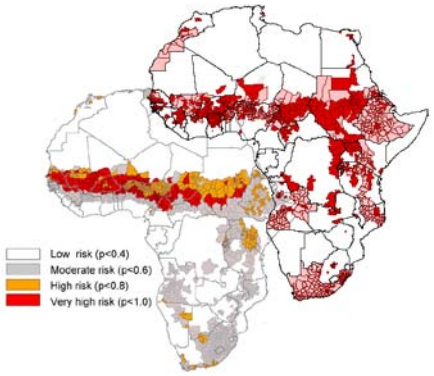
Existing resources could be dramatically improved through collaboration between national, regional and international institutions to refine research efforts, increase access to data and influence the development and enhancement of health-environment networks.

MERIT Project Aims

Improve the application of climate & environmental information to meet the needs of public health policy-makers in Africa

Enhance regional and national surveillance capabilities

Strengthen decision-making and public health policy development through institutional capacity building efforts



Expected MERIT Project Outcomes

- ✓ Improved deployment of vaccines to populations most at-risk by combining health and environmental information in "early warning systems".
- ✓ Improved evaluation of the efficacy of the new vaccine used to control epidemics.
- ✓ Increased numbers of public health policy-makers capable of effectively using climate, environmental and other data in decision making.
- ✓ Increased number of multidisciplinary teams capable of delivering demand-driven operational research outputs for meningitis prevention and control.

For further insight into the meningitis situation in Africa today, download the *'Kill or Cure? Meningitis'* documentary at www.meningvax.org/files/video-meningitis-kill-or-cure.htm

For further information on MERIT please contact Dr. David Rogers, President, Health and Climate Foundation (drogers@hc-foundation.org)