

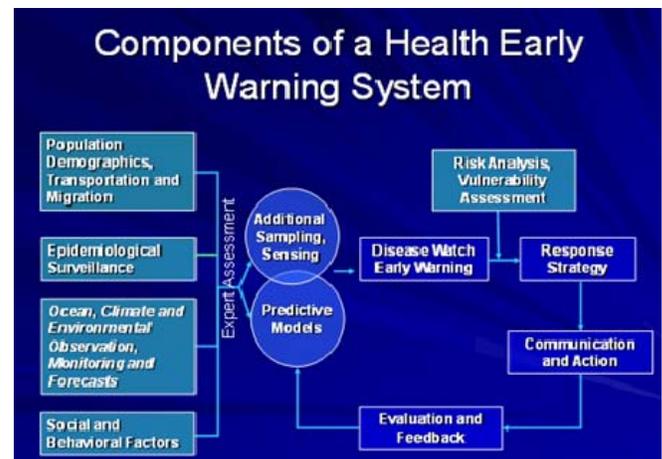
**Global Initiative for Cholera Early Warning:  
Linking GEO, Health and the Post-2015 Millennium Development Agenda**  
*An International Collaboration under the Group on Earth Observations and Contributing to the  
Global Framework on Climate Services*

### **The Goal**

The overarching goal of this Global Initiative to build an integrated Cholera Early Warning System is to reduce public health risks from cholera and other water-related diarrheal diseases. This 'system of systems' is envisioned to provide integrated seasonal and longer time scale environmental and public health information to public health and medical decision makers to use in managing risk and response to cholera and other water-related diarrheal diseases. Response measures will vary by country and capacity but include community level prevention strategies such as improved sanitation infrastructure, targeted water filtration and purification, directed vaccine use when and where available, and improved outbreak response. The Cholera Early Warning System is envisioned to include global environmental, ocean, and health data, and employ common methodologies. These will be coupled with better resolved temporally and spatially compatible country or local level data and models that will yield more usefully detailed surveillance, monitoring, and predictive tools. This effort will weave together much existing but disparate expertise, fill gaps to build complete early warning systems, and ultimately produce a global collective 'system of systems' with common and comparable data, methods and training, used by decision makers in vulnerable countries around the world.

### **The Approach: Moving from Surveillance and Response to Prediction and Prevention**

While the public health response, outcome, and data will vary by country, region, or political unit, the following framework will provide the common approach and ensure the critical public health questions are being addressed and that the basic data parameters are collected and integrated. The fundamental premise is to identify the appropriate public health and related research questions, weave together the multiple research, surveillance, data and modeling efforts, identify and fill critical gaps, and develop a fully integrated and operational Cholera Early Warning System.



### **Managing Cholera in your Country: The Pilot Phase**

The pilot phase will address the key research, data, public health engagement and information dissemination needs required to build an effective early warning system for cholera. Initial efforts will focus on at least three geographically different cholera regimes, with public health interest, vulnerable populations, and reasonable data. The pilots will build in-country capacity using comparable methods, training and engagement strategies to predict and reduce public health impacts from cholera, and will:

- Enhance existing data collection and integration
- Involve incentives for medical/doctor data reporting
- Establish baseline health and environmental data and risk maps
- Facilitate adaptation to climate and connection to climate services

These prototype Cholera Early Warning Systems can then be adapted to other countries, other water-borne communicable diseases, and provide a global network, or system of systems, which can then be further tailored by country and specific Ministry needs. The project will build on existing capabilities of the World Health Organization and its health, climate and Earth observing partners to conduct research, develop predictive models, and build technical and institutional capacity to use this information. The WHO Global Information Management System (GIMS) will provide the backbone for sustainable delivery of a Cholera Early Warning System of Systems based on the framework shown above. GIMS, through the use of common data architecture and open platform, is interlinked with WHO's Global Health Observatory (GHO), and will use industry standards of data sharing and best practices.

#### Guiding Principles:

1. Problem-driven
2. Scalable to local, regional, national, and international issues
3. Addresses time scales from decades to days
4. Involves research, monitoring, modeling, management, mitigation, prevention, and evaluation
5. Well defined national, sub-national and appropriate roles and responsibilities
6. Integrates with other human health surveillance systems, and other biological and physical observation and monitoring systems

#### User Needs and Engagement

Initial Discovery and Design Workshops will be conducted in each pilot country and will include at least participants from Public Health, Water Sanitation and Hygiene, Environment and Climate communities. These workshops will be designed to ensure appropriate public health problems are being addressed, engage key partners, identify existing data resources and requirements, design a research and product development plan, develop institutional and technical capacity building plans, and ensure institutional sustainability.

#### Group on Earth Observing (GEO), Global Framework on Climate Services (GFCS) and Partners

This project is one of the GEO Health Task Components (HE-02-C2) and contributes to the GFCS. Over 25 partner institutions stand at the ready to begin a pilot project in your country. Lead Organizations are the World Health Organization (WHO); National Oceanic and Atmospheric Administration (NOAA); and Fraunhofer IOSB (Germany); with the International Center for Diarrheal Disease Research in Bangladesh (ICDDR,B); EO2HEAVEN: Earth Observation and ENVironmental modelling for the mitigation of HEAlth risks funded by the EU FP7; Council

for Scientific and Industrial Research (CSIR), South Africa; Netherlands Royal Tropical Institute (KIT); NASA Public Health Applications Program, CNES (French Space Agency). For further information please contact: Rifat Hossain (hossainr@who.int); Kym Watson (kym.watson@iosb.fraunhofer.de) or Juli Trtanj (Juli.Trtan@noaa.gov).