

## COMBATING INFECTIOUS DISEASE AS A GLOBAL SECURITY GOAL: EMERGING TRENDS AND “STRANGE BEDFELLOWS”

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### Summary

The mandate of the United Nations to preserve peace through international cooperation and collective security has both enabled and inspired numerous programs aimed at improving the health and wellbeing of the world's peoples. Some of these programs are conducted by offices and agencies that report directly to the General Assembly. Others are conducted through independent agencies joined to the UN through special agreements. Still others are operated by non-governmental organizations. All reflect the linkage between global security and basic human needs. One primary need is health care, which in many regions of the world is complicated by entrenched as well as sporadic episodes of devastating infectious disease. Over the past 5 years, there has emerged a trend, marked by highly publicized proclamations as well as quiet initiatives, to make the link between security and health stronger and more central to the development and implementation of public policy. This trend finds its focus in infectious disease, including but not limited to AIDS, and has been emphasized by initiatives of an NGO historically tied to arms control and activities of the World Health Organization.

## 1. United Nation Groups Combating Infectious Diseases

The UN has within its direct jurisdiction four prominent agencies through which it attempts to find ways to correct conditions that generate infectious disease. They are the: UNHCR (High Commissioner for Refugees), UNICEF (Children's Fund), WFP (World Food Program) and UNDP (UN Development Programme). While none of these is generally perceived as a health organization, all are involved in responding, or getting others to respond, to situations threatening health. UNHCR coordinates emergency assistance in refugee camps where infectious disease outbreaks are prevalent. UNICEF forms vaccination and hygiene education programs in impoverished urban shanty towns and remote farming villages. WFP responds to famines that undercut natural resistance to disease. UNDP promotes infrastructure improvement and water purification, and milk pasteurization schemes in communities throughout the world.

Within the special agency structure, we find the WHO (World Health Organization), FAO (Food and Agriculture Organization), IAEA (International Atomic Energy Agency), (see *A Global Approach to Disease: Coordinating Through the World Health Organization*), and UNAIDS (established as a separate agency in 1999), the four UN-associated groups whose programs have been most instrumental in detecting and controlling infectious diseases. While WHO, with its focus on yellow fever, cholera, plague, measles, tuberculosis, malaria, parasitic worm infections, polio, its international network of collaborating research centers, and the new AIDS initiative, is no surprise, the work of the other two may be less well known and appreciated. FAO's EMPRES (Emergency Preventive System) program works to prevent and control animal diseases, many of which are zoonotic, i.e., affect humans. The IAEA, jointly with FAO, has for many years worked to develop, refine and share what is known as nuclear medicine, including radioisotope technology for diagnosing disease pathogens.

The agendas of several of the remaining special agencies greatly influence the prospect of combating infectious disease. For example, the World Bank and IMF (International Monetary Fund) have encouraged applications for public health improvement loans. The ICAO (International Civil Aviation Organization) has played a major role in devising regulations for safe transport of pathogen samples transferred from one country to another for diagnostic confirmation or research. The IFAD (International Fund for Agricultural Development) and UNIDO (UN Industrial Development Organization) have promoted economic development essential to the alleviation of poverty in developing countries, thus improving the chances for public health improvement.

Currently, there are almost 200 NGOs officially rostered by the UN as related organizations. Of those, most are health oriented and many of them have core programs for preventing and treating infectious disease. Among these are well-known groups like Rotary International, the Aga Khan Foundation, Lions Club International, Save the Children Fund and World Vision International, as well as the lesser known Global Health Council, Council for Health Research Development, the International Eye Foundation, International Pharmaceutical Federation and Medicus Mundi. In addition, there are hundreds of unaffiliated NGOs, including Medecins sans Frontieres (Doctors without Borders), Veterinaires sans Frontieres (Veterinarians without Borders), and thousands of church sponsored medical missions, in-country public health services and

disease research programs funded by the international assistance agencies of national governments and by corporate and private foundations. Finally, there are disease research agencies of national governments, e.g., in the US alone, the Centers for Disease Control (CDC), National Institutes of Health (NIH) and Agriculture Research Service (USDA ARS), that stand ready to assist other countries in unusual outbreaks of infectious disease.

In short, the number of programs engaged worldwide in disease prevention, control and treatment, and in assistance relevant to that mission, is substantial. The size of this pool of active involvement is, however, matched neither by steady capital infusion nor by coordination of logistics and administration of policy in countries that most often require outside assistance in controlling outbreaks. Further, few of the programs are sufficiently funded to handle outbreaks of infectious diseases without emergency funds solicited from WHO member nations.

## **2. WHO Initiatives**

In October, 1995, the WHO reorganized its Geneva offices and formed the Division of Emerging and other Communicable Diseases Surveillance and Control (EMC) dedicated to the strengthening of national and international capacity for global surveillance and control of communicable diseases. In many ways, the formation of this division was a public affirmation of WHO's recognition that its surveillance of prevalent communicable diseases needed to be expanded to include emerging diseases. Emerging diseases are defined as (a) those that reappear where the number of cases ordinarily observed are few and present no significant health threat; (b) those that appear where not previously observed or reported, and (c) those that are newly identified. Recent examples, respectively, are polio cases in Haiti, West Nile virus in the US, and Nipah virus in Malaysia.

In November, 1998, a second reorganization merging five divisions and eliminating EMC as a separate group, created a new program, Communicable Disease Surveillance and Control (CDS). Subsequently, a department was formed in the program under the name of Communicable Disease Surveillance and Response (CRS), which, as the name implies, combines surveillance and response mechanisms. The change in name, from "emerging" and "other communicable" to simply "communicable," appeared to signal WHO's need to consolidate activities in a time of budgetary deficits. And, the adoption of a widely held view that once a disease, such as Ebola fever, has "emerged" and reappeared in the same country it loses its emergent quality and is more accurately included in the broader category of "communicable". While the overall surveillance and control program addresses all infectious diseases, CSR focuses on African trypanosomiasis (sleeping sickness), cholera and epidemic dysentery, hemorrhagic fevers (e.g., Ebola, Marburg, Lassa, Congo-Crimean, dengue), hepatitis, influenza, leishmaniasis, meningococcal disease (meningitis), plague, transmissible spongiform encephalitis ("Mad Cow", new-variant CJD, etc.), rickettsial diseases (e.g., typhus), rabies, salmonella, and yellow fever.

## 2.1 WHO Accomplishments

Notwithstanding the interim reshuffling of programs, the work that was envisioned in 1995 continued and expanded. Perhaps the most important accomplishments of CSR (nee EMC) thus far are:

- (a) *A WHO Emergency Response Team.* This team is selected from a registry of epidemic disease experts who are ready for deployment to any place in the world within 24 h of notification by a country in which emergency WHO assistance is requested. Since the inception of the original EMC, WHO has dispatched over 40 such teams to investigate outbreaks and coordinate response to diseases such as Ebola fever, Lassa fever, cholera, plague, meningitis, Rift Valley fever, monkeypox, Nipah virus, leishmaniasis, and human cases of a new strain of influenza transmitted through poultry, and to work with local authorities to bring the outbreaks to an end. It is important to note that (a) a WHO response team may not involve itself in a disease outbreak unless the government of the country makes a request and (b) expert members of the teams are not usually WHO personnel but are “borrowed” from other institutions and agencies of WHO member countries.
- (b) *The WHO “Network of Networks” for infectious disease surveillance to link already existing local, regional, national and international networks of laboratories and medical centers.* This network is being constructed on a cooperative basis with the 191 WHO Member States and other partners, including the European Union-US Task Force on Emerging Communicable Diseases and the US-Japan Common Agenda. In addition, the 1996 summit meeting of the G-7 in Lyon, France and the 1997 summit of the G-8 in Denver, Colorado US, cited disease surveillance as an area of collaboration by G-7/G-8 member countries. In 2000, the G-8 report devoted 10% of its coverage to health issues. The network is currently composed of 142 WHO country offices and six regional offices of WHO, over 200 WHO Collaborating Centers, over 60 HIV sentinel surveillance sites, 190 UNAIDS country sites and World Bank resident missions.
- (c) *The WHO Proposal to establish the “Global Outbreak Alert and Response Network” (GOARN) for curtailing international spread of outbreaks through faster identification and confirmation of the disease, and through rapid communications to assist the coordination of response.* This proposal was discussed in April, 2000 at a major international meeting attended by 124 representatives from 69 partner institutions, and a schedule was set for all preliminary work to be completed by October, 2000. While there was no formal announcement from WHO that the network had been activated, a Pan African News report on October 16, 2000 said “The World Health Organization (WHO), in conjunction with its partners in the Global Outbreak Alert and Response Network, is co-coordinating the international response to an outbreak of hemorrhagic (Ebola) fever in Gulu District, northern Uganda.”

## 2.2 Other Activities and Considerations

Fundamental to GOARN implementation is a revision of the International Health Regulations (IHR). This revision, begun 5 years ago, is expected to set new rules, including immediate notification of all disease outbreaks of urgent international

importance. A pilot study of the revised standard, which uses clinical syndromes rather than specific diseases, is being carried out in 21 countries. An example of a syndrome is “unexplained severe acute respiratory distress, demonstrated by severe or fatal respiratory failure accompanied by fever of over 38.3 degrees Celsius in humans over five and under 65 years of age.”

Until formally adopted, the new IHR do not replace the present system which requires notification within 24 h of only three diseases—yellow fever, plague and cholera. Even so, cases of those diseases are not always reported promptly and are rarely reported before diagnostic confirmation.

The syndromic approach provides more flexibility in developing response and control mechanisms, since a generic description of disease is not as pejorative to economic interests as, e.g., a confirmatory diagnosis of yellow fever. In addition, a syndrome report prevents situations such as occurred in India in 1994 when an erroneous diagnosis of plague cost the country billions of dollars in trade. GOARN’s focus on rapid electronic communications envisioned for the alert network proposes the use of syndromes for reporting outbreaks, with information flowing into a central database.

In the example given above for one syndrome, a physician or clinical health worker would need to include certain facts: age of patient, extent of respiratory malfunction, and temperature. To cover multiple syndromes, other information would be needed and could be supplied through the use of a simple, check-off form. The form data would then be entered into a local or central computer system and relayed to WHO for transfer into the database.

One problem with the approach has, however, been identified. Physicians in emergency rooms, clinics and elsewhere would be required to fill out the GOARN form in addition to documenting the case according to routine procedures established by the hospital, clinic or governmental authorities. It has been posited that this method will not work even in the US, except possibly as part of a controlled pilot study for a limited period of time in a limited number of facilities, because doctors are, as a general rule and on an on-going basis, too busy with patients to attend to extra paperwork. As a result, unusual disease outbreaks could slip through the cracks. If this is true in a country with one of the most advanced health care systems, attempts to utilize the approach on a global basis may need to be reconsidered.

Another approach has been suggested. It is called “data mining”. This method of retrieving disease syndrome information involves the development of a computer software program that would search databases on computers in medical facilities, diagnostic laboratories and other sites such as schools, factories and insurance companies and select out the information desired.

Obviously, this approach could, if personal privacy issues are resolved, work in highly developed, highly computerized countries. Again, the question is if it could work globally in the near future. Many developing countries are just beginning to use computers for storing information, and it is unlikely that, absent a devastating epidemic, collecting disease information is a priority in any one of them.

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### Biographical Sketch

**Dorothy Braddock Preslar** is the director of the AHEAD (Animal Health/Emerging Animal Diseases) and its operating surveillance program known as ILIAD (International Lookout for Infectious Animal Disease) at the Federation of American Scientists in Washington, DC. She graduated *Phi Beta Kappa* from Wake Forest University and later did graduate study at Georgetown University, George Washington University and the American University. Her articles on emerging disease surveillance have appeared in *US Medicine* and the *International Journal of Sustainable Agriculture* 1999, Action Report. She has also presented papers at forums sponsored by NATO and Cornell University. In collaboration with Jean Pascal Zanders of the Stockholm International Peace Research Institute, she is currently writing a book on managing technology transfers in a weapons proliferation environment, to be published in 2001.