Conference on "Emerging Infectious Diseases: Meeting the Challenge"

Emerging infectious diseases, the leading cause of death worldwide, continue to pose difficult challenges to clinicians, public health professionals, and biomedical researchers in academic settings and industry. Addressing these challenges requires a cohesive effort to develop prevention strategies and to communicate them effectively to the health care community, the public, and policy makers.

On June 5-6, 1995, the New York Academy of Medicine and the New York State Department of Health convened to examine the problem of emerging infections. The speakers addressed four themes: 1) emerging infectious diseases: why and why now? 2) transmission of emerging infectious diseases: old modes, new agents; 3) surveillance and sentinel systems for infectious diseases; and 4) emerging infectious diseases: what is to be done?

The first three themes were addressed through presentations by 20 experts. The fourth was divided into six segments focusing on diagnosis, the role of the microbiology laboratory in surveillance, other surveillance issues, approaches to epidemic investigations, risk perception, and global issues.

Speakers consistently alluded to recent complacency about infectious diseases in the United States and stressed the need for the clinical, public health, and research communities to work with the biomedical industry in confronting emerging infectious disease challenges in this era of transition to managed health care. In his opening address Joshua Lederberg from Rockefeller University reminded participants that the struggle between humans and microbes could be characterized as a battle of "wits versus genes." Margaret Hamburg, Commissioner of the New York City Department of Health, emphasized that plague in India and Ebola virus infection in Zaire were reminders that the world is a global village, that considering domestic and international diseases as separate entities is an outmoded concept, and that many conditions that contribute to disease emergence or reemergence in the developing world are also present in the United States, adding to our domestic vulnerability to emerging infections.

Other speakers focused on the evolution of virulence, the molecular basis of pathogenesis, observations on factors contributing to the plague epidemic in India in 1994 and the Ebola outbreak in Zaire in 1976; foodborne and waterborne diseases; airborne diseases; zoonoses; sexually transmitted and bloodborne diseases and the increasing problem of antimicrobial resistance in both hospital and community settings. Concerns were expressed about the possibility of a "post-antimicrobial era" in which available drugs are no longer effective against common bacterial infections. Other speakers focused on innovative approaches to surveillance at the local, state, national, and international levels. James LeDuc from the World Health Organization (WHO) provided an update on the emerging infections resolution passed by the World Health Assembly in May 1995 and other WHO activities related to detecting and responding to emerging and reemerging diseases.

Among the themes recurring throughout the conference were the challenges that microbes will continue to pose; the critical role of the modern microbiology laboratory in detecting and responding to emerging and reemerging infections; and the limitations of existing capacity at the local, state, national, and international level to respond to these challenges. Human resource, equipment, diagnostic reagent, and facility needs were addressed, and resource needs were emphasized. Training needs of medical students, clinicians, epidemiologists, microbiologists, entomologists, mammalogists, behavioral scientists, and other researchers were also stressed. Additional emphasis was placed on the critical importance of communicating alerts about clusters of illness, data on disease trends, and guidelines for disease prevention; the need for educating professionals, the public, and policy makers about the critical importance of these issues; the need for strengthening existing partnerships and developing new ones, particularly with health maintenance organizations, the pharmaceutical industry, and nongovernmental organizations (including medical missionary organizations); and the need to carefully identify priorities.

Conference participants resounded the message of the 1992 Institute of Medicine Report, *Emerging Infections: Microbial Threats to Health in the United States,* "Pathogenic microbes can be resilient, dangerous foes. Although it is impossible to predict their individual emergence in time and place, we can be confident that new microbial diseases will emerge." Particular future concerns included a possible influenza pandemic, the emergence of vancomycin resistance in *Staphylococcus aureus* , the occurrence of large dengue hemorrhagic fever epidemics in the Western Hemisphere, and the likelihood that additional chronic diseases will be found to have infectious etiologies. Concerns were also expressed about the possibility of a terrorist incident involving an infectious agent and the potential difficulties in detecting and responding to such an episode.

The New York Academy of Medicine plans to use the discussions during the conference in formulating an agenda for further action.

James M. Hughes
National Center for Infectious Diseases
Centers for Disease Control and Prevention
Atlanta, Georgia, USA

Japanese Encephalitis Acquired in Australia

Japanese encephalitis (JE), a mosquito-borne flaviviral disease of humans and animals, is a major public health problem in Asia, where an estimated 50,000 cases occur each year. There has been concern that the range of epidemic JE may be expanding.

On April 5, 1995, an outbreak of three cases of JE was recognized in Australia. Two of the cases were fatal; all were among residents of an island in Australia's Torres Strait, which lies between mainland Queensland and Papua New Guinea. JE was confirmed in two of the patients by polymerase chain reaction (Jeffrey Hanna, Queensland Health, pers. comm.). No other cases were reported. This is the first recognized episode of JE acquired in Australia.

Control activities on the Australian island began on April 7. The community was informed about the importance of personal mosquito protection measures. In addition, larvicides were applied, and areas were fogged to kill adult mosquitoes.

The patients were all male, aged 6 to 44 years. All were hospitalized with symptoms that included fever (up to 40 °C), stiff or painful neck, headache, and abdominal pain. Two patients were unconscious at the time of admission.

Acute-phase sera showed elevated JE virus immunoglobulin M (IgM) titers. Two of the patients also had detectable levels of Kunjin and Murray Valley encephalitis virus IgM, but the JE IgM titers were significantly higher in each case.

Flaviviruses have also been isolated from the sera of each of two asymptomatic island residents. Preliminary tests suggest that these are both JE virus. Blood taken from 10 horses and 12 domestic pigs living near humans on the island was also tested. All 12 pigs and 9 of the horses had high JE titers by hemagglutination inhibition assay. Neutralizing antibody to JE virus was detectable in all the pigs and in four of the horses tested to date.

Details of the index case are as follows: The patient, a 16-year-old male, was admitted to Thursday Island Hospital on March 22, 1995. He was unconscious and was responsive only to painful stimuli. His neck was stiff, and he showed a preference for moving his right side. His illness had begun 3 days before. The day before admission he complained of abdominal pain. This patient had been mildly mentally retarded since birth and occasionally had generalized seizures but was generally healthy. He was transferred to Cairns Base Hospital, where a cerebral CT scan showed a nonenhancing hypodense lesion in his posterior right basal ganglia.

He had a leukocytosis of 17.3 $\times 10^9$L, neutrophils, 15.2 $\times 10^9$. His cerebrospinal fluid contained 150 leukocytes/ µl with a differential count of 50% polymorphs and 50% mononuclear cells.

He had a generalized seizure and 2 days after admission, required mechanical ventilation. He never regained consciousness and died on day 17 of hospitalization (April 8).

Adapted from Hanna J, Ritchie S, Loewenthal M, et al. Probable Japanese encephalitis acquired in the Torres Strait. Communicable Diseases Intelligence 1995;19:206-7.

USPHS and IDSA Collaborate on Guidelines to Prevent Opportunistic Infections in HIV-Infected Persons

U.S. Public Health Service (USPHS)/Infectious Diseases Society of America (IDSA) Guidelines for Preventing Opportunistic Infections in HIV-Infected Persons will be published in an August 1995 supplement of *Clinical Infectious Diseases* . The guidelines, which are intended for health care providers, are the result of collaboration between the Centers for Disease Control and Prevention (CDC), the National Institutes of Health, IDSA, numerous federal and nonfederal organizations, community groups, and HIV-infected persons. The guidelines are endorsed by the American Academy of Pediatrics, the Infectious Diseases Society of Obstetrics and Gynecology, and the Society of Healthcare Epidemiologists of America. Jonathan E. Kaplan, M.D. (CDC), Henry Masur, M.D. (NIH), and King Holmes, M.D., Ph.D. (University of Washington), chaired the USPHS/IDSA Prevention of Opportunistic Infections Working Group and are guest editors of the *Clinical Infectious Diseases* supplement.

CDC initiated work on the guidelines in early 1994; meetings were held in Atlanta in June and September to discuss and refine the recommendations.

The USPHS/IDSA guidelines address 17 opportunistic infections from three angles: 1) preventing exposure to opportunistic pathogens (e.g., sexual, occupational, and environmental exposure as well as exposure through pets, food, water, and international travel); 2) preventing opportunistic disease by chemoprophylaxis and vaccination; and 3) preventing disease recurrence. In this document, new recommendations were made and earlier recommendations were updated. For example, new guidelines recommend that in nonemergency situations, cytomegalovirus (CMV)-seronegative HIV-infected persons who require blood transfusions receive only

CMV-antibody-negative or leukocyte-reduced cellular blood products. The guidelines also recommend that *Toxoplasma* -seropositive HIV-infected persons who have a CD4+ lymphocyte count <100 cells/ μL received chemoprophylaxis against toxoplasmosis (such chemoprophylaxis is generally accomplished with anti- *Pneumocystis carinii* medication). Earlier recommendations for chemoprophylaxis against *Pneumocystis carinii* pneumonia and *Mycobacterium avium* complex disease have also been updated.

In addition to disease-specific recommendations, the guidelines include an overview article designed to prioritize the recommendations for health care providers. This article provides an approach to the initial and follow-up evaluations of the HIV-infected patient and also contains sections on HIV-infected pregnant women and HIV-exposed/infected children. The guidelines are followed by 15 background articles, which provide the information on which the recommendations were based and include research priorities generated by the development of the prevention recommendations.

The guidelines conclude with quality standards and implementation steps on the most standard-of-care recommendations, such as chemoprophylaxis against *Pneumocystis carinii* pneumonia. This final section provides a mechanism by which health care facilities can assess their degree of compliance with the recommendations, so that they can detect and correct compliance-related problems.

An abbreviated version of the USPHS/IDSA Guidelines will be published in CDC's *Morbidity and Mortality Weekly Report* in July.

Jonathan E. Kaplan
Centers for Disease Control and Prevention
Atlanta, Georgia, USA

Henry Masur
National Institutes of Health
Bethesda, Maryland, USA

King K. Holmes
University of Washington
Seattle, Washington, USA

Recommendations for a Regional Strategy for the Prevention and Control of Emerging Infectious Diseases in the Americas

On June 14-15, 1995, a conference on "Combating Emerging Infectious diseases: Challenges for the Americas" was held at the Pan American Health Organization (PAHO) Headquarters in Washington, D.C. The meeting was designed to shape a regional strategy for preventing and controlling emerging infectious diseases that could pose serious threats to the peoples of the Americas.

Participants, convened by PAHO, included top officials and infectious disease experts from that organization as well as the World Health Organization, the U.S. Centers for Disease Control and Prevention, the Canadian Laboratory Center for Disease Control, the U.S. Department of Defense, and several Latin American and Caribbean countries.

This international group of experts noted that an increasing number of new, emerging, and reemerging infectious diseases have been identified in both developed and developing nations and that these diseases threaten to increase in the near future. They include human immunodeficiency virus/acquired immunodeficiency syndrome, which emerged in the l980s and now affects some 16 million people worldwide; and cholera, which returned to the Western Hemisphere for the first time this century in 1991 and has caused more than 1 million cases and 9,000 deaths in the Americas. PAHO estimates that it will take more than a decade and over $200 billion to control the current pandemic of this disease.

The experts concluded that both early warnings of, and rapid responses to, infectious disease threats are needed. The group made several major recommendations to PAHO and its member states to improve surveillance, research, and communications in developing countries. They also issued more detailed recommendations in the areas of antimicrobial resistance, outbreak control, and information and communication. In addition, a plan of action is forthcoming.

The group made the following recommendations for PAHO and its member countries:

General Recommendations

- Develop and frequently update prioritized disease-specific guidelines for the prevention and control of diseases that are emerging or reemerging, both at the public health and individual levels. This should include biologic and behavioral change measures and will require groups of experts for each disease as well as communications experts. Diseases of interest include yellow fever, dengue, antimicrobial-resistant organisms (malaria, tuberculosis, and enteric diseases), measles, polio, cholera and other foodborne and waterborne diseases, viral hemorrhagic fevers, plague, rabies and other zoonoses, and trypanosomiasis and other vector-borne diseases.
- Identify points of contact in the field to receive and transmit information in countries. These contacts should include organizations and individuals outside the government.

- Develop plans to distribute accurate and timely information to the general public.
- Develop plans to improve and make more efficient two-way communication on reporting, control, and modification measures. This may require contracting information management specialists to identify and implement the most efficient means.
- Make efficient use of the press, including radio, television and newspapers, fliers, and other methods to educate the public and the medical community, with an eye toward social mobilization of communities to fight emerging diseases. This will require expertise in communications and support to the countries in developing information dissemination plans. Countries should define populations at greatest risk and focus the information and control measures in these populations.
- Define different approaches for educating the public and the medical community.
- Focus efforts on intersectorial action, including education of policy makers outside the health community.

Antimicrobial Resistance

The expert group recommended that both PAHO and its member countries, where applicable, do the following:

- Seek ways to reduce availability of over-the-counter antimicrobial agents, including those used in veterinary medicine; this will require efforts beyond the health care community and involve education and dissemination of information to all sectors.
- Intensify assistance to the countries in developing rational drug policies.
- Monitor sensitivity to antibiotics in each country to allow for optimum antibiotic use for individual cases and to eliminate antibiotics with little therapeutic value. Employ mechanisms such as WHONET and PHLIS to centralize, analyze, and distribute antimicrobial sensitivity data.
- Develop and distribute specific recommendations to extend the useful life of antimicrobial drugs.
- Frequently revise the list of essential antimicrobials based on sensitivity data.
- Initiate educational campaigns on the cost-effectiveness of rational drug use in hospitals.
- Initiate collaboration with the pharmaceutical industry on rational drug use, standardized labels and warnings, and ethical marketing strategies.

Outbreak Control

The expert group endorsed the leadership role of PAHO in developing and disseminating guidelines for outbreak evaluation and control and recommended that PAHO

- Make timely recommendations to coordinate response to outbreaks or threats, including issues related to travel advice, quarantine, and commerce.
- Develop policies and standard operating plans for response to outbreaks at the regional and country levels. Assist countries in developing national outbreak response plans and assist in training teams.
- Identify and list individuals and groups with disease-specific expertise, laboratories with disease-specific diagnostic capabilities, and products, including diagnostic reagents, drugs, and vaccines (both licensed and investigational products). Frequently update these lists.
- Establish a standard system for rapid procurement of vaccines, reagents, insecticides and antimicrobial drugs for prompt response to outbreaks.
- Establish information management and dissemination procedures for use during outbreaks, including accurate and frequent release of information to the press and public.
- Conduct formal evaluations of responses to each outbreak and use the lessons learned to improve responses to subsequent outbreaks.

Information and Communication

The experts recommended communicating with high-level government officials and emphasizing to them the importance of a basic public health infrastructure—including improvements in water, sanitation, and social and economic conditions—in preventing diseases. The group suggested disseminating more information about public health implications of development (such as deforestation, dam construction, urbanization, and other measures) and seeking effective interaction with other sectors.

Other Recommendations

PAHO should

- Create interagency task forces for emerging diseases at regional and country levels.
- Inform regional governments, other organizations, and the public about the emerging disease initiative and strive for the highest level of political support.

- Solicit and allocate specific resources to deal with the emerging diseases initiative, both at the regional and country levels. A portion of these funds should be immediately available when outbreaks are recognized.

For more information on these recommendations, the conference, or its plan of action, contact PAHO.

Daniel B. Epstein
Office of Information & Public Affairs
Pan American Health Organization
Washington, D.C., USA

Emerging Infectious Diseases Laboratory Fellowship Program

A partnership has been established between the Association of State and Territorial Public Health Laboratory Directors and the Centers for Disease Control and Prevention (CDC) to develop and initiate an emerging infectious diseases laboratory fellowship program in January 1996. A goal of this fellowship program is to strengthen local, state, and federal public health infrastructures to support surveillance and implement prevention and control programs. The fellowship program will help recruit and train microbiologists for laboratories nationwide and provide opportunities for doctoral level scientists to conduct high-priority infectious disease research.

The emerging infectious diseases fellowship program will offer a 2-year laboratory research track for doctoral level scientists, with emphasis on applied research or development in infectious diseases and a 1-year advanced laboratory training track for bachelor's and master's level scientists, with emphasis on the practical application of emerging infectious diseases technologies, methods, and practices. Fellow training and research will take place at CDC and state and local public health laboratories.

For applications or additional information, contact

Emerging Infectious Diseases Fellowship Program
Association of State and Territorial Public Health Laboratory Directors
1211 Connecticut Avenue, Suite 608
Washington, D.C. 20036
Phone: 202-822-5227, Fax: 202-887-5098

Tenth Annual ASTPHLD Conference on Human Retrovirus Testing

The Tenth Annual Conference on Human Retrovirus Testing, sponsored by the Association of State and Territorial Public Health Laboratory Directors (ASTPHLD), was held March 6 to 9, 1995, in Reno, Nevada. The conference, which was attended by more than 300 representatives of public and private sector laboratories as well as test kit manufacturers, emphasized three themes: new human immunodeficiency virus (HIV) variants, international issues, and HIV testing of newborns. The topics discussed included sequence data for type O isolates, the search for new HIV variants, zidovudine (AZT) resistance, decreased maternal-neonatal transmission due to AZT prophylaxis, results of the national anonymous survey of HIV prevalence in the United States, and the ethical concerns of perinatal screening.

An international perspective on HIV testing was brought to the conference by presentations that focused on India and Latin America. Results were given of a project, funded by a 12-month study grant from the World AIDS Foundation, to provide training on HIV testing to laboratories in India. Four Indian facilitators were trained in the United States; they provided translation and other assistance to eight ASTPHLD faculty, who gave workshops in four training centers in India. This training, which focused on enzyme immunoassay, linked trainees with staff from Indian reference centers and established training materials and trainers for future workshops to be conducted by Indian staff.

Laboratory aspects of HIV testing in Latin American and the Caribbean were also discussed by a member of the Pan American Health Organization (PAHO), who described the spectrum of HIV incidence rates and testing algorithms. PAHO is asking countries of the region to assess their algorithms in terms of sensitivity, specificity, and cost. PAHO aims to support national laboratories by providing guidelines and quality assurance. Proficiency testing, which is encouraged, will be provided by the Centers for Disease Control and Prevention.

ASTPHLD's 11th Annual Human Retrovirus Conference is set for March 6-8, 1996, in Orlando, Florida. Requests for additional information are available; FAX request to 202-887-5098.

James L. Pearson
Division of Consolidated Laboratory Services,
Commonwealth of Virginia, Richmond, Virginia, USA