

investigation of foodborne disease outbreaks will be initiated. Many bacterial pathogens, including those that are foodborne, are becoming resistant to antibiotics. To measure this change in resistance, CDC, in collaboration with FDA, USDA, and the states, began monitoring resistance levels of several foodborne bacteria. This information is being used to promote the prudent use of antibiotics in human health and in agriculture.

Other Food Safety Initiative Projects

In 1999, in addition to continuing and extending surveillance activities, CDC plans to support the following projects through the National Food Safety Initiative: school-based health education to teach foodborne disease prevention to a new generation of consumers; a foodborne disease diagnosis and surveillance component to CDC's Field Epidemiology Training Program, which helps Ministries of Health in foreign countries (many of which are major food exporters to the United States) improve their surveillance and diagnostic capabilities; and new methods of determining the risk for exposure to pesticide residues in food. The National Food Safety Initiative is building the public health framework for an effective and efficient response when novel foods from new areas that contain unfamiliar foodborne hazards are introduced into the marketplace.

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Meeting Summary

Conference on Global Disease Elimination and Eradication as Public Health Strategies, February 26, 1998

The goals of the conference were to assess the role of elimination and eradication in decreasing global disease and in using health resources more effectively. Two hundred invited representatives from 81 organizations and 34 countries participated in the multidisciplinary conference; the proceedings will be published in late 1998 in a

supplement to the Bulletin of the World Health Organization.

The working definitions during the conference were those developed at the Dahlem Workshop on the Eradication of Infectious Diseases, March 1997. Disease control: reduction of disease incidence, prevalence, illness, or death to a locally acceptable level as a result of deliberate efforts; continued intervention measures are required to maintain the reduction. Disease elimination: reduction to zero of the incidence of a specific disease in a defined geographic area as a result of deliberate efforts; continued intervention measures are required. Disease eradication: permanent reduction to zero of the worldwide incidence of infection caused by a specific agent as a result of deliberate efforts; intervention measures are no longer needed.

The successful smallpox program and the ongoing poliomyelitis and dracunculiasis (Guinea worm disease) programs served as models in the discussions on eradication. The malaria, yellow fever, and yaws programs of earlier years were recognized as unsuccessful but to have contributed to better understanding of the biologic, social, political, and financial complexities and responsibilities of disease eradication. The conference addressed five major areas: sustainable development, noncommunicable diseases, bacterial diseases, parasitic diseases, and viral diseases. The following is a summary of the conclusions.

Sustainable Development

Eradication programs should have two objectives: 1) eradication of the disease and 2) strengthening and further development of health systems, especially functions such as monitoring and surveillance, supervision, and program management. Potential risks of eradication to the health system and health development include the diversion of resources from basic services and other priorities in countries where the disease being eradicated is perceived to be of lower priority. An additional concern is the failure to accurately estimate the human and financial needs of the eradication efforts. Potential benefits for health development should be identified and delineated at the start of any eradication initiative. Measurable targets should be set, and the program should be held accountable for achieving them. Resources for

eradication activities should be supplementary to those available for basic health-care services.

Successful eradication programs are powerful examples of effective management and can build management capacities that can be carried to other health programs. Therefore, eradication programs should incorporate efforts to design program activities that enhance leadership development and managerial skills among health personnel. These programs also should actively aid in the development and implementation of surveillance systems that can be readily adapted to meet the needs of other national priority programs after eradication goals have been achieved.

Noncommunicable Diseases

The conference concluded that better control was achievable for micronutrient deficiencies (iodine, vitamin A, iron, and folic acid) and lead intoxication, even though none of these conditions meet the requirements for eradication. Recommendations were made for reducing protein/energy malnutrition and lead intoxication and for accelerating attainment of global goals for control of micronutrient deficiencies. Micronutrient supplementation should be enhanced by food fortification and the opportunities presented by existing health infrastructure and immunization programs.

Bacterial Diseases

No bacterial diseases were judged to be candidates for eradication within the next 10 to 15 years. *Haemophilus influenzae* type b (Hib) and congenital syphilis are candidates for regional elimination, and trachoma is a candidate for regional elimination over a somewhat longer term. By the strict definition, neonatal tetanus elimination cannot be guaranteed, although the World Health Organization "elimination goal" of <1 case/1,000 live births in every district is attainable.

Eradication was deemed to be a long-term vision for tuberculosis and Hib. Each of the bacterial diseases considered at the conference represents a major disease, and each has substantial research needs before long-term goals can be achieved. Aggressive action was strongly recommended to improve global control of these conditions.

Parasitic Diseases

The availability of potent, long-acting drugs

makes possible the control of onchocerciasis (river blindness) and lymphatic filariasis on a scale heretofore unconsidered. Even though no parasitic diseases were candidates for eradication within the next 10 to 15 years, the group recommended onchocerciasis as a candidate for elimination. Lymphatic filariasis caused by *Wucheraria bancrofti* also could be eliminated and possibly eradicated at some time in the future.

Filariasis caused by *Brugia malayi* could be eliminated from many areas, as could American trypanosomiasis (Chagas disease).

Viral Diseases

The group urged stronger international efforts to control rabies, yellow fever, and Japanese encephalitis by using existing tools. None of the three was considered a candidate for eradication. Hepatitis A eradication was deemed biologically feasible, but further demonstration of sustainable elimination is a prerequisite.

Rubella and measles were considered possible candidates for eradication within the next 10 to 15 years. The eradication of rubella as an add-on to measles eradication was thought biologically plausible, but several issues first needed to be addressed: the human and financial cost of rubella disease, the human and marginal costs of adding rubella to a measles eradication effort, and demonstration that elimination is programmatically feasible and sustainable in a large geographic area.

Measles eradication was concluded to be biologically plausible with the present vaccine. In the Americas, measles transmission appears to have been interrupted for variable time intervals in many countries. Elimination has yet to be demonstrated in other regional settings. The group recommended that industrialized countries proceed with elimination of measles as a step toward eradication. In other countries, accelerating measles control should be the priority, especially in areas with high death rates. Developing countries should proceed cautiously to more costly measles elimination programs to avoid undermining the polio eradication effort. Experience gained from regional and country interventions should be used to refine the strategies for eventual eradication.

General Comments

The short list of conditions for elimination and eradication within the next 10 to 15 years was concluded to be a reflection of current

limitations in our knowledge. Additional basic and operational research was strongly urged. Some participants expressed concern over the use of the term "elimination," on the grounds that the distinctions between elimination and control and elimination and eradication were unclear. Further discussion and possible revision of these terms were recommended.

In summary, the conference provided a multidisciplinary forum for addressing issues around elimination and eradication and their relationship to sustainable health development. There was widespread agreement that an eradication program could have many positive effects on systems development and that explicit efforts should be made to maximize these positive effects as well as to minimize any negative effects. Community mobilization and organization should be seen as a component of sustainable health development, with the additional potential for disease control and eradication. The conclusions and recommendations of the conference should be brought to other forums to expand international health goals and strengthen the mutual ties between sustainable health development and disease control, elimination, and eradication.

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Conference sponsors included Burroughs Wellcome Fund; CARE; The Carter Center; Centers for Disease Control and Prevention (CDC); CDC Foundation; Children's Vaccine Initiative; The Edna McConnell Clark Foundation; The Fogarty International Center; Glaxo Wellcome; International Life Sciences Institute (ILSI); International Union of Microbiological Societies (IUMS); Merck & Co., Inc. Vaccine Division; National Council for International Health (NCIH); National Institute of Allergy and Infectious Diseases (NIAID); Pan American Health Organization (PAHO); Pasteur Merieux Connaught USA; The Rockefeller Foundation; Rollins School of Public Health of Emory University; The Task Force for Child Survival and Development; United National Children's Fund; United National Development Programme (UNDP); The World Bank; World Federation of Public Health Associations (WFPHA); World Health Organization; and Wyeth-Lederle Vaccines and Pediatrics.

New and Reemerging Infectious Diseases: A Clinical Course

Atlanta, Georgia, USA, June 13-15, 1998

Jointly sponsored by the Emory University School of Medicine, Centers for Disease Control and Prevention, and National Foundation for Infectious Diseases, *New and Reemerging Infectious Diseases: A Clinical Course* focuses on the epidemiology, recognition, treatment, and management of new and reemerging infectious diseases. The course will bring together the foremost infectious disease clinicians and epidemiologists to present pertinent information on emerging infections and prospective therapeutic agents.

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Erratum

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In the article, "Emerging Infectious Diseases—Brazil," by Hooman Momen, on page 3 the last sentence of the next-to-the-last paragraph should read, "The existing, generally passive epidemiologic surveillance system produces information that arrives too late to be effective; however, a number of measures, if implemented immediately, can mitigate the impact of any future epidemic: a containment laboratory (biosafety level 4) that can handle known and unknown microbes of high virulence; at least one infirmary, properly designed and fully equipped, to treat highly contagious and virulent diseases (the current lack of this facility poses a great danger to the population should an outbreak of such a disease occur); and a mobile multidisciplinary task force, including epidemiologists, microbiologists, entomologists, and clinicians, ready to investigate suspected disease outbreaks on short notice."