Infectious diseases

The latest word on emerging pathogens

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From the point of view of an epidemiologist there are at least 2 advantages to the Internet. First, there is the development of Web-based technologies that promise to revolutionize the entry, analysis and integration of data and the dissemination of information. Second, the Internet allows easy access to global information on emerging issues. For example, the ProMED electronic mail conference (www.healthnet.org/programs/promed.html) presents information and lively discussion on human, animal and plant diseases. Online medical journals offer the opportunity to rapidly review tables of contents and often the full text of articles. They also give ready access to original articles quoted by the media. All of the topics highlighted in this article are discussed in articles or correspondence at sites on the World Wide Web, but most of this information is also available in print.

Papers from the World Health Organization Global Burden of Diseases study, published recently in The Lancet (www.thelancet.com), have re-emphasized the importance of infectious diseases. According to this study, 5 of the 10 leading killers are communicable, perinatal and nutritional disorders affecting mostly children, and the 3 leading contributors to the burden of disease, as judged by disability-adjusted life years, are communicable and perinatal disorders affecting children. International comparisons of morbidity and mortality are fraught with difficulties but nonetheless are necessary for recognition of global disparities in health status.

The global dynamics of the AIDS epidemic was graphically demonstrated by illustrations accompanying an editorial in the June issue of the American Journal of Public Health (www.apha.org/news/publications/Journal/AJPH2.html). According to the editorialists, the “working estimates” of HIV prevalence presented in the figures are “a quantum leap forward” toward a clear representation of the worldwide burden of HIV infection. The highest levels of HIV prevalence among adults, 15% to 16%, are found in the African countries of Botswana, Zimbabwe and Zambia. In contrast, the Canadian figure is just 0.162%, but there is evidence of increasing HIV infection in this country, especially among young men who have sex with men and among injection drug users. This trend was highlighted by news stories from Vancouver in October.

Diseases endemic in other parts of the globe continue to be important for Canadians working or travelling abroad. The mosquito-borne disease dengue rarely kills but still causes severe illness. Provisional figures for dengue and hemorrhagic dengue in the Americas up to September 1997 (255 701 cases), gathered by the Pan American Health Organization and available through ProMED, include 11 891 cases in Venezuela (with 18 deaths), 19 732 cases in Mexico (no deaths) and 197 455 cases in Brazil (5 deaths). In 1997 increased numbers of cases were also reported from tourist areas of Costa Rica.

Hantavirus infection occurs worldwide, and hantavirus pulmonary syndrome (HPS) in Canada has been well described. However, a report in Emerging Infectious Diseases (www.cdc.gov/ncidod/EID/eid.htm) suggests the possibility of person-to-person transmission in Argentina, primarily as a nosocomial infection. Does this mean that strains of hantavirus differ in virulence or that for some reason some strains are transmitted more effectively by the airborne route? Despite this development, no changes to infection control precautions for the care of people with HPS are being recommended.

What of other diseases for which new routes of transmission are a possibility? The spectre of blood as a vehi-
able for the transmission of Creutzfeldt–Jakob disease (CJD) is being investigated in Europe and North America, and the April–June issue of *Emerging Infectious Diseases* included an assessment of the risk by a group of Canadian researchers. Meanwhile, substantial but inevitable costs are still being incurred as a result of the recall of blood products obtained from people who may be at risk for CJD. The possibility of CJD transmission to humans by the ingestion of squirrel brains in Kentucky was one of the more unusual stories of this year. The authors of the report noted that “in the meantime caution might be exercised in the ingestion of this arboreal rodent.”

In the face of new infectious threats the success of immunization is usually a comfort, but measles does not follow this pattern. This disease has not disappeared, despite high levels of immunization. A large outbreak, centred at Simon Fraser University, occurred in BC early in 1997. By Apr. 1, 107 cases had been reported, 56 with a link to the university. Most of those affected were between 19 and 29 years of age. Among patients whose vaccine history was obtainable, 1 had received 2 doses of vaccine, 26 had received 1 dose and 3 had received none. The *Canada Communicable Disease Report (www.hwc.ca/hpb/lcdc/publicat/ccdr)* noted that “this is the first time a significant change has been reported in the age distribution of measles.” As of this year, second-dose measles immunization programs had been introduced in all provinces, and provinces and territories accounting for 80% of Canada’s population had carried out 2-dose catch-up programs. The BC outbreak re-emphasized the importance of these initiatives.

What of existing diseases with “new causes”? The possible benefit of antimicrobial agents used against *Chlamydia pneumoniae* infection for patients with coronary artery disease is food for thought. If bacteria (*Helicobacter pylori*) can cause peptic ulcer disease, then why not a connection between *C. pneumoniae* and coronary artery disease? However, the omnipresent and increasing danger of antimicrobial resistance, often resulting from misuse of the drugs, is cause for concern. Consider the possibility that if macrolides are widely used for the treatment of coronary artery disease, resistance may develop to a group of drugs now effective in treating the most common sexually transmitted disease in Canada, infection with *Chlamydia trachomatis*.

Interest in emerging infectious diseases can also bring forward unsubstantiated concerns, such as those related to *Pfiesteria piscicida*, a one-celled microorganism “referred to by scientists as a toxic dinoflagellate” (according to one contributor to ProMED). Fish kills and catches of diseased fish in the eastern US led to a conflict in the assessment of risk between a panel of physicians and the Virginia Department of Health. Local eating habits changed as a result of media coverage, even though there was no real evidence of human disease. In contrast to this false alarm, cellularity and, in one case, endocarditis resulting from the handling of the fish tilapia (*Streptococcus iniae*), was described in the *New England Journal of Medicine (www.nejm.org)* by Canadian investigators. In fish the infection results in behavioural change, so the problem has unfortunately been labelled by the media as “mad fish disease.”

Undoubtedly 1998 will bring a crop of new diseases and a resurgence of interest in old infections. The challenge for health care practitioners who are responsible for controlling the spread of these organisms is to distinguish between a new threat that needs investigation and novel risk management and a purported threat that will amount to nothing. Vigilance and investment of time in surveillance, investigation and research are required to make the right choice.

References


