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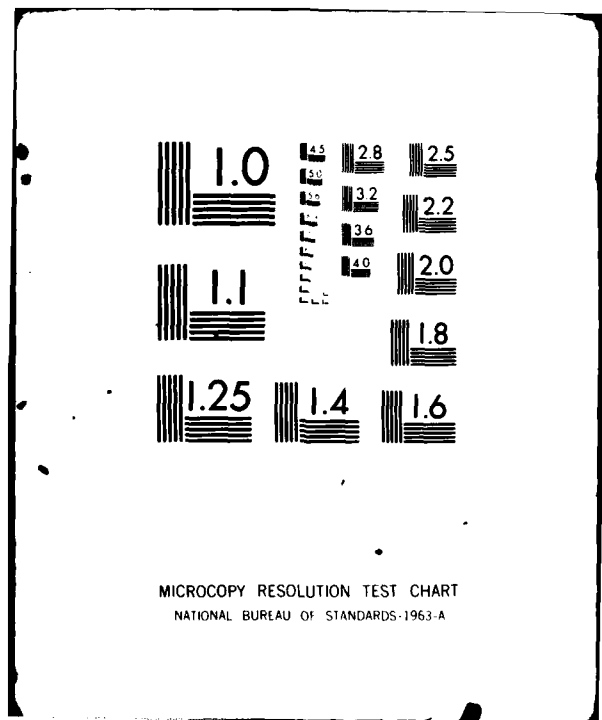
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9TH SCIENTIFIC MEETING OF THE INTERNATIONAL EPIDEMIOLOGICAL ASSOCIATION
MICHAEL STEK, JR*
9 SEPTEMBER 1981

*Uniformed Services University, Bethesda, MD

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The epidemiological conference discussed here was attended by some 900 participants from more than 60 countries. The program covered a wide range of topics related to the epidemiology and prevention of acute and chronic diseases. In this report, the author directs his attention to the discussions about tropical and infectious diseases, which are his areas of special interest.		

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9TH SCIENTIFIC MEETING OF THE INTERNATIONAL
EPIDEMIOLOGICAL ASSOCIATION

The 9th International Epidemiological Association Conference, held 22 through 28 August 1981 at Edinburgh, Scotland, was attended by more than 900 participants from over 60 countries. This was the largest gathering of the association since its establishment. The program covered a wide range of topics in the epidemiology and prevention of acute and chronic diseases. However, since the author's major interests are in tropical and infectious diseases, only those aspects of the broad scientific conference are summarized here.

Two of the five plenary sessions dealt with tropical diseases. The Robert Crickshank Memorial Lecture entitled "The Epidemiology of Tropical Diseases" was presented by Dr. A. O. Lucas (World Health Organization [WHO] Special Program for Research and Training in Tropical Diseases, Geneva). He noted that major studies have been made in the control of tropical infectious diseases. However, further epidemiologic field work needs to be done. To facilitate this work, he stressed that sensitive and yet specific serologic assays such as those for circulating antigens need to be perfected and field tested. These tests must, however, be simple and cost-effective in order to have utility for the developing world.

The second session was a symposium on schistosomiasis (S). Dr. Ken Warren (Rockefeller Foundation, New York City) presented data on studies conducted in Brazil, Puerto Rico, and Uganda on *S. mansoni* infections which indicated that symptomatology in patients in these studies were generally low even in those with apparent heavy infections as assessed by fecal egg count data. Evidence was given which correlated hepatosplenomegaly with fecal egg counts. A problem here may involve the fact that malarial coexist in a number of the study areas and would influence the degree of hepatosplenomegaly. Studies in Sorsogon, Philippines, on *S. japonicum* infections did not support the generally held concept that infections with the Asian schistosome species are more pathogenic. Warren did not suggest reasons for this discrepancy, but a lower level of egg deposition could explain the difference in pathogenesis noted in his study. He then focused on chemotherapy as the primary control measure illustrating his point with hycanthone, which is not the best drug currently available.

Dr. Su De-Long (First Medical College of Shanghai) reported that in China, the clinical manifestations of disease did, in fact, correlate with the worm burdens. Although he considered chemotherapy important, he stressed snail control as a strategy for schistosome disease containment and potential eradication which as he outlined, has been effective in China.

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Dr. Adel Mahmond (Case Western Reserve Univ., Cleveland, OH) noted that in Kenya, symptomatology for *S. haematobium* correlated with the intensity of infection as measured by the urinary egg load. In addition, even light infections occasionally demonstrated considerable morbidity.

A problem inherent in the viewpoint of these three presentations, is the ready acceptance of fecal or urinary egg load as being necessarily a measure of the worm burden and tissue egg load. First, several repeated samples must be collected because of wide fluctuations in egg passage. Second, in early infections, fecal and urinary egg deposition correlates with worm burdens as demonstrated in experimental animals. However, this relationship declines with time as the infection becomes chronic. Third, in heavier infections, the tissue reactions to the worms and eggs may drastically alter intra-luminal egg deposition. Unfortunately, except for the developing tool of circulating antigen detection, the parasitologic egg load measurements are the only indirect determinants of worm burdens and tissue egg loads currently available.

Dr. Nott (WHO, Geneva) presented an overview of a cost-effective strategy for schistosomiasis control employing an integrated approach of low cost; simple, quantitative parasitologic techniques; drug treatment; and ecological control measures. Nott also indicated that several new drugs are, or soon will be, available which offer great promise in the treatment of schistosomiasis: (1) Oxamniquine (*S. mansoni*); (2) Metrifonate (*S. haematobium*); (3) Oltipraz (*S. mansoni* and *S. haematobium*); and (4) Praziquantel (*S. mansoni*, *S. haematobium*, and *S. japonicum*).

For military purposes, an effective pre-and post-exposure prophylactic drug is desirable. Recently, however, oxamniquine was shown not to be effective for all stages of the life-cycle in the mammalian host, thus limiting its utility. The other drugs noted here also need to be assessed for their prophylactic as well as their chemotherapeutic efficacy.

In the general sessions, a paper by Dr. A. Buck (US Agency For International Development, Washington, DC) was of particular note since it focused on disease interaction in the tropics heretofore not extensively explored. He pointed out that for most of the tropics it is the rule, and not the exception, that individuals become infected with multiple parasites, a fact that needs to be more universally appreciated since diagnosis may be complicated by the infection of the several diseases. In addition, disease specific morbidity may be altered and rendered difficult to assess. For example, the infection with one parasite may facilitate infection by and pathogenesis of other parasites. Several organisms may compete with a particular parasite for which treatment is attempted, thus causing therapeutic difficulties. To illustrate, he noted the immunosuppression seen with malaria, the positive association with multiple malarial species infections, and the increasing hepatosplenomegaly seen with malaria and *S. mansoni* infections but not with malaria and *S. haematobium*. Further, patients with onchocerciasis appear to have a greater frequency of lepromatous leprosy. Thus, he concluded that a

full understanding of these interactions is necessary for adequate treatment of the patient as a whole, assessment of the impact of specific diseases on the patient and the community, and ultimately, the control of these diseases.

Two papers dealt specifically with malaria and schistosomiasis. (For a report on schistosomiasis in Egypt, see ESN 34-4:186 [1980]). Dr. F. Wuropa (Ndola Tropical Disease Research Center, Zambia) presented a related paper which dealt with the interactions of malaria (*Plasmodium* (*P.*) *falciparum*, *P. ovale*, and *P. malariae*) and schistosomiasis (*S. mansoni*) in northern Zambia. Individuals with *S. mansoni* had a lower infection rate with *P. falciparum* than those without schistosomiasis. In addition, the *S. mansoni* patients with malaria tended to have lower levels of *P. falciparum* parasitemia. Multiple plasmodial species infections were correlated with the degree of splenomegaly. Positive associations were noted for all malaria species. That is, individuals infected with one species of malaria had a significantly higher risk of infection with another species. The major malaria species in northern Zambia was *P. falciparum* (56%) followed by *P. malariae* (20%) and *P. ovale* (5%). Of the population studied, 50% demonstrated *S. mansoni* infections on stool examination.

The author presented a paper, coauthored by Dr. O. O. Kassim, on the serologic assessment of 45 school children in Epe, Nigeria, an area hyperendemic for *P. falciparum* and *S. haematobium*, employing enzyme immunoassays (EIA). Dual infections appeared to augment antibody responsiveness. Specific circulating antibody alone could not be used to ascertain current infection. However, specific circulating *P. falciparum* and *S. haematobium* antigen assays were shown to correlate well with the presence of malaria parasitemia, and urinary egg loads respectively. These techniques approach the needs outlined by Lucas in his opening address.

The onchocerciasis control program in the Volta Basin was represented by 2 papers. Dr. K. Dadzie, presenting for himself and Dr. B. Thylefors (Volta River Basin Program, Upper Volta) noted a decrease in prevalence and incidence over the years 1975 to 1980. During this time, a significant decrease in eye lesions has been noted. Dr. M. Karam, presenting for himself and Dr. A. Prost (WHO Project, Ouagadougou, Upper Volta) supported the decreasing prevalence of onchocerciasis in the region with their data but noted that blindness was still a significant factor and that the mortality rate was four times greater in the blind than in the sighted. In addition, Karam noted that patients with onchocerciasis were found to demonstrate reduced responsiveness to tetanus and BCG (Bacillus Calmette-Guerin), implying immunosuppression, and confirmed the positive relationship between onchocerciasis and lepromatous leprosy alluded to by Dr. Buck.

The epidemiologic factors related to lymphatic filariasis control was presented by Dr. Dave Dennis (WHO Regional Center for Research and Training in Tropical Diseases, Kuala Lumpur). He illustrated an integrated strategy for the control of lymphatic filariasis employing diagnosis, chemotherapy, behavior modification, and vector and animal reservoir control.

Several papers dealt with the epidemiology and control of leprosy. A detailed paper by Dr. M. Lechat (Catholic Univ. of Louvain, Brussels) outlined the design of a field trial for a yet-to-be developed leprosy vaccine. However, such a vaccine currently is not available.

Dr. S. Noordeen presenting for himself and Dr. H. Sansarricg (WHO Leprosy Unit, Geneva) noted the problems of early diagnosis and assessment of disease activity. Of particular concern was multibacillary leprosy. Dr. P. Neelan (Central Leprosy Teaching and Research Inst., Chingleput, India) reported on the results of acedapsone employed as a chemoprophylactic in children (1-15 yrs) who had contact with multibacillary leprosy. This study was complicated by the fact that two dose regimes were used, 150 and 225 mg, administered intramuscularly daily for 10 weeks. Three hundred forty-eight children were in the test group and 352 in the placebo group. Twenty-two new cases appeared in the acedapsone group and 42 in the placebo group. Acedapsone appears promising, but there is need for further study, particularly, an assessment of the drug in older age groups. Also, a comparison of several sulphones would be in order to assess the protection they offer and the side effects they produced. This would help to establish which particular drug is the best chemoprophylactic agent.

Several papers discussed diarrheal disease in the tropics. Dr. M. Khau (International Center for Diarrheal Disease Research, Dacca, Bangladesh) reported on the 1976-77 epidemic of diarrhea in Dacca due to nonagglutinating vibrios (NAG) and group III NAG-like organisms (EF-6). The epidemiologic study revealed that the NAGs were present throughout the year, peaking in the spring and post-monsoon seasons. The EF-6 appeared in October 1976 and peaked in March 1977. Water was indicated as the transmission vehicle. Secondary attack rates for the NAGs ranged from 10-25% but no secondary infections were found for EF-6.

Dr. M. Merson (WHO, Geneva) presented a review of the WHO Global Diarrheal Disease Control Program established in 1978. The program has as its main goal the reduction of morbidity and mortality associated with diarrheal diseases. To illustrate his point, he noted that the 7th pandemic of cholera continues to place significant monetary demands on several affected countries, and high death rates from infantile diarrhea (primarily due to the Rota viruses) go relatively unchecked. WHO's focus has been to attempt to incorporate diarrheal disease control as a budgetary item in the primary health-care programs of countries with demonstrated greatest need. Emphasis has been on oral rehydration rather than mass chemotherapy.

Dr. W. Cutting (Dept. of Child Health, Edinburgh) reported on a questionnaire survey conducted by himself and Drs. R. Omer and S. MacLean which was not world wide as reported, but biased toward Africa, where health care workers received the greatest number of questionnaires, followed by Asia, and then Latin America. Although regionally biased, the survey indicated that between 1976 and 1979 health care providers were

deciding in favor of oral rehydration for therapy (50 to 75%). Koolin preparations had fallen in to disfavor (31% in 1976 to 18% in 1979). Antibiotic use remained about the same (28 to 26%). In addition to oral rehydration, intravenous rehydration increased during the study period (46 to 58%). The majority of health workers employed homemade oral rehydration mixtures. Only 24% of respondents employed the complete formula recommended by WHO incorporating bicarbonate and potassium. (The WHO packets, to be mixed in 1 liter of potable water, contain 3.5 g of sodium chloride, 2.5 g of sodium bicarbonate, 1.5 g of potassium chloride, and 20 g of glucose).

Continuing in the gastroenteritis category, Dr. T. Murrell (Univ. of Adelaide, Australia) presented a review of Pigbel (enteritis necroticans) caused by the beta toxin of *Clostridium (C.) welchii* which has been a major problem in the highlands of Papua, New Guinea. He suggested in his paper that the disease may, in fact, be an ancient disease previously placed in the acute intestinal obstruction category. This may have occurred in ancient communities living at subsistence levels where the diets may have been composed of millet or sweet potatoes with occasional feasting on pig or other meat contaminated with *C. welchii* beta toxin. These conditions would mimic the situation in Papua, New Guinea. (It should be noted that Burroughs Wellcome has developed a vaccine against Pigbel which has successfully completed human trials).

Another preventable disease is dracunculiasis (guinea-worm). A global eradication proposal was made by Dr. M. Sharma (National Inst. of Communicable Diseases, New Delhi) based on the smallpox eradication scheme of search for cases, containment, and liquidation of foci. As a major world effort is underway to increase protected water supplies, this disease should be readily defeated by the identification of foci and the elimination of contaminated waters.

Alluding to smallpox, Dr. K. Kagami (Kyoto Univ. of Medicine, Japan) suggested that an observed increase in cases of molluscum contagiosum seen in outpatient clinics at Kyoto are related to the cessation of immunization with vaccinia. He further suggested that there may be antigenic similarities between molluscum contagiosum and vaccinia.

Dr. Ali Rashed (Maadi Military Hospital, Cairo) pointed out that Rift Valley Fever (RVF) may also be contained, but because of a lack of sufficient supplies of vaccine, RVF has become established in Egypt. Human introduction by airlift was considered a possible source for the 1977 outbreak, but evidence supports a zoonotic introduction via camel routes from the Sudan. Another outbreak of RVF in Egypt is considered possible. With the occasional severe sequelae of meningoencephalitis and ocular hemorrhages, RVF is a major public health concern in Egypt.

The Caribbean Epidemiology Center (CAREC) at Port-of-Spain, Trinidad, may serve as a model for the control of communicable diseases in the tropics. Dr. P. Hamilton, the director of CAREC, presented a summary

C-4-81

of 5 years experience in developing the PAHO (Pan American Health Organization)/WHO multinational center for communicable disease surveillance in the Caribbean. It functions in a broad sense somewhat like the US Navy's Environmental and Preventive Medicine Units. The center has 4 primary objectives: (1) disease surveillance and epidemiologic investigation; (2) backup laboratory service in support of surveillance in virology, bacteriology, and parasitology; (3) training in surveillance and laboratory methodology; (4) practical research relevant to the program.

In the past 5 years, help has been given during 54 natural disasters and epidemics including the "Dengue 4" outbreak. A monthly epidemiology report is now produced for the area which includes 18 English-speaking countries in the Caribbean with a population of 5 to 6 million persons.

