

Diarrheal Diseases. This Group, after reviewing the current knowledge and experiences in cholera control, concluded that the development and implementation of national programs for the control of *all* diarrheal diseases was the best way to prevent and control cholera. Guidelines for Cholera Control are now available and can be obtained by writing to: The Program Manager, Pro-

gram for Control of Diarrheal Diseases, World Health Organization, 1211 Geneva 27, Switzerland.

(Source: WHO, *Weekly Epidemiological Record*, No. 13: 97-98, 1981.)

Global Distribution of β -lactamase-producing *Neisseria gonorrhoeae*

The global spread of penicillinase-producing and chromosomal-resistant gonococcal strains is continuing. The number of countries where penicillinase (β -lactamase)-producing *Neisseria gonorrhoeae* (PPNG) strains have been identified up to May 1981 (See Table 1) appears to be limited by the capacity of the local laboratory service to isolate and test for these strains. Countries with a good surveillance system have observed a two to six-fold increase in the number of PPNG isolates within the last 18 to 24 months.

Gonococcal strains partially or totally resistant to penicillin and other antibiotics have been well known for a long time and infections caused by them had been dealt with by dose increases or alternative antibiotics. However, the situation has rapidly changed by an onslaught of gonococcal strains with combined chromosomal and plasmid-mediated resistance, causing an unacceptable proportion of ineffective treatments with penicillin and other antibiotics in many areas of the world. Alternative treatment regimens which could still be effective in the majority of gonococcal infections may not only be difficult to identify but may well result in an increase of treatment costs which can no longer be afforded by many countries nor by the patients. This, in turn, may lead to the use of an ineffective treatment which would further boost drug resistance and extend the period of infectivity and activity of the disease in the patient, a situation that

will no doubt result in an increase in gonorrhoea transmission and its complications. Gonococci are just one well-studied example of the development of antimicrobial resistance and similar trends can be observed in other bacterial species.

It should be remembered that delayed recognition of drug resistance in recurrent focal and epidemic outbreaks of *Shigella* dysentery and typhoid that have scourged South East Asia and Central America as well as Africa in recent years has, on several occasions, resulted in excessively high attack rates and case fatality rates.

Similar observations have been made of various bacteria causing acute respiratory infections and cerebrospinal meningitis, resulting in an increased case fatality rate. The incidence of resistance to different antibiotics of both gram-positive and gram-negative bacteria has increased considerably in recent years. The growing frequency of β -lactamase-producing *Haemophilus influenzae* has been noted in different geographic areas. Almost 50 per cent of these strains were resistant to penicillin. The investigation of penicillin proteins in clinical isolates of *Streptococcus pneumoniae* strains resistant to multiple antibiotics in South Africa and the United States revealed several changes that accompanied the development of the resistance. Of particular interest is the drug resistance of staphylococci, meningococci, and *Escherichia coli* isolated from patients and carriers in different

Table 1. Global Distribution of β -lactamase-Producing *Neisseria gonorrhoeae* up to May 1981.^a

Countries with identified strains
<i>Africa</i>
Morocco (?)
Ghana
Mali
Nigeria
Central African Republic
Gabon
Zaire
Madagascar
Zambia
Senegal
<i>Americas</i>
Canada
United States of America (0.1%)
Mexico
Panama
Argentina
Colombia
<i>East Asia</i>
Philippines (10-40%)
Hong Kong
Taiwan
Guam
Japan
Republic of Korea (<1%)
New Zealand
New Hebrides
Australia
<i>South East Asia</i>
Indonesia
Singapore (30%)
Malaysia
Thailand (28%)
India
Sri Lanka
<i>Europe</i>
France
Belgium
Netherlands (5%)
United Kingdom
West Germany
Denmark
Sweden
Norway
Finland
Poland
Switzerland
<i>Middle East</i>

^aInformation obtained through WHO Epidemiological Surveillance System.

geographic localities.

Antibiotics used indiscriminately and in inappropriate doses by physicians, health-related workers, and in self-treatment are assumed to be the root of the problem, providing the needed antibiotic pressure favorable to an ever-growing chromosomal resistance and promotion and maintenance of plasmid-mediated resistance.

In addition, the use of antibiotics in the prevention of animal diseases and in food preservation provides another parameter of a low level antimicrobial pressure directed mainly towards enteric pathogenic agents.

It is felt that it has become a matter of urgency to draw the Governments' attention to the gravity of the problems created by the antimicrobial resistance of bacteria in general and *N. gonorrhoeae* strains in particular and to propose effective measures to counteract this unfortunate trend toward increasing bacterial resistance.

To this end WHO intends to convene a meeting of experts before the end of the year. Furthermore, the group will review the complex questions of optimal gonococcal therapy and propose practical and cost-effective means of treating gonococcal infections that can be applied without delay.

(Source: Bacterial and Venereal Infections Unit, WHO.)