Technical Reports

Malaria: Disease of poverty and underdevelopment

The Ministerial Conference on Malaria which is being convened by the World Health Organization (WHO) in Amsterdam, the Netherlands, on 26 and 27 October 1992, will open a new chapter in the fight against the most important parasitic disease afflicting mankind.

Each year, over one million people are killed by the disease – a death every 30 seconds – and more than 100 million others fall ill from it, often severely. It threatens 40% of the world's population, undermining the health and welfare of women and families, the survival of children, debilitating the active population, and straining both countries' and individuals' resources.

Countries in Africa south of the Sahara account for 80% of all clinical cases and nearly 80% of the deaths each year. Children are particularly at risk, malaria being one of the major childhood killers in rural tropical Africa, taking the life of 1 out of 20 children before the age of 5 years. The disease causes anaemia in children and pregnant women and increases vulnerability to other diseases. Malaria is also a major cause of school absenteeism. It is estimated that the cost of malaria to Africa alone will rise to more than US$ 1800 million by 1995.

Approximately 5 million cases of malaria are reported annually from countries outside Africa south of the Sahara but it is estimated that the real number is four times as high. About 75% of these cases are reported from the following 9 countries in decreasing order of magnitude: India, Brazil, Afghanistan, Sri Lanka, Thailand, Indonesia, Viet Nam, Cambodia and China.

Although most of the populations in Asia and the Americas now live in areas where the risk of malaria is relatively low, there is a serious problem in frontier areas of economic development and in countries affected by social disruption. In these areas, environmental disturbances, population movements and the absence of health care infrastructure have increased the malaria problem in situations where the disease was under a measure of control. Thus, two-thirds of the cases of malaria in the Americas occur in the Amazonian basin as a result of colonization and mining of the forest environment. In Asia, control efforts have been devastated by war in countries, such as Afghanistan and Cambodia. This situation is compounded in the Indochina peninsula, by severe problems of resistance to drugs.

"Malaria is a curable and preventable disease", says Dr Hiroshi Nakajima, Director-General of the World Health Organization. "We at WHO are convinced that malaria can be controlled but it is not the isolated concern of the health sector. It is everybody's business and everyone should contribute. It requires the partnership of the community and the involvement of those engaged in education, the environment and development in general. The key is competent local action".

The Conference is expected to adopt a new global stategy for malaria control. The objectives of this strategy are to prevent mortality and to reduce morbidity and social and economic loss through the progressive improvement and strengthening of local and national capabilities. There are four fundamental principles to the strategy:

- to provide early diagnosis and prompt treatment;
- to plan and implement selective and sustainable preventive measures;
- to detect early, contain or prevent epidemics; and
- to reassess regularly a country's malaria situation, in particular the ecological, social and economic determinants of the disease.

History shows that there is no single method of bringing the disease under control. The introduction of DDT and other cheap insecticides in the 1940s meant that houses in malarious areas could be sprayed with chemicals to interrupt transmission. This and the discovery of cheap and relatively safe synthetic antimalarial drug, such as chloroquine, raised the hopes that eradication was possible. Transmission was totally prevented in some highly malarious areas but insects and parasites developed resistance to the chemicals and by the 1960s it became clear that these problems, together with many other technical, social, economic and logistic constraints, made it impossible for malaria to be eradicated by a campaign approach.

Malaria has plagued mankind for thousands of years, and was described by Hippocrates in the fourth century BC. The word malaria comes from the Italian, *mal'aria*, which means bad air. The French term, *paludisme*, stems form *palus*, Latin for swamp. Although now it is regarded as a tropical disease, malaria was endemic in Europe and parts of the United States of America until comparatively recently. A severe epidemic in Italy and several major outbreaks in the Netherland occured after

World War II. Even today, some Mediterranean countries continue localized malaria prevention and control activities. Rapid increases in international travel led to some 8000 cases of imported malaria in Europe in 1990 alone, and because of underreporting the true total is believed to be considerably higher.

But it is in the poorer, less developed countries of the world that malaria has its greatest impact. About 500 million people, mainly in tropical Africa, live in areas lacking strong, sustained, antimalaria efforts. Elsewhere the disease has spread because of major ecological changes, such as economic exploitation of forest areas, social or political unrest and large-scale uncontrolled population movements with disruptions of established malaria programmes. Malaria control is closely linked to the quest for poverty reduction.

While the vastly expanded knowledge of the disease and its control acquired over the years provides the basis for launching a new global initiative for malaria control, research continues to be needed to allow national programmes to adapt their activites to the ever evolving malaria situation and to provide new tools and approches in the face of increasing drug and insecticide resistance. In current drug research, much interest has been aroused by the discovery of artemisinin, a new class of antimalarial drug has its roots in history. For some 2000 years, the leaves and flowering heads of *Artemesia annua* have been used in Chinese traditional medicine to treat fever associated with malaria. Derivatives of artemisinin have been synthesized and some researchers cautiously express the hope that artemisinin and its derivatives might become one of the biggest pharmaceutical advances against malaria since quinine was isolated in 1834 from the bark of the *Chinchona* tree. Research spanning ten years, and including human clinical trials, indicates that some artemisinin derivatives can clear malaria fevers and parasites from the blood faster than any other antimalarial drug.

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