

## **Chapter 1: Introduction**

**Note:** “The Handbook of Malaria Infection in the Tropics” was published by Italian Association Amici di Raoul Follereau (AIFO), based in Bologna, Italy, in 1997 as the 15<sup>th</sup> number of a periodical series called “Health Cooperation Papers” (or Quaderni di Cooperazione Sanitaria). This series is edited by Prof. Enrico Nunzi, Italian leprologist and Head of Department of Dermatology and Head of Inter-Departmental Centre of Leprosy Research under University of Genova (Italy). This handbook was edited by Prof. G. Carosi and Dr. F. Castelli, of Department of Tropical Medicine at University of Brescia (Italy).

Two thousand copies of this book were published and were distributed all over the world, especially in collaboration with the World Health Organization (WHO).

In the mean time, we continue receiving requests for this book. Therefore, we have decided to put this handbook on the web. However, from the web-version of the handbook, two chapters are missing (Chapter 5: Immunology of Malaria by Dr. M. Hommel; and, Chapter 11: Antimalaria Drugs by Dr. W. H. Wernsdorfer). Also in many chapters, photographs and graphics are missing. We regret this but we were unable to trace these old files.

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## Introduction

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Malaria is probably the second infectious cause, after tuberculosis, of morbidity and mortality all over the world. It has been estimated that 300-500 new clinical cases of malaria (more than 90% of which in tropical Africa) occur every year worldwide, causing 1.5 to 2.7 millions deaths, the great majority being recorded in African children (World Health Organization, 1994). In the age-group 1-4 years, malaria is the cause of nearly one-quarter of all deaths in some african Countries. Outside Africa, other Countries pays a heavy tribute to malaria. Among them India, Brazil, Sri Lanka and Afghanistan are the most involved.

The introduction of antimalarial specific drugs and of residual insecticides during the '50s caused the disappearance of malaria transmission or at least the decrease of malaria-specific morbidity and mortality in several Countries, but has mislead the scientific community that world wide eradication of the disease was to be achieved soon.

As a matter of fact, the number of malarious Countries decreased from 140 in 1955 to 90 in 1992 but these preliminary achievements were not doomed to be followed by the complete success of mankind in the everlasting struggle against this dreadful disease. Furthermore, from the other side, they caused a sharp fall in the interest (and in the amount of dedicated funds for research!) of the scientific community in a disease that was thought to be the second infectious plague to be dominated by man after smallpox.

Unfortunately, logistic, economic and political reasons have impeded substantial progresses in those areas, as Africa, that would have benefit more from malaria eradication activities. Too late it was realized that the eradication of malaria from a given area needs the

simultaneous development of the health, agricultural, sanitation and economic systems, that were not to be achieved in the last 30 years in a large number of malarious Developing Countries. It is not by chance, in fact, that eradication activities were successful in the more economically advanced temperate and subtropical areas of the world. The worldwide spread of drug-resistant *Plasmodium falciparum* strains, that has interested virtually each continent except Central America, and the initial resistance of some mosquitoes to residual insecticides have further hampered the success of malaria eradication campaigns.

Having realized the impossibility to achieve the eradication target until conditions for a more global development of involved areas were achieved, the scientific community has then addressed the issue of control programmes.

As at 1992, out of 5.430 million people inhabiting the planet, the following figures reflect the world wide situation of malaria:

**3.150 millions** people live in malaria free Countries;

**1.780 millions** people live in areas where malaria was reduced or even eliminated but it was reinstated;

**500 millions** people live in areas (mainly tropical Africa) where malaria situation remained unchanged despite control activities.

It has also to be remembered that the increasing volume of international travels and migration flow to and from malaria endemic areas has also exacerbated the problem of imported malaria in otherwise malaria-free areas, where peculiar ways of transmission have been reported (airport malaria, transfusion malaria, malaria in drug addicts). Imported infected mosquitoes have proved capable of transmitting the infection even far from International Airports (*baggage malaria*) so that the ghost of reintroduction of malaria infection (mainly *Plasmodium vivax*) in subtropical and temperate malaria-free areas has already been evoked (World Health Organization, 1995).

It is nevertheless in Developing Countries of tropical areas, and particularly in the most peripheral levels of the health systems, that malaria still represents a major health problem that is to be addressed by local health systems with the support of the international community.

The mainstones of malaria therapy and diagnosis have not substantially changed over the last fifty years (the only possible exception being represented by the introduction of the new drugs

mefloquine and halofantrine) and new effective and economic drugs and diagnostic tools that could be used in the field are eagerly awaited, as well as the availability of effective malaria vaccine.

In the field of therapeutics, great expectations have been raised by the artemisinin derivatives that proved to be highly and quickly effective to clear chloroquine-resistant *P. falciparum* parasitaemia in many field trials (Supplement to the Transactions of the Royal Society of Tropical Medicine and Hygiene, 1994).

In the field of diagnosis, the easy-to-perform but time consuming microscopic methods could be supported in the future by biotechnology-based methods, but still economic constraints are to be overcome.

After decades of deceiving attempts, the Spf66 vaccine appeared promising, even if the results of the first controlled trials carried out in school children in Tanzania (Alonso et al., 1994) and in Gambia (D'Alessandro et al., 1995) have provided contrasting results as to the degree of the vaccine-induced protection.

It is then conceivable that the tools available for fight against malaria in its core areas, that are the peripheral areas of tropical endemic Countries, will change little in the next years. Health workers operating at the district level are in the front line in the fight against malaria and have to cope with economic and logistic constraints and lack of access to scientifically sound informations. This **Handbook of malaria infection in the tropics** is dedicated to them, hoping that it will become a useful tool both in the bedside clinical activities, in control activities and in the understanding of the future line of research in the field. The Non Governmental Organization **Amici di R. Follerau** has financially supported the printing and distribution charges of this booklet, that is the 15<sup>th</sup> fruit of the Health Cooperation Papers collection started in 1980 and I am pleased to testify the dedication and collaborative attitude of all their staff. **All the Authors** are of wide international reputation and have collaborated benevolently to this project with the valuable presentation of their experience. To them I would like to address my personal thanks for finding the time to give their contributions among several other engagements. Also, I would like to thank the **World Health Organization** for its permission to reproduce excellent didactic plates and figures.

The success of this Handbook will be achieved only if it will be regarded as an operating and useful tool, and not as a reference book, to help health policy makers and, in particular, health worker at the district level to fight against “*mala aria*” (bad air).

## References

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