Malaria control: history shows it’s possible

by José Antonio Nájera-Morrondo

Malaria has always been one of the most serious obstacles to mankind’s efforts to develop agriculture, establish permanent settlements or in any way modify the environment. The earliest civilizations recognized that unhealthy conditions could be created by natural disasters, destructive wars or uncontrolled cultivation of the land.

It is no exaggeration to say that malaria has been responsible for much of the human suffering and misery accompanying the process of social and economic development. It has also largely “fuelled” the vicious cycle of poverty, ignorance and disease. A well-documented example occurred in southern Europe where, in periods of war or economic depression, the use and the care of land declined; this favoured the transmission of malaria, which contributed to further neglect of land and the lowering of its value, so that the least productive areas became even more intensely malarious. This direct association of agricultural neglect with this disease is enshrined in an old Italian saying that “malaria flees before the plough.”

Early measures

Protective devices against mosquitoes also date far back in history. Herodotus (484-425 BC) observed that in parts of Egypt, above the marshes, people slept in lofty towers which mosquitoes could not reach, while people living in the marshlands slept under nets. In the 13th century AD, Marco Polo noted that the wealthier residents of the Coromandel Coast in India slept on bedsteads with curtains which could be closed at night. Later, mosquito nets and window screens were regarded as protection not only from mosquito bites but also from “miasmal exhalations” (bad air), then thought to be the cause of malaria.

Medical treatment for fever also has a long history. Besides magic practices, many herbal remedies were prescribed in different areas of the world, some of them with proven antimalarial action. At least four different remedies, including qinghaosu (Artemisia annua), were used in China during the last 2000 years.

Nobody knows how long the Peruvian Indians knew of the properties of cinchona before 1500 AD, when an Indian chief offered the bark of the “fever tree” to the Jesuit missionary Juan Lopez. Nearly three centuries later a physician and “inspector of epidemics” recommended to King Charles III of Spain that “since cinchona is so effective in treating and preventing this disease, I cannot but suggest using it.”

In 1630, the Countess of Chinchon cured her recurrent fever with a decoction from the bark of a Peruvian tree.
beg Your Majesty to take the most appropriate measures to ensure that all the villages of this continent be provided with such an effective antidote, and that it be sold at a moderate price, so preventing the frequent adulterations that apothecaries (chemists) make of this bark.” Cinchona is the origin of today’s quinine and its derivatives.

**Colonial times**

Malaria was a serious obstacle to the colonization of Africa, where the early colonies—particularly in West Africa—paid a heavy price to this disease. Although Europeans were conscious of the risks and even had some knowledge of preventive measures, their urge to exploit natural resources as well as strategic considerations often forced them to establish settlements in highly malarious areas. From the late 18th century, better sanitation at the trading posts and the increasing use of cinchona and later of quinine permitted large-scale European settlement, the massive exploitation of African resources—and a century of intensive slave trading.

By the mid-19th century, quinine was being routinely taken as prophylaxis, a method later standardized by Robert Koch in 1900, after the discovery of the malaria parasite. Nevertheless, the disease provoked major disasters. Apart from the failure of the French corporation of Ferdinand de Lesseps during the construction of the Panama Canal, the construction of many roads and railways approached the grim mortality rate of the Mamore-Madeira Railway in north-west Brazil, of which it was said—perhaps with some exaggeration—that it left a dead man for every sleeper laid.

Specific control of the disease began with the discovery of the malaria parasite in 1880 by Laveran, and of the mosquito vector by Ross and others in 1897. These findings led rapidly to practical proposals for the interruption of transmission, and for appropriate diagnosis and treatment of malaria.

**DDT insecticide**

The idea of malaria eradication, which had been put forward as early as 1916, gained fresh currency after the Second World War—when epidemics had ravaged the devastated areas of southern Europe, while the insecticide DDT had appeared to be extremely effective, not only in controlling those epidemics but also in dealing with malaria in such endemic areas as widely from one area to another.

The main lesson we have learnt from history is that many spectacular successes were ephemeral and followed by severe resurgences, while areas where malaria control was in tune with local health and social development have maintained their malaria-free status.

**Appropriate control**

Specialized technical competence is essential to the planning of appropriate control measures, as well as to the training and reorienting of health and medical services so as to improve their performance and ensure the health education of the local population.

Great expectations are now being placed on the development of a malaria vaccine. But, again, history shows that some of the major breakthroughs in research were hailed as the final solution to the problem. The discovery of the curative effect of cinchona, the isolation of quinine, the discovery of the malaria parasite and its transmission by anopheline mosquitoes, and the recognition of the residual effects of DDT and other synthetic insecticides all led to proposals for the mass control and even eradication of malaria.

Looking back at such proposals, the Second Report of the Malaria Commission of the League of Nations in 1927 commented: “The history of special antimalarial campaigns is chiefly a record of exaggerated expectations followed sooner or later by disappointment and the abandonment of work.” Unfortunately that comment is still valid, after the renewed optimism that had been engendered by DDT.

A healthy scepticism towards panaceas for malaria control does not mean it would be justified to abandon the more than one hundred million people now suffering from the disease, or to forget that nearly half of the world’s population is at risk. Although malaria eradication is not feasible at present, malaria mortality and a great deal of the suffering caused by the disease can be eliminated by the judicious use of available technology. Eventually, as part and parcel of health, social and economic development, the malaria risk itself can also be eliminated.

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