

# Missed opportunities cost lives — vector control in emergencies

by Madeleine Thomson

**The casualties of war and other emergencies are not confined to the battlefield; vector-borne diseases spread like wildfire among vulnerable refugees crowded together in alien environments. Can relief agencies ever hope to control these major killers?**

THE WORD REFUGEE conjures up many images: long and dangerous treks through hostile country, violence, starvation, and death — along with appalling personal and communal loss. At the start of an emergency, humanitarian aid to such distressed groups of people must be fast, well-planned, well-implemented, and highly focused if further loss of life is to be minimized. To achieve this, most relief agencies concentrate on four main issues: water, food, shelter, and medical treatment.

But now, more and more relief agencies are recognizing that, in the many parts of the world where refugee populations have appeared in great numbers in recent years, vector-borne diseases, such as malaria, lice-borne typhus, and kala azar<sup>2</sup> — are widespread, and can have a devastating effect on highly vulnerable refugee groups.

Falciparum malaria is by far the most

serious vector-borne disease worldwide and is listed as a major killer in many emergency situations. It is particularly dangerous when non-immune refugees are forced to flee into a malarious area — recently highlighted by the exodus of Rwandans from the malaria-free highland area to the malarious lowlands of Zaire and Tanzania.

## Prevention

The prevention of vector-borne diseases through public-health measures in a refugee setting may be the most effective means of reducing overall morbidity and mortality. Organizations interested in refugee health care need to be aware of the risks of vector-borne epidemics, train their staff appropriately, and prepare suitable control strategies. All actions must be based on a thorough understanding of the relative risk of vector-borne disease to

the refugee population, and also to the resident host population in the settlement area.

At the December 1995 Oxfam workshop on 'Sanitation in Emergency Situations', Lucy Lowndes highlighted the lack of familiarity with vector control

### Priorities in the acute phase of an emergency

The importance of vector control must be seen in the light of all the other essential inputs: food distribution and nutrition interventions; immunization; basic curative care — including surgery in a war zone; and — depending on the risk\* of mortality and severe morbidity — vector control.

NB \* The risk may be increased due to such factors as: immune status (people who have not developed any immunity to the disease, children under five, pregnant women); poor health status; virulence of the parasite; and availability of curative treatment.

## Why do vector-borne diseases present such a serious health-risk to refugees?

### Refugees may:

lack immunity to a disease found in the settlement area

*example: malaria;*

have fled through an area infested with certain vectors

*example: through acacia woodland in southern Sudan, home to the vectors of the deadly parasitic disease kala azar;*

have been settled in a normally uninhabited area

*example: where tsetse or blackflies, the vectors of sleeping sickness and river blindness, respectively, are present;*

have lost their livestock — insects which normally bite both humans and animals will increasingly turn their attention to people;

live in crowded, unhygienic camps where certain vector populations may increase dramatically

*example: body lice, the vector of lice-borne typhus and relapsing fever;*

suffer stress resulting from flight, fear, and loss, which may exacerbate disease morbidity

*example: refugees may be anaemic as a result of major trauma and blood loss and, therefore, are more susceptible to life-threatening malaria.*

Such problems may be compounded by the breakdown of national vector-control programmes in the areas from which the refugees have fled, and in the host country. In the latter, local resources may be overwhelmed by a sudden influx of refugees.



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demonstrated by many relief workers involved in sanitation and public health.<sup>3</sup> The key problem appears to be a lack of basic knowledge and poor access to information. Sanitation fieldworkers come from a variety of backgrounds, and rarely possess the specialist knowledge and technical expertise required to design, instigate, and manage an effective vector-control

## Control strategies

Vector-control strategies actually involve a wide range of issues, some or all of which will impinge directly or indirectly on the level of disease, and the ease with which they can be controlled:

- choice of settlement site (probably the most decisive factor for any disease where transmission is localized);
- camp construction and organization (will help or hinder any control programme);
- shelter (may determine levels of overcrowding, penetration by vectors, choice of insecticide formulations);
- community awareness and health education (essential to all control programmes);
- excreta disposal (may affect fly and mosquito breeding, but not malarial mosquitoes);
- water-supply systems (may affect mosquito breeding including malarial mosquitoes. Water availability may affect lice and mite infestations);
- personal protection — clothing, bed-nets, repellent oils — may reduce individual exposure; and insecticide-control programmes (may be extremely effective, but only if undertaken properly, using appropriate insecticides and application machinery (sprays), and trained personnel, with due consideration to problems of safe handling, environmental pollution and insecticide resistance).<sup>4</sup>



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programme. This inexperience and ignorance can also be observed at the relief agency head-office, which may result in hesitation and confusion when

vector-control strategies are first discussed, and funds requested. Greater awareness at all levels — fieldworker, logistician, desk officer, and

administrator — of vector-borne disease problems and their control is essential if the situation is to improve.

## Supervision

Successful vector-control programmes depend on well-informed, properly co-ordinated activities being executed by a (large enough) well-trained, control team using the most appropriate control methods. Proper supervision is essential — to ensure that the control measures are being carried out — which should include an operational evaluation of the methods used, such as the number of bed-nets distributed, the number of individuals protected etc. — to make sure that the original objectives have been achieved.

The world's largest refugee populations are in countries whose annual expenditure on health is extremely low; national vector-control programmes are rare, and usually face a permanent shortage of qualified personnel, transport, and funds. The appropriate government ministry should be consulted before setting up a control programme — particularly if it involves the use of insecticides. Its contribution to the control programme will vary, however, according to its own technical capacity at the time of the disease outbreak. During an epidemic, government resources may be overstretched in protecting their nationals and, in such circumstances, the role of the relief agencies may be extremely important. In areas where the population has been displaced as a result of civil war, it may not be possible to gain the administration's support.

Vector-borne diseases may be a significant problem in many refugee situations; controlling such diseases by controlling the vector has frequently fallen between two stools — medical staff (who may possess a detailed knowledge of the life cycle of the parasite and vector, but have little interest in non-medical, control methods); and sanitation workers (willing to undertake such programmes, but unable to make appropriate decisions because of lack of training). The time has come to redress this situation.

## Notes and references

1. In this context, the term 'vector' is given to any insect, tick, or mite which transmits a parasite or virus from one animal or person to a human host.



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*Clothes-washing in a stream at Katala camp, Goma. Choosing the right settlement site can be the decisive factor in effective vector control.*



Tapstands being installed and used at Kibumba camp, Goma, September 1994.

2. Kala azar (visceral leishmaniasis) is transmitted by small sandflies which live near acacia woodland. A victim's chances of survival are extremely small unless treated with effective drug therapy. In Sudan it is associated with times of famine, war, and anarchy.

3. Lowndes, L., 'Vector control in emergency situations', Sanitation in Emergency Situations: Proceedings of an international workshop, Oxfam, Oxford, 1996.

4. An insecticide suitable for use in a public health programme should have given satisfactory

results in all four phases of the WHO Pesticide Evaluation Scheme (WHOPES). But, as some appropriate insecticides will not have passed through the system, the next best approach is to buy from a reputable company. WHO's 1993 publication *Equipment for Vector Control* provides a detailed guide to the right equipment.

5. Mainstream WHO publications, including *Entomological Field Techniques for Malaria Control* (Vols. I and II) can be obtained directly from WHO or from the nearest WHO agent.

6. Thomson, M.C., *Disease Prevention through*

*Vector Control: Guidelines for relief organizations*, Oxfam Practical Health Guide No. 10, Oxford, 1995.

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## Vector control and the relief agency

The role of the relief agency in a vector-control programme will vary according to the situation and its role in general in the overall running of health facilities within a refugee camp. The main areas of assistance that a relief agency might provide are:

□ *Access to technical expertise.* For example liaising with relevant international organizations such as WHO, UNHCR, government departments, institutes concerned with vector-borne diseases, and other relevant organizations including companies selling insecticides and application machinery; obtaining the relevant international literature available, and employing vector consultants. Obtaining information (for those 'online') has never been easier or quicker. The phenomenal increase in the use of the internet makes it possible to access a very wide range of resources in a relatively short time. The exponential increase in computer power and availability, combined with ever-decreasing costs, make information technology a central axis upon which to access literature, and contact experts. Abstracts of articles on vector-borne diseases can be searched for in many medical and scientific libraries using CD-ROM bibliographic programmes such as MEDLINE, POPLINE, and LIFE-SCI.

□ *Funding part or all of a vector-control programme* (in particular, funding for fuel, transport, salaries of spray personnel, insecticide, bed-nets and equipment for environmental sanitation such as spades, tractors, and bins). The decision to fund a vector-control programme requires a clear understanding of the problem at hand, at both the local (camp) and agency (funding office) level. Cost-effectiveness analysis may improve an agency's ability to decide the most appropriate method of control.

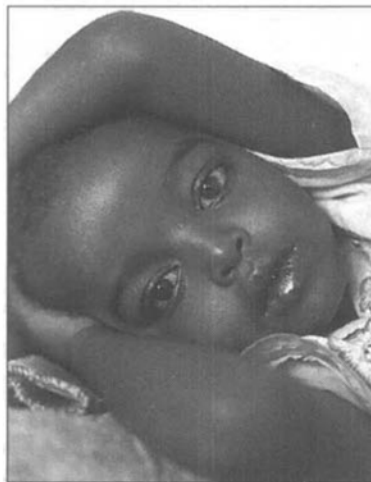
□ *Incorporating vector-control activities into health education programmes.* All vector-control programmes require refugees' support — the more active the better. Relief organizations should incorporate vector-control information into their health-education programmes, to encourage both personal and communal vector control. An example of

the latter would be the control of pit-digging for brick construction — which may result in the production of malaria-vector breeding-sites. Health-education programmes are essential for the dissemination of information about specific vector-control activities such as indoor house-spraying.

□ *Running the vector control programme* (in which case the relief agency must either recruit staff with appropriate expertise, or ensure that field staff are properly trained in all relevant aspects of vector control). This involves proper identification of the vector, its habitat, and behaviour, as well as the most appropriate control method. WHO's Control of Tropical Diseases Department (CTD) produces a number of useful training guides, and should be contacted for its most up-to-date list.<sup>5</sup> Companies selling insecticide and spray machinery may also produce useful training guides and materials.

□ *Disease Prevention through Vector Control: Guidelines for relief organizations* has recently been published by Oxfam.<sup>6</sup> This manual is intended to give an overview of vector problems that relief workers may come across, and a range of strategies for dealing with them.

□ *Undertaking operational research.* The highly specific and often localized nature of many vector-borne diseases means that some relief agencies have undertaken research (in collaboration with appropriate academic institutes) targeted at specific questions, for example, the identification of the vector, the main transmission habitats, and the efficacy of particular control strategies. Such studies have a vital role to play in determining the best control measures. When the results are published in scientific journals, this knowledge may continue to be used long after the particular emergency situation has ended. The current, widespread promotion of insecticide-treated bednets for malaria control has been greatly assisted by operational studies focused on malaria control in refugee situations.



Recovering from malaria,