



SEMINAR ON THE ROLE OF HEALTH SERVICES  
AND TRAINING INSTITUTES IN THE CONTROL  
OF VECTORS AND RESERVOIRS OF DISEASES

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CO-ORDINATION OF WORK AMONG DIFFERENT AGENCIES  
INVOLVED IN VECTOR CONTROL

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Within the context of the declaration of Alma-Ata and Health for all by the Year 2000 and the transfer of vector control activities to village level, it is imperative that a profound change in the strategy of vector control is effected. In the years to come the execution of the vector and disease control programmes will not be possible without due regard and attention to the overall concepts governing health protection of the community and the contemporary trends in socio-economic development. Politically and ethically, single disease control programmes managed vertically may no longer be acceptable. Moreover, the techniques used for vector control programmes of the future will employ an integrated approach utilizing a combination of most cost-effective methods which the community can sustain. Before starting such a campaign the following operations must be carried out:

- An entomological and epidemiological evaluation of the proposed methods.
- Planning of structures, personnel, finance.
- Socio-economic feasibility study.
- Study of the prospect for continuity of operations.

The precise listing of agencies involved in an integrated control programme is somewhat difficult to provide as this may differ from vector to vector and from one area to another. However, the following agencies or sectors may be directly involved and the role of the health services in co-ordinating various activities may be very important:

Municipalities and Corporations

Within the administrative limits of these agencies certain responsibilities and programmes can best be executed through them since their actions may have originally given rise to the existing vector/pest problems. Water supply and drainage within the municipal and corporation limits has been associated with an increase in the habitats of vectors of malaria (e.g. Anopheles stephensi), arboviruses (e.g. Aedes aegypti), and

bancroftian filariasis (Culex quinquefasciatus). Storage of water in water containers greatly increases the population densities of urban vectors of malaria and arboviruses. Defective waste disposal and drainage contribute to the rodent problems (may result in outbreaks of plague) and spread and increase of bancroftian filariasis. Urban city planning, health education and maintenance of drainage systems can greatly contribute towards solving some of these man-made problems.

#### Planning Ministries and Departments

In several countries there are separate Ministries dealing with overall planning and in others there may be some national or state level department dealing with planning. A close liaison with these departments would be an essential requirement of a vector control campaign. The assistance of this department in the preparation of the population through health education may also be required.

#### Finance

Many well-planned vector control campaigns have failed and never achieved their goals or have had to be suspended because of lack of finance. It is thus imperative that a close link be established with the Ministry of Finance to ensure that funds are available throughout the execution of the programme.

#### Agriculture

Agricultural development schemes may modify the environment in favour of the vectors, largely through intensive irrigation modifying local epidemiological conditions regarding vector-borne diseases such as malaria, filariasis, schistosomiasis etc. New cultivation methods may thus modify the mosquitogenic potential and provide conditions suitable to other vectors. National specialists on vector control must draw the attention of communities to the risks that such methods may entail. The best ways of limiting and eliminating these risks must be examined. An example may be given here of periodic drying out of rice fields (intermittent irrigation) which may result in considerable reduction of mosquito populations.

Large dams may change the ecology of the area and close attention to the dam design and manipulation of water levels may result in significant reduction of vector densities. Generally, a very close ecological/epidemiological study is required before specific measures can be recommended. The introduction of certain crops may favourably change the environment, e.g. eucalyptus plantations dry out marshy land by lowering the water table. Certain plants may compete with the vegetation that supports the larvae of Mansonia, the vector of Brugia malayi. Cattle population depletion may have resulted in increased man/vector contact thus resulting in the conversion of the hitherto safe areas into highly malarious areas. There is a renewed interest in zooprophylaxis in certain areas and here the plans and programmes of the Ministries of Agriculture and Health must be closely co-ordinated.

Besides this, there is a considerable use of pesticides in the agricultural sector and it has been demonstrated that this has led to the development of resistance, particularly amongst the malaria vectors. There is thus a close need for the co-ordination of activities, particularly in the use of pesticides, should the dynamics of development of resistance be clearly understood and some methods for the limitation of the amounts of pesticides used in the agricultural sector be considered as a means of retarding the development of insecticide resistance amongst disease vectors. Alternatively planning of agricultural insecticide applications may be carried out in such a way that some side benefit results in controlling disease vectors. Vectors of Japanese encephalitis in Korea and Japan were controlled to some extent through the agricultural use of insecticides.

Some of the other departments whose activities may result in increased vector densities and who may be able to work in close contact with the Ministry of Health are.

- Fisheries
- Irrigation authorities
- Railways
- Highway engineering and development
- Defence
- Education (health education at all levels)

This list is certainly not comprehensive and there may be other departments involved both at the national and state levels who should work in close collaboration with the Ministry of Health in vector/disease control campaigns.

#### Training of Vector Control Personnel

One of the serious problems faced by the administrators of vector control operations is the lack of suitably trained staff. This is acutely felt in some developing countries particularly within the ministries of health. This may result because of the absence of a regular cadre for vector control personnel, lack of opportunities for advancement and promotion and general insecurity of employment. Very often this means that vector control operations are relegated to ill-trained and equipped personnel resulting in the total or partial loss of resources and a worsening of the epidemiological situation. Training institutes and universities have thus a very important role to play and courses, both short-term and long-term organized at the known centres of learning, co-ordinated through the national health services of the country or the ministries of health, can contribute towards solving this problem. Of course, as mentioned earlier, training without adequate development of a cadre of vector control personnel with promotional opportunities can be counter-productive due to high turn-over rates of staff.

### Research and Information

A certain amount of research is required at every level in various areas of vector control and this is where the existing research institutes can play an important role. The Ministry of Health can bring to the attention of research personnel the relevant areas where investigations are required. In fact, the Ministry of Health can participate effectively in the field research for which it has extensive resources. An important consideration could be to keep this research limited to strictly goal-oriented problems and definitely not get involved in academic research which may not be relevant to solving the local problems.

### Inter-Country and Inter-Regional Collaboration

Vectors and disease do not recognize political boundaries and very often there is the need for inter-country collaboration in this area. Within the general sphere of TCDC (Technical Collaboration within Developing Countries) there are many areas where inter-country collaboration is important and mandatory. Migration of human populations from one country to another under special circumstances may have important epidemiological consequences for vector control operations. During the malaria eradication days border meetings between the neighbouring countries were commonly held once a year. There is considerable scope for inter-country collaboration in vector control.

At the regional level a great deal of collaboration can be expected on the exchange of information by discussions at appropriate levels and exchange of visits. Very often there are areas of expertise on a special subject located in a region and it may not be feasible or economic to duplicate such centres in every country. WHO has several such collaborating centres distributed globally on specific areas of vector control and use of such reference centres and collaborating centres can be made to solve specific problems faced by a country. The Ministry of Health thus may have a key role to play in utilizing the services of such Centres.