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NOMADISM AND THE OPERATIONAL DIFFICULTIES RELATED TO IT; OTHER DIFFICULTIES EXPERIENCED IN MAINTAINING TOTAL COVERAGE DUE TO FACTORS RELATED TO PHYSICAL ENVIRONMENT, HUMAN CUSTOMS AND HABITS.

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Residual insecticides have been widely used for several years now and all possible operational limitations, apart from the resistance problem, have been reasonably appreciated. Total and complete coverage in residual insecticidal spraying is required to be attained for achieving full interruption of transmission; treatment of all potential indoor resting surfaces of vector mosquitoes in all the dwellings in the area under protection is the goal of a well-planned spraying programme. However, experience is soon gained that these stipulations cannot sometimes be satisfactorily fulfilled due to several inherent adverse factors in the community life. These factors will continue to exist in various degrees; ideal conditions as required for thorough application of residual insecticides may not be obtained under various social practices; insecticides will have to be used as the chief weapon in malaria eradication programmes in spite of factors affecting total and complete coverage. Strategy will depend on the nature of adverse factor primarily encountered in the community under care.

Various factors contribute to incomplete coverage in a residual spraying programme. The main difficulties experienced may be grouped as below:

I. TEMPORARY SETTLEMENTS

This results from migratory habits of any section in the community. Two groups will be encountered:

(a) Nomadic population whose permanent way of life precludes any fixed settlement, their whole life-span is spent in wandering about within different limits without any fixed abode.

(b) Seasonal movement of settled population. This occurs in relation to different social needs as below:

(i) Agricultural pursuit may involve temporary sojourn to crop huts in the fields for guarding and care of crop and also for harvesting.
(ii) Concentration of labourers in temporary camps in connection with engineering work.
(iii) Concentration of population in connection with pilgrimage, fair, etc..
(iv) Movement of population in connection with trade.

II. TYPE OF DWELLING

(a) Houses with high roof or alternatively too low roof restricting easy movement of spraymen.

(b) Houses with deep cracks in walls or ceilings.

(c) Insufficiently illuminated dwellings.

(d) Poorly thatched walls with no uniform surface.

III. HABITS OF PEOPLE

(a) Practice of replastering wall surfaces without due regard to insecticidal treatment.

(b) Practice of building new construction without relation to time-table of spraying in the area.

(c) Putting close to wall heavy furnitures, pots or else wall-hangings interfering with complete coverage.

(d) Objection to treatment of certain parts of the dwelling.

IV. TERRAIN

Any factor in the terrain which precludes grouping houses close together and conditions scattering of houses introduces an element of difficulty in attaining total coverage:

Hill slopes
Marshy tracts
Forest

Road communication is intimately associated with the degree of coverage in any spraying programme.

One or more of the above limitations in achieving total and complete coverage in residual spraying is encountered in most of the programmes. Rational use of insecticides involves understanding of above limitations and planning necessary supplementary spraying to attain and maintain maximum coverage under local factors.

The difficulties will now be considered in some details.

NOMADISM

Even though human civilization of the present time has reached a high level, primitive pastoral way of life is still prevalent in different degrees in amy communities of the world. In the middle east, the cradle of human civilization, nomadism is widely encountered still. Any traveller through the countries of the middle east will frequently notice groups of tents pitched in the barren fields, away from the villages. There reside rugged people with a primitive life-pattern with more interest in live-stock than agriculture. They keep wandering about, seeking pasture and water for their animals. Agriculture has not attracted them; settled life in the many villages which they cross and recross in the course of their journeys has no appeal for them. Their mobility produces problems in interrupting transmission by residual insecticides as the necessary degree of coverage and maintenance of insecticidal potency becomes difficult. The problem is linked with the size of the nomadic population, the frequency and extent of movement.

An exact census of the nomadic population in Iraq is not available. They are encountered in all parts of the country. Some of them may cross frontiers occasionally and move to neighbouring countries, Iran, Turkey and Syria.

Operational problems connected with nomads may be grouped as below:-

1. Appearance of settlements in areas already covered in spraying. Each spraying team has an area to cover within a specified time for an annual application or at the most twice in a year. However, nomadism involves repeated supplementary re-visits to locate and treat nomadic camps which appear at irregular intervals. Even then it is not possible to treat all these temporary settlements cropping up irregularly in the sprayed sector.

2. Dislocation in planned schedule of spraying. The programme for spraying is based on earlier geographical reconnaissance and has taken into consideration estimated area surface and average output of spraymen. Encountering unaccounted nomadic settlements during spraying, increases planned work-load, dislocates advance programme and affects total coverage; budgetary provision for labour wages is affected by increased duration of spraying round.

3. Moving a sprayed tent to another locality disturbs the residual deposit and introduces an element of doubt if in the new area the surface will be considered as treated or needing new treatment.

4. Sometimes the treated inner surface is reversed and becomes outer surface, either in the same camping place or at the next camp site.

5. Sometimes camp-sites are off-the-track and never discovered and hence cannot be treated.

All above factors may provide safe resting surface in an otherwise treated area and allow a degree of continued transmission. Generally speaking, nomadism of the traditional form has not affected the Iraq Malaria Eradication Programme to any large extent. Interruption of transmission has been obtained over the greater part of the country even though a proportion of nomadic population wander about.

The continued transmission in some localized parts of the mountainous northern region is linked with incomplete coverage resulting from seasonal migrations rather than with true nomadism.

Seasonal migration affecting total coverage are of two main types in Iraq:

(a) Sleeping in summer months in structures away from village homes; Kurdish tribes erect temporary structures with better ventilation for sleeping during the summer season; the whole family sleeps under these shelters which are put up from June onwards. The first round of spraying is completed in April and May; since completion of residual spraying, every family erects summer sleeping huts. These are built a little away from their dwellings and have a roof supported on poles with or without walls. This social practice produces difficulty in maintaining total coverage during the long transmission season. Supplementary re-visits for spraying needs considerable planning and effort.

(b) Practice of temporary sojourn to crop huts in connection with tobacco cultivation is extensive in parts of Erbil and Sulaimaniya Liwas and it is in these Liwas that continued transmission of malaria still exists. Incomplete insecticidal protection resulting from seasonal movement is the main adverse factor. Detection of crop huts scattered in fields need considerable walking on foot and residual spraying of these is considerably more strenuous than spraying of villages.

Type of dwelling has often inherent difficulties in obtaining total coverage. High roofs are sometimes found; extension rods

of spray lances meet the situation to some extent but spraying of high ceilings is not quite easy. More inconvenient is when the roof is low and the sprayman has to work in an uncomfortable attitude, bent down or kneeling. Same effects quality of work and incomplete spraying may happen.

Mud-walled houses in a dry climate often have deep cracks; cracks one inch wide and running all the width of the ceilings or height of the walls are often found. Adequate coverage of the inner surface of these deep cracks is not easy; these dark cracks may provide ideal resting surfaces for vector anophelines.

In Kurdish homes built against the hill-slope, the dwelling often caves into the hill and the back-rooms are dark and often insufficiently sprayed by spraymen for poor visibility.

Malaria work is primarily a rural work; dwellings of the humble rural folks are often such that complete coverage of the total surface area is not obtained due to the poor state of the wall surface.

Problems in obtaining total coverage due to habits of the people primarily consist in replastering sprayed surface; this will be met in all rural communities. Sometimes repairs is the motive, othertimes cleanliness on advent of festivals, marriage, etc. Careful vigil at all times is needed to detect these disturbances to sprayed surfaces. Persistent health education is also necessary.

Apart from the resistance problem, residual insecticides will interrupt the transmission if the required degree of coverage in application can be attained and maintained.

Spraying cannot be considered to be over when the planned rounds are laid on; repeated supplementary re-visits to detect new surfaces or disturbances need to be carefully planned.

When residual insecticides were initially discovered, malariologists felt that once the spraying round was over, field workers may have a long interval of rest; repeated spraying as with Pyrethrum insecticides involved a continuous effort which residual insecticides has now eliminated. Experience was soon gained that maintenance of total coverage level all through the transmission season needed continued vigilance and the longed for interval of rest was only a dream. Properly planned re-visits for supplementary spraying will need to be organized if total coverage is to be attained and maintained.

"Vigilance is the price of freedom" is an apt quotation for freedom from malaria transmission through residual insecticides.