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TOTAL COVERAGE SPRAYING

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1. The concept of "total coverage" implies:

   (a) careful designation of sprayable surfaces;
   (b) application of insecticide on designated surfaces,
   (c) renewal of insecticide as frequently as necessary.

2. Sprayable surfaces

In many programmes the general rule is to spray all inside walls and ceilings within the locality, excluding certain buildings on practical (rather than technical) grounds. In some programmes the "sprayable surfaces" have been carefully designated in the plans of operations. In only a few instances, apparently, the designation has been guided, or confirmed, by systematic studies of vector habits in the absence and presence of insecticides. The rational determination of sprayable surfaces is obviously of great importance both to the success and the cost of the campaign. If it is made arbitrarily, either money may be wasted or the spraying may not be successful. If it is not made at all, the individual field supervisors will have to decide for themselves what to spray. As a consequence, neither the material and manpower requirements, nor the results, will be comparable from team to team or from year to year. Examples are plentiful of very large variations in insecticide consumption per capita or per house after a change in supervision. Although measurements of sample houses to determine

average unit surfaces have been carried out in many places the results have little meaning unless sprayable houses, rooms, and room surfaces were previously defined.

Towns are often partially or totally excluded from spraying operations, either because there are no breeding places or because the breeding places can be readily controlled by larviciding. The decision has to be made whether to spray a "barrier" of houses on the outskirts of the town or not, and if so, how deep a barrier. This decision should naturally be supported by entomological evidence.

3. Application of insecticide on designated surfaces

All the mechanisms of a well-planned and well-operated programme help to ensure that the right insecticide is applied at the right time on the right surfaces. The preparatory work includes, besides studies to determine which surfaces have to be sprayed, the preparation of a detailed and realistic plan of work based on adequate maps, village information, logistical plans and trained staff. Some information - such as number of houses and condition of roads - has to be collected from every village in the operations area; other information - such as average sprayable surface, average time allowance per unit covered, prevalence of different types of surface - may be more accurately estimated from carefully chosen sample surveys. Before mass operations start the spraying plan and organization should be tried out in limited "pilot operations" to see whether the assumptions of materials, manpower and time were correct. These pilot operations may also be used to check the correctness of assumptions about sprayable surfaces.

When the mass campaign starts every supervisor from the director down to the squad chief should know essentially what is going to happen day by day throughout the spraying cycle. The squad chief will know how many houses are to be sprayed in the village where his men are working and will be on the look-out for houses missed; higher echelon chiefs will keep track of progress against goals and be immediately aware of delays or omissions. Attention is focused more on houses not sprayed than on houses sprayed, and on days behind schedule than on days worked.

A very specific procedure has to be instituted to deal promptly with sprayable houses not sprayed for any reason, and for spraying of new houses. Squad chiefs have to be informed quickly by spraymen of unsprayed houses, and try to have them sprayed before leaving the village. Sector chiefs have to be informed immediately of houses not sprayed when the team leaves, or of new houses built since the team's visit. Depending on the volume and distribution of the "pending houses" or new houses, either one sprayman may be attached to the sector or one squad to the zone to deal with them. It is not enough to record unsprayed houses on the routine reports; special forms are needed on which the record of pending work is kept always up-to-date. Checking of the actual coverage of all

sprayable surfaces has to depend on good plans, well-trained, well-disciplined staff, and prompt processing of reports. Reliance cannot be put on chemical or biological tests of surfaces.

4. Renewal of insecticide as frequently as necessary

The need to renew insecticide has usually been based on assumed "durations of effectiveness" of the different insecticides on different surfaces, knowledge of lengths of transmission seasons, and sometimes periodic bioassays of sprayed surfaces. Recently it has been shown in many countries that the controlling factor is really "loss of protective surface" due to mechanical removal of the insecticide, covering it with paint, plaster or tapestries or changing of the walls or other factors. Based on this, surveys have been undertaken in a few places to see how much and how often sprayed surfaces are "lost", and the results are astonishingly high. Arbitrary decisions on frequency of spraying must for economic as well as technical reasons, be verified by epidemiological and entomological investigations. Proof that transmission has stopped is of course the final check on the adequacy of total coverage.