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MAINTENANCE OF MALARIA ERADICATION

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Malaria eradication requires house-to-house search for fever cases as well as residual spraying of insecticides. Once transmission has been interrupted and the reservoir of infection has been depleted, it is possible that active search for fever cases by periodic house visits may no longer be necessary, and that adequate vigilance to prevent resumption of transmission might be maintained solely by the examination of febrile attendances at a network of health centres. But what may seem possible may not prove to be feasible.

In theory, an existing network of health centres could be of such fine mesh that all or most inhabitants would visit a nearby centre when medical attention is needed. All febrile attendances could be examined for malaria parasites, or at least when a build-up in the fever rate is recorded. Thus any imported case or at least the secondary cases would be detected with such promptness that appropriate measures would not permit an epidemic to result or the re-establishment of endemic malaria.

In India, health centres combining preventive as well as curative services are to be established in such numbers that eventually all inhabitants should be within five miles of a health centre or sub-centre. A more elaborate network of centres hardly being feasible in the near future, the question remains whether medical relief is in fact such a powerful attraction that all or most inhabitants would be willing or able to walk or be carried up to five miles for medical relief. This question led to the study of the power of attraction of six dispensaries in the Benares District during May and June 1963, to determine whether

adequate vigilance against the possible re-establishment of endemic malaria can be provided exclusively by passive surveillance, at least within a five-mile radius of a curative facility.

The rural population served by these six dispensaries is homogeneously distributed, with a density of more than 500 inhabitants per square mile. The topography of the area is typical for the Gangetic plain, of which the area forms a part. Three of the dispensaries under study are practising the indigenous or Ayurvedic system of medicine and the other three the modern or allopathic system of medicine. For each attendance the date, name, age, sex, diagnosis and residence were recorded. It was also noted whether the patient attended in person or whether his illness was reported by proxy.

Obviously the attendances should be considered in the context of the population to be served. With a homogeneous distribution of the population, this was most readily achieved by the calculation of the number of attendances per square mile, grouped by the distance of the residence from the dispensary. It became apparent that a substantial proportion of the attendances was "by proxy", which led to separate calculations of the attendances per square mile for those who attended in person and "by proxy".

The findings are substantially the same for the six dispensaries, for which reason the presentation of data, summarized in Table 1 and shown by the graph, is limited to the attendances at the allopathic dispensary in the village of Cholapur, situated 10 miles north of Benares city.

The daily attendances in persons per square mile decline at a geometric rate as the distance of residence from dispensary increases at an arithmetic rate (see Table 1 and graph). If it is accepted that the total attendances in person and "by proxy" within a half mile of the dispensary would tend to underestimate the morbidity in that locality, and if it is further accepted that the morbidity should be more or less evenly distributed throughout the area (at least in the absence of any epidemic), then it is estimated that less than 3.5% of those ill within five miles of the dispensary receive personal attention at the dispensary (see Table 1).

It is evident that a system of passive surveillance, to achieve total coverage of the population by a network of static facilities, would require the location of such facilities in such numbers that the bulk of the population would live within a mile of medical relief. Studies of the power of attraction of curative facilities in other parts of India seem to confirm the general validity of the findings in the Gangetic plain.

Active surveillance will be required to supplement notification of fever cases (or malaria cases) by curative facilities, until the static facilities approach total coverage of the population or until extinction of the malaria parasite renders further vigilance redundant. Neither of these can be promised in the near future.

Although active surveillance is required to ensure that the interruption of transmission of malaria is maintained, this does not mean that "maintenance of malaria eradication" could not be effectively integrated into the general health services. Certain essential health services, requiring total coverage, may be jointly more successful in maintaining a dynamic approach to health problems.

Whereas medical relief might be offered conveniently in a static facility, it would not be realistic to expect attendances for preventive services, when even medical relief has such limited power of attraction. But the primary health services need not be restricted by the walls of a building. Medical relief might be considered as an incidental aspect of a health centre, which might be viewed as the base of operations for certain essential health services throughout the area.

Auxiliary staff, as the basic tier of the district health organization, each with a single function, serving multiple purposes under the supervision of a hierarchy of semi-professional and professional staff with no clinical inclinations or responsibilities could extend essential health services over the area.

House visitors with the single function of asking a few questions could serve multiple purposes. By periodic visits, possibly once a month, the house visitors could cover 1000 to 2000 households each. From such periodic visits the district health service could obtain epidemic and demographic intelligence serving among others family and economic planning as well as the "maintenance of eradication of both malaria and smallpox". Another cadre of auxiliaries could give primary vaccinations to convenient accumulations of births located by the house visitors and also revaccinations to those attending the first and last year of primary school. A semi-professional category could specialize in the investigation of all increases in the fever rate, which might result in the collection of slides, so that the district laboratory could rule out malaria.

It would seem that the "maintenance of malaria eradication and smallpox eradication" as well as other health services could readily be integrated into a general health service. Yet the "maintenance of malaria and smallpox eradication" may not be feasible, at least not for very long. It is not only the villager who has greater understanding of and appreciation for cure than prevention. With such attitudes prevailing at all levels of society, it is quite possible that demands for curative services will be met at the expense of the quantity and quality of preventive services, particularly those directed against long absent diseases, such as malaria and smallpox. Ultimately the inevitable temptations or pressures may result in false economies. If chances are taken and the gamble is lost, vast areas may require another full-scale attack on resurgent malaria or smallpox.

The eradication of malaria launched by the World Health Organization has reached the point of no return. Those countries of the world that have taken the lead in launching national campaigns as integral parts of a proclaimed world-wide effort may find themselves in a difficult position unless all countries soon join the attack on malaria wherever it persists.

Malaria cannot be eradicated from one country or from half the world. Eradication is indivisible, the effort and benefit to be shared by all or none. Once the World Health Assembly resolved to eradicate malaria from the world it cannot be left to piecemeal efforts of those countries particularly concerned or responsive. Even where malaria is a relatively minor problem from the national point of view, it must be eliminated otherwise costly measures to prevent the re-establishment of malaria will be perpetuated elsewhere.

The "maintenance of malaria eradication", which might be tenable as a temporary phase to bridge minor gaps in the synchronization of the world-wide attack on malaria, has become time unlimited. The concept of "maintenance of eradication" has in effect resulted in the perpetuation of efforts where there is no malaria, because malaria is ignored beyond boundaries not recognized by the disease. It is ironical that inability to "maintain malaria eradication" for lack of a pre-existing infrastructure of health facilities should be the compelling reason for some countries not to join the world war on malaria. First, transmission can be interrupted and the reservoir of infection depleted without a network of health centres. Secondly, the active surveillance system

could become the dynamic infrastructure for certain essential health services area-wide, including the "maintenance of malaria eradication". . . Ultimately, the vicious circle of a self-perpetuating "maintenance phase" can be broken only by the synchronization of the attack on malaria rendering the parasite extinct and the "maintenance of eradication" unnecessary.

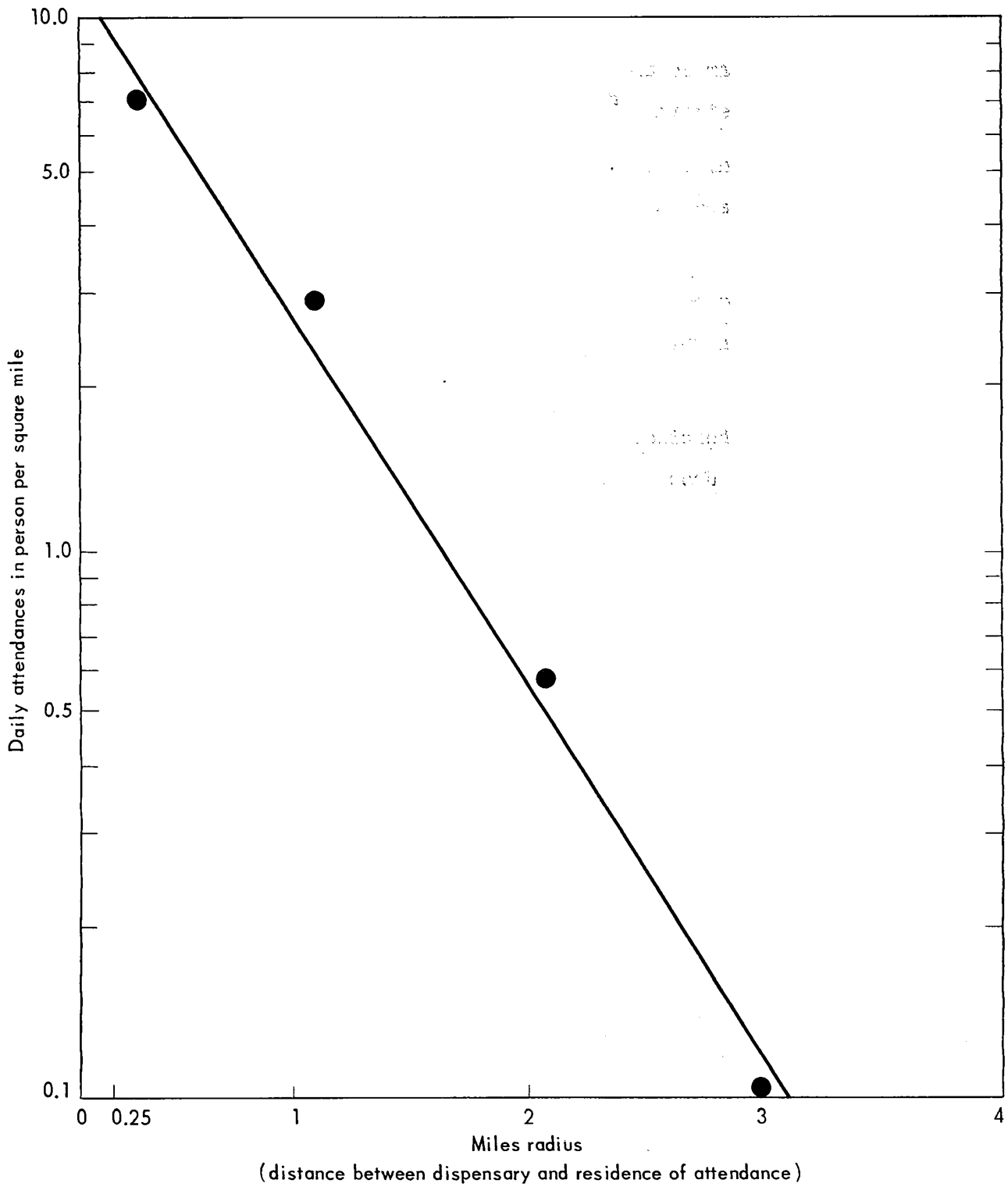
TABLE 1. DAILY ATTENDANCES AT THE ALLOPATHIC DISPENSARY,
CHOLAPUR VILLAGE,* BENARES DISTRICT, U.P., MAY AND JUNE 1963,
BY DISTANCE OF RESIDENCE FROM THE DISPENSARY

		Distance of residence from dispensary (miles radius of concentric circles)						
		0- 0.5	0.5- 1.5	1.5- 2.5	2.5- 3.5	3.5- 4.5	4.5- 5.5	Total 0- 5.5
Area**	Square miles between concentric circles	0.8	6.3	12.6	18.8	25.1	31.1	94.7
Daily attendances	Total	9.1	41.1	15.4	5.4	2.8	0.4	74.2
	"By proxy"	3.5	22.2	7.4	3.4	1.7	0.3	38.3
	In person	5.6	18.9	8.0	2.0	1.1	0.1	35.7
Daily attendances per square mile	Total	11.4	6.5	1.2	0.3	0.1	0.0	0.8
	"By proxy"	4.4	3.5	0.6	0.2	0.1	0.0	0.4
	In person	7.0	3.0	0.6	0.1	0.0	0.0	0.4
Index of daily attendances per square mile	Total	100.0	57.3	10.7	2.6	1.0	0.1	7.0
	"By proxy"	38.4	31.0	5.2	1.6	0.6	0.1	3.5
	In person	61.6	26.4	5.5	1.0	0.4	0.0	3.5

* 600 inhabitants

** More than 500 inhabitants per square mile

DAILY ATTENDANCES IN PERSON AT THE ALLOPATHIC DISPENSARY, CHOLAPUR VILLAGE,
BENARES DISTRICT, U.P., MAY AND JUNE, 1963 PER SQUARE MILE BY MILES
RADIUS FROM THE DISPENSARY



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