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MEASURES FOR REDUCING MAN/VECTOR CONTACT THROUGH EDUCATION,
LEGISLATION AND SANITATION

by

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1. Introduction

In its goal of "Health for All by the Year 2000" the World Health Organization emphasises the importance of primary health care (PHC) involvement and community participation (Kleczkowski *et. al.*, 1984). In terms of vector-borne disease control, this strategy needs a pragmatic approach in order for it to succeed. In addition to considering the funding and management of PHC systems (de Ferranti, 1985) and the incentives to encourage community participation, there is a need to assess realistically the extent to which vector control can be integrated into PHC and the limits to what community participation can achieve. In order for community participation to operate and be effective, the government would have to first provide a sound infrastructure.

2. Vector control measures for integration into
primary health care

Vector control measures suitable for integration into PHC should consist of activities which are simple, uncomplicated and easily understood at PHC level. They should be easily communicated or illustrated to the community and be effective when carried out by the community itself. The control measures should also be within the community's ability to implement.

While there is a need for central coordination, each community's activities should be self-sustaining and independent of others so that in case of a breakdown in one the others are not affected but where success is achieved, the information can be shared. In other words, some form of decentralization is desirable (Vaughan *et. al.*, 1984). The central coordination should come in the form of support from a core group of specialists who will plan and adopt strategies based on the needs of the PHC worker and the community i.e. the core group must be receptive to the needs of the grassroot level.

There is also a need to identify realistic goals which can be achieved and the target vectors to be controlled so that the control activities to be carried out can be prioritised and implemented accordingly. There is no need for the PHC worker who is normally already overburdened to be bogged down with unnecessary work.

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While not exhaustive, this paper summarises a practical approach that had succeeded in what is today a highly urbanised developing country, Singapore. The measures summarised here are those that have been selected considering the limitations of political structure, economic development and the nature of vector problems. They centre on health education, sanitation and legislation all vital components of Singapore's integrated control strategy (Chan, 1985). Although vector control has not been integrated into PHC here, some aspects (eg health education, house inspections) of our public health auxiliaries' (PHAs) role are probably equivalent to a PHC worker's. However, our PHAs are all under government employment.

3. Health education

This is a very important tool which the PHC worker can use to motivate the community to participate. It is here that he exerts a direct influence (especially if he is doing a face-to-face education) on the community he is handling. It is also here that he can create an awareness in the community of the relationship between vectors, diseases caused and vector breeding - disease prevention. Before health education can be implemented several aspects should be considered. These are :-

a) The target vector to be controlled through health education

Obviously there is a need to identify the type of vectors that a community can effectively control and the aspects of control to be carried out. For example, in Singapore the obvious targets were Aedes aegypti and Aedes albopictus because the breeding of these species were often found within homes and were directly related to the people's habits (Lim and Tan, 1985). Also, it was within their ability to change these habits so that breeding of these Aedes vectors could be prevented.

The identification of the target vector should be carried out by the core group after examining the bionomics and ecology of the vectors affecting the community.

b) The target group to be health educated

Ideally, the whole population should be the target group but with limited resources, the PHC worker might do best to concentrate on the more responsive and effective component of the community. For example, in our Aedes control programme, health education concentrated mainly on housewives (because they were largely responsible for housekeeping and maintaining orderliness in the house), schoolchildren (because they were responsive/impressionable and also to inculcate the attitude in the future generation of adults) and school teachers and principals (the facilitator group because of the influence they exert).

c) The media for health education

The selection of media would have to depend on the message to be conveyed, the coverage required, the target population and very importantly the resources available. For example, for Aedes control, the health education for housewives centred on face-to-face education by the public health auxiliaries and the distribution of health education pamphlets because this was normally a low education group and a lot of explanation was required for the message to sink in. To supplement this, exhibitions on Aedes control measures (mainly pictorial) were held at markets and popular shopping centres, both areas frequented by housewives.

d) The motivational element to be used

The motivational element need not always be based on logic e.g. that control of vectors is good for the community's health and therefore the community should try to control vectors. It does not always work because logic often does not penetrate indifference. Financial motivation e.g. gifts, monetary rewards is also not practical because it may turn out to be expensive in the long run. Often, an emotional motivation may work eg one of Singapore's health education posters on Aedes control showed the picture of a healthy looking child and explained how he could be kept healthy if certain measures were carried out. This poster was targetted specifically for the housewife group in order to motivate them emotionally (to protect their children).

These four aspects should be examined by the core group which can then provide the concepts on which the PHC worker can base his health education.

3.1 Health education activities

3.1.1 The health education activities that can be carried out by the PHC workers are :-

a) Face-to-face education

The PHC worker could health educate individuals during his routine house visits for other health care matters. Although it is time consuming and does not give wide coverage, it is effective for individuals because people mostly respond favourably to 'personal' attention. In Singapore's vector control programme the PHAs conduct face-to-face education and distribute health education pamphlets when checking homes for vector breeding.

b) Talks, film-shows, slide shows

Talks, film shows and slide shows on vector control could be slotted in between communal recreational activities. In order to obtain more impact, the PHC worker could rally the support of respected members of the community like a religious leader, village headman or a school principal and get them to speak to the community. Where more sophisticated audio-visual aids are not available the PHC worker can use for instance flip-charts and life demonstrations just as effectively. For example in their visits to schools our PHAs first teach the school children how to visually identify mosquito larvae and then take them for a search-and-destroy operation within their school compound. In this way, they become aware of vector and potential vector breeding habitats, how to destroy them and how to prevent vector breeding in the first place.

c) Facilitator group education

This is a worthwhile effort for the PHC worker because of the influence exerted by facilitator groups (eg school principals, teachers, community leaders) on the community. If convinced, this group would be able to mobilise a large proportion of the community. For example, we have held one-day seminars and dialogues with school principals, teachers and curriculum developers to develop worksheets for student projects on Aedes control.

d) Communal activities

Health education could be carried out through communal activities like a mini clean-up campaign, quiz contest, on-the-spot children art competition, competition to select the cleanest neighbourhood, etc. In Singapore's health education programme on the proper disposal of refuse, the PHAs enlist the support of community leaders to organise such activities. Before the activities are launched the community is informed via posters and leaflets. The activities are often held near markets and area where the community often congregate. The launching is done by a prominent community leader.

3.1.2 To reinforce the health education carried out by the PHC the government could give the following support :-

a) Exhibitions

These can be held at areas frequented by the populace like markets, shopping centres, community centres, primary health care clinics, recreational centres, etc. Exhibition boards are useful because they can be reused many times over. However, if these are too expensive simple posters with persuasive languages can be displayed at these areas to motivate target groups to act.

b) Mass media education

The community can be kept informed through radio broadcasting, T.V. spots or articles in local health bulletins and newspapers. Mass media education should accompany the PHC worker's efforts so that the knowledge is not only imparted but sustained. Mass media is useful in that it affords wide coverage and can be repeated without much effort. However to be effective its timing is important e.g. following an outbreak of vector-borne disease or following an anti-vector campaign at ground level.

c) Provision of health education material and techniques

The government should do its best to provide health education material, technical expertise and training to the PHC worker so that he is better able to carry out health education.

Central government support is important because other than affording better resources, it lends authenticity to the PHC worker's cause, in the eyes of the community.

4. Legislation

While not always desirable, legislation may serve as an important tool for vector control if used selectively. It is not a practical approach for countries that are not politically stable and communities that are poor and lowly educated. There is no sense in further pressurising communities which are already facing more trying situations in life.

However, in a community that is affluent and well-educated enough but indifferent, it exerts a carrot-and-stick influence when combined with health education, ie the community is that more responsive to health education because of the grim reminder of fines to pay if it is not. Law enforcement which was a very successful tool of Singapore's integrated vector control programme was formalised in late 1968, a time when the country had already achieved political stability and was economically viable.

It is difficult for legislation to be successfully integrated into a PHC activity for vector control. Several aspects have to be considered. They are :-

a) The legislation itself

The law written would have to satisfy vector control requirements (WHO Technical Report Series, 688) and fit in with the political, cultural and the socio-economic situation of the country.

b) The enforcement officers

The PHC worker would have to be empowered to carrying out enforcement. This would prove difficult if he was a volunteer worker e.g. a local villager instead of someone on a government pay roll. Also, there could be abuse of this legislative power since accountability would be difficult. In Singapore, the PHAs are empowered to carry out law enforcement on vector control. They are therefore both health educators and law enforcers and as the situation demands they take on either role.

c) The community involved

In order for it to be effective, law enforcement should be used only for recalcitrant offenders. Otherwise, health education should be the main tool because it constitutes long-term control. In Singapore, law enforcement was found to be effective in promoting vector control awareness particularly in the community of trade premises and property owners (excluding ordinary householders) and builders and developers (construction activities). Most of these engage professional help in rendering their premises free of vectors. This is important because mosquito and fly breeding were often found in abundance at such premises.

Legislation should be implemented very carefully for it to be effective. Although it acts as a strong deterrent it may also breed antagonism and result in non-cooperation from the community i.e. refusal of entry into premises for vector control measures to be carried out, refusal to carry out preventive measures, etc. Thus, in vector-borne disease outbreaks, law enforcement is often lifted temporarily to gain cooperation from the community. At the same time, health education of the community is intensified.

In Singapore's integrated vector control programme legislation had successfully provided a strong backing for effective implementation of the health education programme (Chan, 1985). However, the emphasis is on health education to motivate community participation for long-term vector control. Law enforcement is usually used as a last resort for recalcitrants.

5. Sanitation

This is a form of environmental control measure and would prove cost-effective if the community itself could practise simple sanitation measures. It is an important tool for source reduction. Here the PHC worker would have to motivate the community to carry out sanitation measures to prevent or destroy vector control breeding. He should give emphasis to potent vectors and limit the measures to what the community can effectively carry out. The activities could be related to :-

a) Good personal hygiene

This is the most fundamental form of sanitation that the PHC worker could instill in the community. E.g. Good personal hygiene for body lice control.

b) Good Housekeeping

The PHC worker could teach good housekeeping practices to householders eg removal and burial/proper disposal of unwanted receptacles for Aedes control.

c) Proper disposal of refuse

This is essential for control of rodents and flies. The PHC worker should impress upon the community on the importance of this. He could with the help of respected members of the community organise campaigns on this. E.g. In Singapore's campaign on the proper disposal of refuse the householder is encouraged to contain refuse in a plastic bag which is properly tied up. This prevents the contact of flies with the breeding medium. The PHAs enlist the support of respected grassroot leaders to spearhead such campaigns.

d) Drainage and related systems

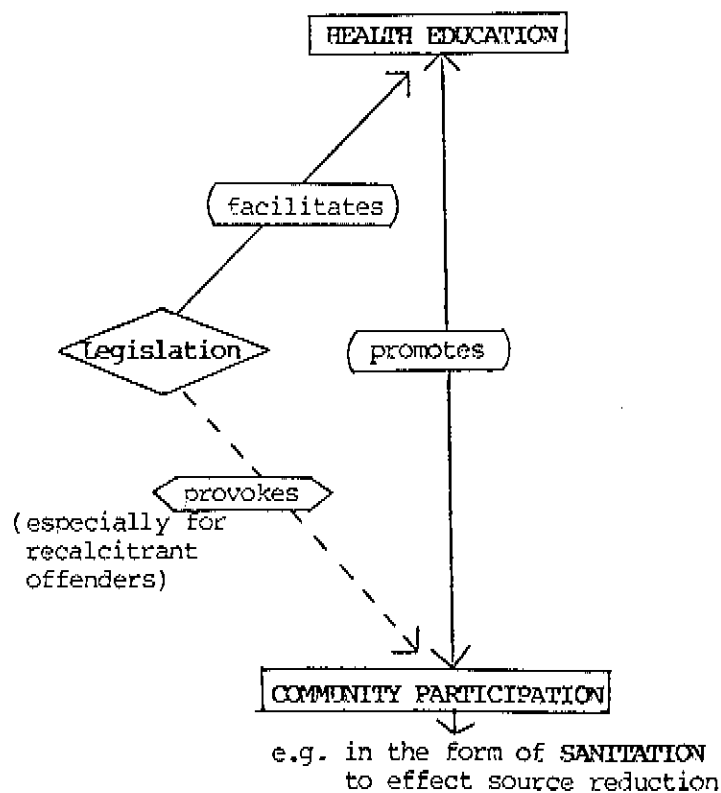
The PHC worker could encourage the community to keep their drainage systems in good working order to prevent for example breeding of Culex vectors. Sometimes it could be just a simple matter of regrading invert levels or clearing chokages to ensure good flow. In one village we found that regrading the side of an earth drain and planting turf on it to prevent erosion ensured smooth flow and stopped the breeding of Anopheles sundaicus. We found also the provision of simple earth drains to drain water-filled depressions effective (Lim et. al., 1985).

e) Sewage systems

This need not be a sophisticated and expensive system but should comprise a practical method that would prevent vector contact with the breeding medium. E.g. In China's rural and urban areas, human and animal wastes are disposed of by composting, a method which reduces or virtually prevents the breeding of houseflies (WHO, 1983).

6. Conclusion

While several aspects of vector control activities could be integrated into primary health care, this paper has emphasised only health education, legislation and sanitation. All three are components of Singapore's integrated vector control programme and serve to reinforce each other with health education receiving the main emphasis and legislation providing a sound backing. Perhaps the relationship between these three components could be best summarised schematically as shown below. It must be reiterated that a pragmatic approach is necessary and that the vector control activities should be confined to those which are within the community's capability to carry out.



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