

## EDITORIAL

### HANDLING INFORMATION IN PUBLIC HEALTH PLANNING

It goes without question that large amounts of information are needed for effective management of public health programs worldwide. The challenge is to obtain, organize, analyze distribute and utilize increasing amounts of data effectively, efficiently and economically within each country. An even greater challenge is to collate relevant information flow from neighboring countries when coordination thereof can be to mutual benefit.

Two papers in this journal issue serve to illustrate some of the questions involved in this context in Southeast Asia. One paper by Hu *et al* (1998) provides impressive geographical mapping of data of relevance to the control of malaria in Yunnan Province, China. Yunnan has great variation in topography and shares more than 4,000 km of borders with Myanmar, Lao PDR and Vietnam, so that disease control management must take into account factors beyond immediate authority of the provincial government. In turn, the databases gathered in Yunnan Province are potentially of considerable interest to disease control programs in the three adjoining countries. One of the common needs is ready availability of information in summary format for rapid visual appreciation by public health planners. This is provided by the use of appropriate geographical information systems (GIS) such as have been employed by these authors.

The second paper, by Stern (1998) addresses the difficult issue of transnational border movement of populations in this region in relation to disease management, focusing on the mechanisms for assessing population flow and mapping border crossing points of importance to co-incident disease dispersal in the Greater Mekong Subregion (GMS). Official crossing points represent a starting point where potentially accurate numbers can be ascertained and where additional useful information (duration of migration, purpose of travel, disease history) could in theory be collected, albeit with difficulty and at considerable time/financial cost. The much more difficult challenge is to identify all unofficial crossing points, to obtain estimates of migrant numbers and other details in these domains. This paper represents a start in tackling an issue that has been left aside for too long: the

potpourri of data sources underscores the difficulty in obtaining accurate information on population flow by any one method. Incomplete though the data may be, they represent an attempt to begin the arduous but worthwhile task.

What both papers illustrate is the need to gather data far beyond the standard public health sources and indeed, beyond the normally accepted areas of direct public health responsibility. Even some of the best public health systems are inwardly directed and constrained by what is seen to be the immediate responsibility of the systems/health ministries themselves. In particular such systems generally have evolved to cope with stable populations living in fixed villages or towns where disease patterns are reasonably predictable. Population movement has of course been an accompaniment of human civilization since time immemorial but in recent history the process of destabilization has tended to increase and to become an intrinsic variable of economic reality. The causes of this change are multiple, encompassing such factors as improved agricultural technology leading to redundancy of farm labor; increasing industrialization in the towns and cities with increased real or imagined job opportunities that serve as a lure for that redundant farm labor; increased opportunities for commerce and trade; paramilitary insurgency and refugee status; facilitation of family reunion; increased tourism, and many others.

The outcome of this increased population movement on health is both positive and negative. Some causal elements of population movement reflect increasing commerce and trade among the GMS countries, with its resultant contribution to increasing national wealth, hence increased ability to afford improved health care. Improvements in infrastructure - roads, transport, communications - necessary to assist commerce and trade, again contribute to wealth generation and improved living standards, which in turn facilitate improved health care. Infrastructure also contributes potentially to greater decentralization of health care, reducing distance from health centers and peripheral hospitals; it can contribute significantly to education, and through this to knowledge of good health practices.

On the other hand, the negative elements associated with large scale population movement between neighboring countries can be seriously disadvantageous. Strains are imposed on the health services of the recipient countries, disease dispersal accompanies mobile population groups, epidemics can be fostered inadvertently. The GMS, for example, is already the global epicenter of multi-drug resistant falciparum malaria; migration carries resistant strains from one pocket to another to form the nidus for continuing selection of new mutants exhibiting greater resistance against more drugs. Such a situation requires concerted action by all countries in the region, through cooperative data management and consequent improved disease control: this is an urgent matter which alone justifies the focused attention. HIV/AIDS has already received considerable attention in this same context. Tuberculosis, severe diarrhea, dengue hemorrhagic fever and a number other diseases fit into the high risk category.

The role of effective information gathering and channeling is paramount in this public health context. This information does not stop still in time, there is a need to capture and record the changing databases and to do so cooperatively among the countries concerned. This process must encompass methods of displaying the information in a readily interpretable way so that planners can assess warning signals immediately and act upon them. Mapping, with all the finesse of GIS, is one powerful tool for this purpose. Stern puts forward the case in broad terms, Hu *et al* use it to illustrate the evaluation of multiple variables affecting one communicable disease. Mapping can be useful on both macro and micro scales. Here the software developed by Crissman and colleagues permits accurate international border analysis from provincial down to township or village level with a high degree of accuracy. The planners need the macro scale analysis for rapid nationwide and regional assessment; the public health workers need the micro scale for resolving local disease prevention/control measures. Thus the same databases can be analyzed

across a spectrum of magnitude. Of course great sophistication can be superimposed using the whole gamut of GIS based on remote sensing technique (Murai, 1991).

Stern makes the salient point that beautiful maps are only as useful as the accuracy of the data sets on which they are based. His paper illustrates the fragility of many of the data sets concerned with population movements in the region. At the same time he illustrates the value of starting with what data are available, as a stimulus to develop better collecting systems.

Geographic Information Systems are well developed now, the challenge in the Southeast Asian region is to apply them, to improve data collection, to develop dynamic ongoing systems for handling data sets and for doing so on a regional, multinational basis. The region is a continuum, international borders are porous, one country's disease patterns are the neighboring country's problems also. GIS provides a powerful tool to aid rapid assessment, networking provides the potential mechanism for proceeding to a regional scale. It is hoped that these papers will stimulate a great deal more work in this field in the region.

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## REFERENCES

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