SOME SPECIAL HEALTH PROBLEMS OF ISLAND DEVELOPING AND SOME OTHER SPECIALLY DISADVANTAGED COUNTRIES

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I gratefully acknowledge the assistance of the Sandoz Foundation in making funds available to me to collect information from and consult with governments in the Pacific, South East Asia, the Caribbean and elsewhere, and to consult with the World Health Organisation, the Commonwealth Secretariat and the Christian Medical Commission. This paper is based upon material from these sources and I am most grateful for the interest and the responses to my enquiries from these multiple authorities.

THE NATURE OF THE PROBLEM

It is widely recognised that many different groups of countries have different health problems requiring quite different solutions. The past decade has been filled with appreciations of these special needs and unique solutions and some individual, national, regional and international actions have resulted from the prominence that has been given to these identifiable special cases. For example:

(a) Special Disease Problems. A recognition of the size and nature of the problems with onchocerciasis in West Africa, and cholera in Bangladesh and in Bengal, has resulted in national and regional action which has been dramatic and of major health relevance; or

(b) Poverty. The leadership of the World Bank in underlining the dominant role of poverty as the major factor influencing health in many rural and peri-urban areas (quite independently from the level of national wealth or health services) has been an important factor in altering attitudes and actions relating to development.

These and similar special classes of examples have not stood in the way of debates upon some major fundamental principles on health care and development such as those on Primary Health Care by WHO[1] or the declarations of the 1978 Alma Ata Conference. However, it is probable that these general principles are based upon certain hidden assumptions which do not fully apply to some populations which, by reason of their size or geography, differ from the usual pattern.

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[1] Organisational Study on Methods of Promoting the Development of Basic Health Services, Official Records of WHO, No. 206 pp. 103 (1973).

One such assumption or principle is that a multi-tiered health care system is more economic, more acceptable to people, and potentially as effective as a single-tiered system. The reasons for this have been described in a large number of WHO publications[2,3,4] and include both the sensible use of health workers of different levels of training at different levels of the system snd the advantages of having a health care system which attempts to deal with health problems as close to where people live as possible. The most usual pattern is for at least three tiers:

(i) primary single or double tier close to people's homes for home and ambulatory care;

(ii) secondary level capable of providing district hospital or health clinic services;

(iii) tertiary level for specialty needs.

While the patterns of use may vary widely between these three or more levels in different situations, the one which has appeared to be the most economic and practical has been the one where about 85% of the health tasks have been dealt with within each tier and about 15% of tasks have been referred to the next level. There is nothing magical about the 15% referral figure, but in practice it appears that if the referral rate drops much below this level then one has the expense and other difficulties of an over-trained health worker at this point. If the referral rate is very much greater than 15% many people feel that that tier is a useless and ineffective assistance point and they ignore it or jump over it to a higher tier. This both destroys the lower tier and overloads the tiers above.

This multi-tiered assumption, with its inherent critical values, is an unstated component of primary health care (as described by WHO) and, while it in no way detracts from its effectiveness and practicability in most countries, it assumes that such a referral and support pattern is possible in others. However, it is known that in some countries this is not the case.

Two factors are important in influencing this difference in countries which have limited health budgets: the total population of the country and the geographical grouping and ease of communication between within-country communities.

There is no general acceptance of the minimal size of the population required to properly justify a full set of tertiary care facilities. However, it is likely that the population size

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[2] Djukanovic V. and Mach E.P. Alternative approaches to meeting basic health needs in developing countries, WHO 1975.

[3] WHO, Primary Health Care. Report of the International Conference on Primary Health Care, Alma Ata, September 1978, pp. 2.

[4] Newell, K.W. Health by the People, WHO 1975.

is probably greater than one million for the more usual specialties and many millions for the more exotic super-specialties. This could mean that for countries of less than one million it is improbable that a complete tertiary level can be economically justified and a regional or inter-country referral solution is necessary.

Such solutions have been the pattern of the past in many small countries, but it is perhaps insufficiently understood that in some countries or areas the ad hoc or existing arrangements are taking up to as much as one-quarter to one-third of the total health expenditure (e.g. in the Trust Territories of the Pacific Islands). This enormous proportion appears to be partly due to a failure to explore more economic and acceptable regional arrangements and partly due to a failure to develop an efficient and acceptable secondary tier (i.e. an unnecessarily large proportion of people are being referred to unnecessarily specialised and expensive facilities - taking transport and care costs together). This excessive proportion of health expenditure spent upon tertiary care decreases the resources for primary and secondary care and increases tertiary care expenditures with a snowball effect.

The second factor of geographical grouping and ease of communication is of equal or even greater significance. While it may be said that a community as small as 200, 500, 1000 or 2000 persons may justify a primary care resident health worker (depending upon the wealth of the country) the decision is not solely dependent upon economics of community size. It also depends upon the ease or difficulty of communication (taken in the widest sense) between the primary and the secondary levels. Different reasoning must apply to a 500-person community one mile from a secondary care facility than to an island community (for example) 50 or 100 miles from secondary care with no radio, no air-strip, and one regular boat a year. In the latter case the realities of geography may make it necessary to consdier the minimal unit of primary care to be a population of 50 or 100 or that the isolated 500-person community should have a greater health care capability and therefore decrease the need for the same proportion of referrals to the secondary worker levels. It may also justify a very considerable health expenditure upon communications plus a different type of secondary care facility able to cope with the support required in a different and original way.

Taken together, these two factors alone may by their nature force a government to:

(a) develop a multi-tiered health system of quite a different pattern from that used in larger countries;

(b) train and employ health workers in different tiers with very different qualities and capabilities;

(c) implement a unique referral and support pattern;

(d) suggest a different resource allocation of the health budget;

(e) search for a different set of drugs, equipment, techniques and communications equipment which would be impossible to justify for that country alone but which have similar qualities to a number of other countries facing similar problems;

(f) consider regional collaboration for both tertiary care and for some common needs such as training schedules and teachers training facilities.

It is my thesis in this paper that while major steps have been taken in these directions (e.g. in Fiji) there is still a large series of unknowns and major problems to be solved. The delays in moving towards solutions have been because the differences in the nature of the problems from other patterns have been insufficiently appreciated, because many of the countries involved have been small and without technical development resources of their own, because there has been no forum within which such countries can discuss their common problems and agree upon solutions, and because the total populations concerned have appeared so small (in world terms) that they have had little or no leverage in their search for help and support. There is little doubt that many of the problems are solvable using existing knowledge and technology and it would appear to be consistent both in terms of humanity and of explicit world aims (Health for all by the year 2000)[5] that steps be taken to do so.

Using the reasoning given above, there are good grounds for stating that island states do have special health problems and these problems have many similarities to some of the problems of other disadvantaged countries when they are small (in population terms) or they have all or some of their communities isolated due to geography.

Some relevant countries

Annex A lists some countries which are likely to fall into this category. It is in no way complete. A significant proportion are known to be worried by these problems in response to direct and indirect enquiring.

In the Pacific the large majority are members of the Commonwealth, although the geographical and other problems in the new Federation of States of Micronesia, in the Marshall Islands, and in the French Polynesia are very similar.

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[5] WHO Formulating strategies for health for all by the year 2000, Geneva 1979.

In the Indian Ocean the Seychelles' (and the Maldives') problems are like those of many Pacific Island groups. They differ markedly from those of large single islands, such as Mauritius (and Réunion).

Superficially the Caribbean geography would also indicate many similarities. However, recent consultations with the University of the West Indies persuade me that the distances, the considerable populations on most islands, and the existing communication networks developed for other reasons put most Commonwealth Caribbean states into a separate category. However, some (such as the Turks and Caicos Islands) are very similar.

In South East Asia and the West Pacific there are two large at-risk groups. One includes Indonesia and the Philippines, which have large isolated island populations which may total many millions of persons. The other includes countries with a large land mass but difficulties of access (e.g. Papua New Guinea and Nepal), and here it appears irrelevant that the separation of communities is by mountains rather than by sea as the resulting problems are very similar. In Africa there may be many similar examples which have not been included.

When using even an incomplete list[6] and restricting it to the Commonwealth, it would appear that the populations at risk may be from 5 to 10 million from 20 to 30 countries with a median GNP per capita (1976) of less than 700 US dollars. If non-Commonwealth countries are included the population may be doubled. Thus what may seem to be a minor problem restricted to, for example, countries such as the New Hebrides (population 99,000) or the Turks and Caicos Islands (population 6000), may in fact be an important problem justifying a major collaborative effort.

It is suggested that for a boundary line to be drawn it could be reasonable to give emphasis to those countries (or parts of countries) where a significant part of the population is settled in communities of 2000 persons or less and where reasons of geography prevent access to a secondary health care facility by more than 24 hours of travel or only at prohibitive cost.

Indicators of success or failure of solutions could be based upon:

(a) certain health status indicators (e.g. IMR etc.)

(b) cost

(c) acceptability

(d) ability to cope with certain death-threatening emergencies (e.g. obstructed labour, acute intestinal obstruction, haemorrhage etc.)

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[6] e.g. Memorandum by the Commonwealth Secretary-General, Commonwealth Heads of Government Meeting, August 1979, HGM/79/6 Annex 1.

(e) equity (comparability with major centres)

(f) poverty and links with development

Summary

1. There are precedents for considering that some special groups of countries have unique health care delivery and other problems which can be assisted by collaborative endeavours.

2. The problem of small developing countries with scattered populations by reasons of geography are different in a number of respects.

3. Such countries include a number of small island states and some parts of countries within continents. Many of these are in the Commonwealth. In total these may be more than 30 and have at risk populations of 10-20 million persons.

4. There are reasons to belive that improvements can be made to the health and health services of these countries if unique solutions are found using existing knowledge and technology.

5. It is likely that costs will always be higher in small countries with scattered populations but some of these extra costs can be decreased by joint action and regional collaboration.

SOME POSSIBILITIES

If the problem as stated is a real one, and if success can be judged in the way suggested, the alternative solutions are varied. However, all the alternatives are directed towards the manner in which a health service (preventive, promotive, curative, developmental) of comparable standard can be provided at a similar cost despite the known geographical realities.

It is most improbable that this can be done. Any service which inherently requires links with the major centre(s) for training, supervision and support, has a referral component, and requires continuing logistic support, will cost more if it is dispersed. The initial choice then is whether a country chooses to provide a more incomplete or lower standard of service at the periphery for the same per capita costs as the national average, or whether it will accept the extra costs involved.

Studies of national health budgets of medium and large countries show that, either from choice or as a historical accident, the great majority of such countries spend a greater per capita amount of the health budget on central rather than on peripheral populations (i.e. the reverse of the above). This difference may be as great as ten times. Such inequities would appear to be less acceptable in many of the countries listed in Annex A because they are largely multiple island communities with the periphery having a greater proportional political leverage. This paper therefore assumes that a government decides that all areas and groups, irrespective of their location, should have an equivalent or comparable service and the problem is therefore to

provide this in an acceptable manner and at a minimal additional cost.

At the primary and secondary health care levels the constraints of geography and demography make certain further principles beyond argument. These include the following.

Single or monopolistic system required. In a system which is divided into so many small geographic fragments parallel or competing systems clearly multiply the costs and decrease efficiency markedly. Whether such a system should be public, voluntary or private is dependent upon national ideology but the arguments for a single functioning system are overwhelming.

Poverty and development. The demonstrated links between poverty and ill-health are so clear that now there can be no question that the abolition of poverty where it exists must be the primary health goal. This must mean that any health policy directed to even an isolated community where poverty exists must be multi-sectoral and be anti-poverty orientated. Such a statement has two separate riders. The first relates to those communities where the existing and potential resources are so small that there is no local development possibility to abolish poverty. Here a rational view leads one to conclude that the community is socially non-viable. Political and social factors may result in a rejection of such a reality. Instead, a country may support the continuing existence of such communities by direct or indirect subsidies. The second relates to those communities where poverty has been abolished and there is the potential for further socio-economic development. Such further development has little direct health significance but may have considerable other social and economic importance. It is clearly not a dominating health goal and yet the increase of wealth in the future can lead to the support of further health and other services, greater self-sufficiency, and social survival.

Examples from isolated New Zealand rural communities show that the abolition of poverty can sometimes be a product of the more efficient use of land by, for example, the amalgamation of smaller units. This required less labour and the resulting migration out may make the population too small to justify a school. The school closes. Because there is no school, families with young children will not stay to work in the dairy factory, which also closes. As there is no factory, dairy farming stops and the land may be abandoned. An apparently sensible initial development step has thus led to a result which is against both individual and national interests. Development has social risks and cannot be thought of in purely economic terms.

Accepting such principles, the design of a health service delivery system has two different aspects. What service can best provide the "usual" services and how can an isolated community deal with the "exceptional" event?

The "usual"

The two additional costs of isolation that have to be minimised are the provision of a resident health presence even in

small communities and methods of decreasing referral to the secondary health care tier. These two needs are in conflict. On the one hand, the temptation is to decrease the technical capabilities of the health worker (and thus the training and running costs) as the population group he or she is responsible to becomes smaller. If this is done, then the proportion of health problems which need to be referred to a higher technical level would be expected to increase. In a situation where transport/communications costs are high or prohibitive the latter costs may far outweigh the savings in the former. There is no simple solution to this dilemma. Both aspects must be placed within the same equation and the total is the only figure with health economic relevance.

Despite this, the possibilities are quite varied and not as depressing as they would appear. There is a wide spectrum of possible health workers ranging from the policeman or postman with some first aid knowledge through to the full- or part-time health assistant, to the nurse, the medex or medical assistant, and the various levels of doctors. Each of these designations has a different meaning in different countries. In one country a health assistant has direct diagnostic and treatment responsibilities. In another his role is largely that of an intermediary between the health system and the community. In Fiji or Tanzania, a medical assistant is known, and acts in his level, as the resident "doctor". In the Trust Territories of the Pacific a medex is an "extension of the physician".[7] Such differences in the meaning of titles bring confusion and highlight professional jealousies between different groups within the health services. They also obscure the now well and widely demonstrated fact that it is possible to train and employ a health worker with a minimal general educational background and a brief training period who can deal locally with the vast majority of "usual" health problems. Such a person is not a "substitute" for a doctor and has a high effectiveness and acceptability rating if he or she:

(a) is resident in the area,

(b) is linked effectively and continuously with other levels of the service,

(c) is properly supplied and equipped,

(d) has continuing training opportunities.

The level of capability and responsibility is partly dependent upon the degree of isolation, but in most of the areas of over 100 persons faced by countries listed in Annex A this level is less than that of a graduate of the Fiji School of Medicine and greater than that of a health assistant. At such a level it is possible to consider such a person (or persons) dealing with 85-95% (or more) of the "usual" if the prior listed conditions are met. The form of training and the form and

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[7] W.M. Peck, MEDEX. Statement prepared for Micronesian Leaders, 1974.

manner of meeting the essential pre-conditions require special technical papers but are clearly practicable as judged by existing experiences and knowledge.

Even within such a framework there are a number of variants and unresolved issues. To whom should such a health worker be responsible? (e.g. to another health worker of similar background, or to a doctor?) Is it better to have a single full-time health worker or two half-time health workers with the same or different responsibilities? Is it an advantage or a disadvantage that the health worker was originally from the same area or island? These and other questions are important and the answers are likely to vary in different countries.

At this stage the conclusions may well be that:

(i) it is possible to plan for a resident health worker even in isolated small communities who could deal with most of the usual conditions;

(ii) the proportion of the "usual" which is dealt with is dependent upon the level of training of this health worker and upon the form of the supporting linked services;

(iii) it is the form of the linked and supporting services which can most easily be manipulated;

(iv) it is likely that the "mix" of the type of health worker and the form of the supporting services would be unique to each individual country and situation, although there may be common technical components.

The "exceptional"

Almost by definition, any primary care system has health related events which cannot be effectively dealt with at that level. These are the "exceptional" events. Some clearly need highly-specialised persons and facilities to deal with them. However, time also enters the picture and the number of such events which require such actions in, for example, a 24-48 hour period are relatively small. The remainder fall into a wide grey area which can be dealt with by the specialised services in a non-urgent manner or where possible other solutions can possibly be found. An example could be a retained placenta. This may be a health emergency which a local health worker in a small community may rarely if ever meet with. However, with some knowledge of the principles of the birth process, with radio or other contact with a central base, and with access to appropriate pharmaceuticals and equipment, such an event could be locally faced. It seems probable that the number of referrals to a secondary health service tier could be decreased if:

(a) there was a local health worker of the type described able to deal with usual events;

(b) systematic study was made of the interventions possible which could be used with radio links and other indirect equipment and pharmaceutical support;

(c) a supporting network was established to implement these findings;

(d) provision was made for the very rare urgent transfer of a life-threatening emergency to a secondary facility.

It is becoming more and more accepted that the question of how an exceptional health event could be dealt with in such circumstances has rarely been considered. The progress in the treatment of severe dehydration in babies from intravenous rehydration in special centres to oral rehydration is a case in point.

Reference has been made in the earlier part of this paper to the costs incurred and to regional and other solutions which are possible in secondary care referrals to tertiary levels. In addition some of the same thinking described in primary-secondary care referrals may also be applicable here.

Summary

1. Any dispersed health system to isolated communities is likely to cost more than one without these disadvantages.

2. A likely national decision of many countries will be to try to attain equality of health service benefits to all of the population rather than equality of health expenditure. This in practice means a form of subsidy to those living at the periphery.

3. Decisions upon what form the services will take must rest at least partly upon a complex equation which takes into account local costs and the cost of the supporting communications/transport network.

4. It is likely that the cheapest and most effective solution will be in a local health worker higher than a health assistant and lower than a doctor who can act in his own right and undertake some exceptional tasks with indirect support.

5. The development of such workers, their training, the equipment, the drugs and communication equipment they will need, the methods they will use and the secondary supporting system which will be required all require further development.

6. While many components in (5) may have wide applicability, the unique situation in most countries will require individual health system solutions. This development of national systems will frequently require support from outside the countries themselves.

SOME MECHANISMS FOR STRENGTHENING AND MOBILISING EXISTING NATIONAL, REGIONAL AND INTERNATIONAL RESOURCES WHICH WOULD ASSIST IN SOLVING THESE PROBLEMS

Acceptance of a problem

The past two years of travel and discussions have convinced me that a problem exists and that it is recognised locally in a long list of countries. However, in most of these countries it is considered that all aspects of their problem are unique and they are unaware of the similar worries of their neighbours. As many of these countries are small and with limited technical and academic resources, they feel powerless to grope for a solution other than in an ad hoc manner.

The first step must be to provide a forum by which they can agree upon the nature of their problems and to discuss the similarities and differences of their objectives. From there, mechanisms could be suggested upon how these problems can be solved. Such a forum could possibly be initially regional although other forms of structuring are possible.

Such a forum may well be best undertaken by the sponsorship of a host government or by bodies such as the Commonwealth Secretariat or WHO. The large proportion of Commonwealth members in any listing of eligible countries is highly significant.

Provision of data

Preceding parts of this paper refer to certain crucial data which must influence decisions. Some are geographical and demographic (who lives where and what are the existing links), some are economic (poverty, potentials for development, breakdowns of health expenditures), some are epidemiological (direct and indirect health status indicators, referral rates, effectiveness measures), and some are political and relate to the future ambitions of each country. It is my impression that much primary data is already present (e.g. in Fiji, Trust Territories of the Pacific etc.) but has not been tabulated or produced in a usable form. In many countries this can be done within the country at minimal cost in a short period if a case can be made that the information could be useful and the country required it. This is a reasonable second step.

Preparation of national health system models

Fundamental outlines of alternative health service systems need to be prepared for each country. These should reflect the existing system, the gaps and successes, the alternatives if a different division was made between the primary, secondary and tertiary tiers, and the constraints (type of health workers, resources, communications and transport, health problems etc.). While this is fundamentally a national activity, technical support would be required in many cases from outside.

Development of usable components

A large number of constraints could be resolvable if they were identified and described in direct problem terms. These include radio equipment which can be cheap, locally run and repaired, lists of drugs with a higher safety factor, equipment, emergency (or exceptional even) procedures, training and continuing education systems, usable transport (what are the economics between a helicopter, an amphibean and a reef airstrip?). It is unlikely that these will be fully faced by the world community unless their usefulness in a number of situations can be demonstrated. If the need can be stated, and they are properly described, then it would seem reasonable to either set up a group or regional mechanism for solving them or to refer them to international or world problem-solving groups (the universities, industry, the Commonwealth Secretariat, WHO, the applied technology group etc.).

Search for development costs

For many countries listed it is improbable that development costs could be locally fundable. Some national health objectives may need to be restricted to self-sufficiency in running costs once an amended health system is operational. Some governments may not unreasonably need assistance in preparing suitable proposals prior to their submission to an international or a bilateral source of funds. Possibly the Commonwealth Secretariat or WHO could provide such assistance or it could be even developed in a regional way.

Implementation of an amended system

A country of the size of many of those listed understandably has difficulty in calling upon the whole range of expertise necessary to implement an amended system. Outside help will frequently be required.

Development of regional or collaborative structures

No health system is ever final or optimal, and continuing change and development requires continuing support. The ever-increasing complexity of living, governing and administering must mean that in the long run the smaller countries will be at a disadvantage unless they can collaborate and develop together what may be unattainable separately. Still-developing institutions such as the University of the West Indies or the University of the South Pacific indicate both the difficulties and the possibilities for collaborative action. Some similar mechanisms involving both the health services themselves and the academics may be the possible answer.

CONCLUSION

The steps towards the solution to the health and health service problems of small countries or countries with isolated communities cannot be put on paper with every step clearly defined

and the answer at the end. One can describe with clarity the initial steps and the possible benefits which could result. The steps which follow must fully express those conclusions and agreements which have gone before, and must also recognise some of the individual qualities of uniqueness which have led to the different countries' diversity and independence.

The events or forces which have led to individuality are frequently followed by a feeling of wanting to share or collaborate upon their own terms. Such moves must come from internal rather than external forces and cannot be planned by experts, however well intentioned. Therefore it seems proper that the end of this paper should be left blank.

Information already publicly available shows the countries described to be at a disadvantage in health service terms. It is likely that because of their nature they will continue to have some disadvantages. However, some ways of decreasing these disadvantages are available and these could be implemented by starting a series of national, regional and collaborative steps and drawing upon the pool of goodwill which exists within and outside the Commonwealth.

Some countries facing island and isolation health service difficulties

Area	Commonwealth	Non-Commonwealth
Pacific islands	Cook Islands Fiji Niue Tonga Western Samoa New Hebrides Tuvalu Solomon Islands Kiribati Nauru (Pitcairn, Norfolk Islands etc.)	American Samoa French Polynesia Trust Territories of the Pacific - Federation of States of Micronesia - Marshall Islands - Palau
Indian Ocean islands	Seychelles	
South East Asia/ Pacific countries with isolated islands and other populations	Papua New Guinea	Indonesia[+] Philippines Nepal
Caribbean islands	Turks and Caicos	
Atlantic islands	St. Helena Ascension Tristan da Cunha Falkland Islands	
Africa		

[+] Typified by populations in such provinces as Nusa Tenggara, Riaw, Molucca etc. Personal communication from H.E. Dr Suwardjono, Minister of Health, 1979.