1. INTRODUCTION

1.1 Scope and purpose of the project

All countries, no matter what their stage of economic development, face tough choices in how they allocate their scarce resources between competing activities. Public expenditure decisions, be they within or between Ministries, are made (and will continue to be made) as a result of a complex interplay of social, cultural, economic and political factors. However, given that budgets are increasingly stretched in the face of competing demands, there is a pressing need for evidence on the costs and benefits of public sector investments. Nowhere is this need greater than in the health field, where the benefits of health programmes are typically difficult to measure, and where budgets in many countries are still under considerable strain, although they have expanded relatively quickly when compared to other fields of public expenditure. Within the health sector a key area of interest is primary health care (PHC), which is generally regarded as a central function and the most important means by which the health of the population can be improved, both in developing and developed countries (WHO-UNICEF, 1978).

It is against this background that the current project was undertaken. Its objectives were to prepare a report for consideration by the Commonwealth health ministers which would include:

(i) a literature review of cost-effectiveness and cost-benefit analyses of key primary health care projects in Commonwealth countries;

(ii) an analysis and interpretation of the results of the projects in (i) above;

(iii) a discussion of policy implications for ministries of health

(iv) suggestions for further work in this area that could be undertaken by the Commonwealth Secretariat.

The approach has been both to survey the existing published literature and to solicit data from Commonwealth countries by use of a questionnaire. The report presents our findings on both counts. More details of the questionnaire returns from individual countries are to be found in Appendix 1.

The main body of the report is organized in the following manner. The remainder of this introductory section outlines the range of activities that we have designated primary health care and discusses the extent to which the definition and activities of PHC vary between different parts of the Commonwealth. (The designation of primary health care used here follows closely that of the World Health Organization (WHO).) Also in the introductory section, we outline the methods of economic evaluation, defining key terms such as 'cost-effectiveness analysis' and 'cost-benefit analysis'.

The next section of the report contains a review of the literature on the economic evaluation of PHC activities in Commonwealth countries. The literature is fairly extensive, containing studies relating to approximately one-third of all Commonwealth countries. In the review of the literature the following points are highlighted: the range of topics examined from an economics viewpoint, the major methodological issues arising in studies and the key issues in interpretation of results for decision making purposes.

The next section contains 4 case studies of major PHC projects. The case studies have been chosen not only for

their intrinsic interest but also to reflect the needs and concerns of different parts of the Commonwealth (Asia, Africa, the Caribbean and the developed countries). In the discussion of case studies the quality of the economic evaluation (and hence reliability of results), the main lessons that policy makers can learn about the conduct of projects, and the interpretation of results are commented on.

The policy issues resulting from economic evaluations of PHC activities are discussed further in the final section. The main issues concern whether investments in PHC justify their cost and the efficient organization of PHC, the ways of mounting and undertaking economic evaluations, and the implementation of study findings. Finally, further work that might be undertaken in this field is outlined. It is our hope that the report will be of use to health ministries in all Commonwealth countries and that it will lead, albeit indirectly, to increased efficiency in the delivery of PHC.

1.2 Primary health care

In order to define the boundaries of this study, it is necessary to agree a definition of PHC and a listing of its essential elements. A starting point is the Declaration of Alma Ata (WHO/UNICEF 1978):

> "Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part of the country's health system, of which it is the central function and main focus, and of the overall social and

> economic development of the community. It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process".

The Declaration goes on to list the essential elements of PHC that are the responsibility of the health sector (other elements falling under other sectors):

> "(PHC) includes at least: education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs".

PHC can thus be viewed firstly as an approach that guides the whole health system and, indeed, development strategy, secondly as a number of essential elements, and thirdly as a level of care. In this third view, of PHC as a level of care, emphasis is placed (as the first definition given above makes clear) on the location of PHC services. That is, those activities under the eight essential elements which take place in the community or in small scale health units close to the community are usually termed PHC.

While this description of PHC is relevant to all Commonwealth countries, each country will place a different emphasis on the various components, depending on its level of economic development, prevailing disease patterns and structure of its health system. The less developed countries of the Commonwealth, lacking a

comprehensive infrastructure of water and sanitation facilities and facing health problems amongst which infectious diseases loom large, are likely to put particular emphasis on disease prevention through immunization, environmental health services and health education, and on appropriate curative measures that can be delivered outside hospitals, in local health units, or in villages and homes. The more developed countries of the Commonwealth already have a well developed network of environmental health services and curative services and in general have the traditional infectious diseases well under control. In their place they face the problems resulting from an ageing population, from chronic degenerative diseases and from those environmental and life-style influences which damage health. Primary health care policies in the more developed countries are thus particularly concerned with providing supportive care to the elderly and chronically ill in the community, and with developing strategies for health promotion. In addition, PHC acts as an important filter on patient demand, to ensure a more effective and efficient use of costly secondary and tertiary care services.

Because of this difference in emphasis between the developing and developed countries (and indeed within each of these groups) it has sometimes been difficult to decide which studies are relevant to our focus on PHC and should be reported here. To guide our choice of studies, we have used the following criteria:

(a) studies which are concerned with one or more of the eight essential elements of PHC identified in the Alma Ata Declaration; and

(b) studies which analyse the delivery of these essential components in or near peoples' homes; and

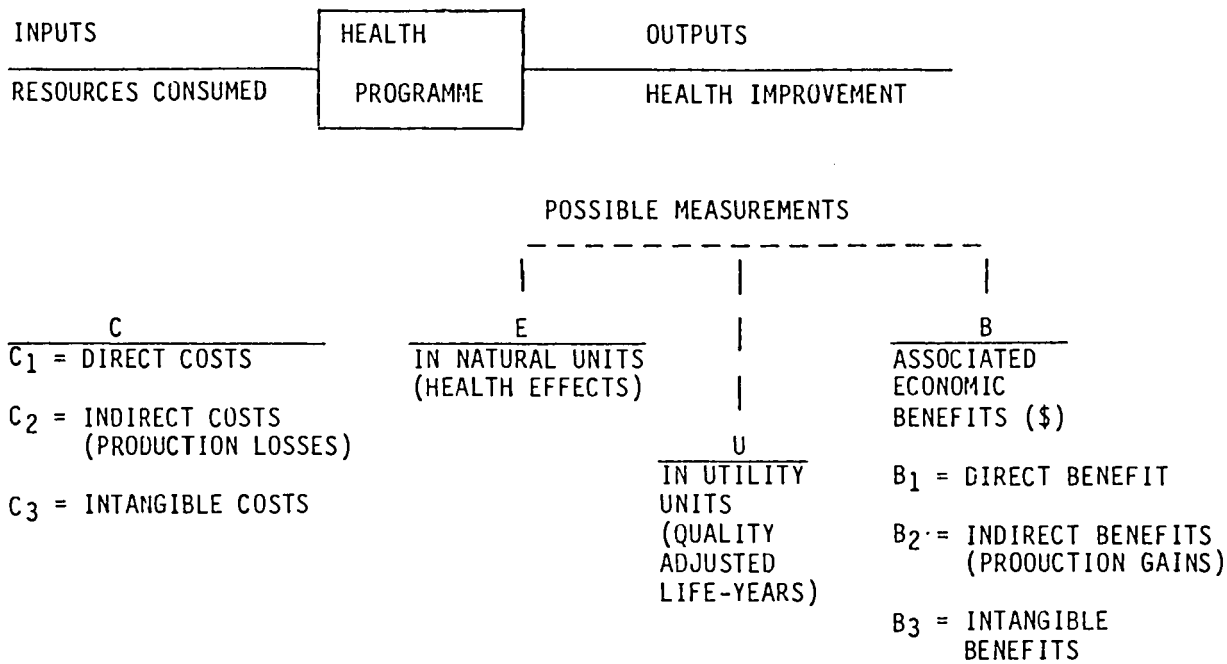
(c) studies which explicitly consider the costs and benefits of PHC components.

1.3 Introduction to the methods of economic evaluation

The main justification for economic evaluation of health programmes is that the resources for the provision of health and health related services are scarce, in that there are not, and never will be, enough resources to satisfy human wants completely. Therefore, in choosing to use resources in a given health activity, the community forgoes the opportunity to use the same resources in another competing activity. Hence the economist's notion of (opportunity) cost; that is, the cost of using resources in a given health programme is their value in their best alternative use. For example, one might argue that the real cost of overuse of high technology diagnostic aids such as CT scanners is not the money expenditure on equipment and staff, but the forgone benefits of the primary health care programmes that have not been given funds to expand. Thus the logic is that, given scarcity of resources, health programmes should be compared in terms of their relative costs and benefits.

There are a number of forms of economic evaluation, but they have the common feature that some combination of the inputs to a health programme are compared with some combination of the outputs. (See Figure 1.1) An exception to this is cost analysis, which considers only inputs. This approach can only be used in situations where it can be assumed that the outputs from the alternative programmes are identical (e.g. as in the study by Lowson et al (1981) on methods of delivering long-term domiciliary oxygen therapy in Britain). The inputs

FIGURE 1.1 COMPONENTS OF ECONOMIC EVALUATION



COMMON FORMS OF ANALYSIS

1. COST ANALYSIS: C_1, $C_1 + C_2$
2. COST-EFFECTIVENESS ANALYSIS (CEA): $(C_1+C_2)/E$; $(C_1-B_1)/E$; $(C_1+C_2-B_1-B_2)/E$
3. COST-UTILITY ANALYSIS (CUA): $(C_1+C_2)/U$; $(C_1-B_1)/U$; $(C_1+C_2-B_1-B_2)/U$
4. COST-BENEFIT ANALYSIS (CBA): $B_1+B_2-C_1-C_2$; $(B_1+B_2)/(C_1+C_2)$

   ALSO SOMETIMES INCLUDES CONSIDERATION OF C_3 AND B_3

include the direct costs (in medical care expenses) to the health sector and individuals and the indirect costs (in production losses) resulting from the removal of individuals from the workforce in order to be given therapy. (There may also be intangible costs associated with therapy, such as pain and suffering.)

The outputs of health programmes can be assessed in a number of ways. First, they can be measured in the most convenient natural units, such as 'number of cases prevented' or 'years of life gained'. A study measuring effects in this way would be called a cost-effectiveness analysis.

Secondly, they can be measured in quality-adjusted life-years, where the life extension gained is adjusted by a series of 'utility' weights reflecting the relative value of one health state compared to another. This approach is particularly useful where the success of a health programme is more appropriately assessed in terms of the quality, not quantity, of life gained. There are few examples of this approach in the primary health care field. See, for example, the study by Torrance and Zipursky (1984) on antepartum prevention of Rh immunization in Canada. In the developing Commonwealth countries, the nearest example is the study by the Ghana Health Assessment Team (1981) which assessed the impact of disease on the community in terms of 'the number of healthy days of life lost'. A study measuring the outputs in quality-adjusted life-years would be called a cost-utility analysis. (Some authors prefer to consider such studies merely as a special form of cost-effectiveness analysis.)

Finally, the outputs can be measured in money terms. Some categories of benefit are fairly easy to assess in this way, such as the savings in direct medical care costs resulting from improved health, or the production gains from earlier return to work. Production gains

in a subsistence economy are more difficult to assess, as are other less tangible benefits, such as the value to patients of feeling healthier. Such benefits are obviously more difficult to express in money terms, although measurements are sometimes attempted. A study measuring outputs in money terms would be called a cost-benefit analysis.

The precise form of economic evaluation depends on the question being addressed. Some of the formulations are given in Figure 1.1, along with the labels they are commonly assigned. In principle, cost-benefit analysis is the broadest form since it allows a direct comparison of all the costs with all the benefits. However, the intangible benefits are rarely estimated and the analysis is often reduced to a comparison of items that can easily be expressed in money terms. See, for example, the study by Hagard et al (1976) on screening for spina bifida cystica in Britain. A particular feature of many cost benefit analyses, on which we shall comment critically later, is the practice of valuing life by the 'human capital' method, where reductions in disability, debility or mortality are valued in terms of the increased production made possible through individuals working longer or better. Because of the measurement problems of cost-benefit analysis, analysts are increasingly turning to cost-effectiveness or cost-utility analysis.

Economic evaluation has been widely applied in the health care field (Drummond 1980; Warner and Luce, 1982; Mills and Thomas, 1984). The main forms of analysis, and a number of simple examples, are discussed further in Appendix 2.