

ultimate output being "the resumption of normal activities) then personnel is no longer an intermediate product but a primary input. As such, it is a constraint to be considered.

Evaluation of Costs

Scarcity of resources and the innumerable social needs of developing countries increase the need for developing an accurate measure of program costs. As stated above, however, cost itself is a meaningless term and must firstly be defined before it can be measured.

Be defining the cost of a health care project in terms of its function, relevant costs can be measured and identified. Costs vary among projects since costs depend upon the purpose of the project and the purpose for which the cost data is desired (15). One approach is to examine only those costs which occurred because of innovative or experimental health services; existing ancillary services are not considered to be a cost item. Another approach is to focus directly on operating as opposed to investment costs. Still other estimates include project costs as well as the costs of increased utilization of pre-existing health care facilities. The crucial step in cost measurement is to determine what are the specific health services whose costs should be identified; such identification is reduced to a simple task once the function of the project has been defined.

The method of functional analysis of health care costs as developed by the Johns Hopkins' Department of International Health entails an accounting procedure that highlights the distribution of health center costs by functions and activities. Cost figures are derived from each function "by cumulating the money value of all resources, including the workers' time, utilized in performing the various activities within each function." (16) A distribution of staff time was obtained from work sampling while expenditure information was collected directly from health center records. The cost information was then cross-classified by item and function. Items consisted of: capital expenditures, recurring expenditures on fixed items, recurring expenditures as variable costs, and salary and staff allowances. Functions included: medical relief, M.C.H., family planning, C.D.C., and Environment and Sanitation. The functional table was further disaggregated by separately considering work within the primary health care center itself versus work in the geographic area assigned to the primary health care.

The analysis can also be expanded to include the cost of project expansion or substitutability of inputs. For example, the authors consider the growing emphasis on providing family planning and MCH services at the PHC subcenters. Calculations indicated that Auxiliary Nurse Midwives (ANM) provide most of the family planning services at the subcenter level. By using a profile of the ANM's activity time, all expenditures related to subcenters except drugs and supplies were apportioned to the various functions carried out there. The capital and recurring expenditures were calculated using the same procedure as for the entire PHC; salaries were distributed on the basis of proportionate

time spent on PHC staff carrying out subcenter activities. (17) The results of this counterfactual exercise suggest that in some regions subcenter MCH services are as costly to provide as those in the PCH headquarters while in other regions subcenter services are relatively more expensive than PHC services. Then, by comparing the subcenters' activities and their proportions of total expenditure with the PHC headquarters activities and expenses it was determined that doubling the number of subcenters was less costly than adding another PHC headquarters.

Throughout their work the authors subdivide activities solely according to function and then compare the cost of providing the function by alternative means. If the function were constant, i.e. providing MCH in a number of different ways, or giving injections by using various personnel or center-subcenter combinations, then the functional analysis would be a powerful tool. Instead, the majority of comparisons are made between the cost of providing MCH versus PHC or family planning services. Although the authors themselves have defined functions in terms of homogenous activities, the question of non-homogeneous output, i.e. the multi-product output analyzed above, looms in the foreground. The value of functional analysis lies in comparison of these homogeneous activities where homogeneous is defined in terms of function.

Age, sex, and disease -- specific characteristics can be incorporated into this concept of function without overcomplicating the analysis. In fact, the counterfactual example of expanding family planning services through MCH subcenters or PHC headquarters employed functional analysis while implicitly holding multi-product differences constant. Thus, this was one of the more powerful analyses of this work.

Costs Over Time

One aspect of function that must be considered is the time span of the project. Surely, the time function of a primary health care program varies between a one-shot immunization project and an engineering and sanitation project. The time dimension ushers in an expanded concept of cost that must differentiate between period costs and multi-period or continuous costs. Joseph and Russell (1979) view the development of broadly distributed PHC systems as providing a piece of permanent infrastructure that can be used by other health care activities. The example cited is that of an immunization program that must not only reach the population on a one-time basis but also creates the demand for a sustained mode of access to the entire population at risk. The function of this program is now a continuous rather than discrete time period.

This expanded dimension of function directs attention to program maintenance and operational costs over time. Clearly not all of a program's costs will be recurrent, but those costs which will be recurrent must be costed on a continuous basis.

Why is this simple concept of recurrent cost absent from much of the health care cost literature and likewise from program budgets? Heller (1979) cites three fundamental reasons. First, the equating of development