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PRELIMINARY DRAFT
FOR DISCUSSION ONLY
NOT FOR QUOTATION

**GUIDELINES FOR HEALTH SECTOR ASSESSMENT
for the Asia Bureau of A.I.D.**

July 29, 1985

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July 29, 1965

Dr. Harold Rice
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Washington, D.C. 20523

Dear Hal:

Enclosed are 5 copies of the Preliminary Draft of the paper "Guidelines for Health Sector Assessment for the Asia Bureau of U.S.A.I.D.", in conformance with AID Purchase Order ASB-0249-0-00-5021-01 to Community Systems Foundation.

As you know, the purpose of this Preliminary Draft is to stimulate thought and discussion with the AID staff, in accord with the philosophy of this effort to jointly develop the guidelines so that they will be most useful to the Asia Bureau. Therefore, the enclosed Preliminary Draft presents a variety of information in a variety of manners, in somewhat experimental fashion, so as to elicit discussion. We expect the final document to be significantly different, based on the comments received.

Sincerely yours,



Barton R. Burkhalter
Senior Scientist

Encs:

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CHAPTER 1

INTRODUCTION

1.1 Background

The term "Health Sector Assessment" (HSA) has been used for several years by U.S.A.I.D., and other international agencies as well, to refer to a spectrum of different types of studies. In the early 1970s, the Latin American Bureau of AID sponsored several formal and ambitious HSAs, which were envisioned as a major research, analysis and planning effort, conducted principally by the host country with AID/Mission technical assistance and financial support.

In the Asia Bureau of AID, HSAs have varied widely in purpose, scope, quality and manner of undertaking, but generally have been far less ambitious than the Latin American HSAs. The principal purpose of Asia HSAs has been to support the development of Health Sector Strategies as part of Country Development Strategy Statements. When done well, HSAs can help to focus resources on problems where greatest impact can be achieved, and also communicate this result effectively to both host country and U.S.A.I.D. officials. They have also served other purposes, for example, to justify a particular project, to sensitize the host country to a particular problem, or to support the development of a planning capability in health/nutrition/population. As a result, the scope has varied, running from assessments of a broadly conceived health/nutrition/population sector to a focused review of some subcomponent thereof.

The manner in which HSAs have been carried out has also varied. In some instances, small expert teams have been sent to the host country for a few weeks to interview host country personnel, review documents and prepare a report in collaboration with the local AID Mission. Team members might be AID/Washington personnel, or outside consultants, or a combination, who may or may not have had previous experience in the host country or with AID. Such factors and a host of others, such as the quality and availability of data, have led to variation in the quality of the HSAs.

Although many HSAs had been done, no systematic effort had ever been made to draw the general lessons from them as they apply specifically to the Asia Bureau of AID. Recognizing this, the Asia Bureau of AID gave a purchase order to Community Systems Foundation of Ann Arbor, Michigan in 1985 to analyze previous HSAs and related efforts, and develop guidelines for HSAs which could be used in the preparation of their Country Development Strategy Statements (CDSS).

1.2 Scope of Work

Develop guidelines which the Asia Bureau can use to carry out health sector assessments, including nutrition and health related family planning elements. Develop the guidelines from an analysis of previous health assessments, related efforts in nutrition and family planning, and the Asia Bureau Health/Nutrition/Family Planning Strategy. The results should be written up to serve as guidelines to U.S.A.I.D. Missions in the preparation of their Country Development Strategy Statements.

Such guidelines could provide several advantages to the Asia Bureau, the Missions, and the host countries: more focus towards AID and Asia Bureau objectives, higher quality HSAs, savings of consultant time, standards against which both AID/Washington and Mission officials can judge proposals for and results of HSAs, and for training programs.

The following activities are to be undertaken in preparing guidelines:

- (a) Interview Asia Bureau personnel and review relevant documents regarding Bureau objectives and expectations for HSAs, health sector strategies, and HSA guidelines.
- (b) Review Asia Bureau HSA documents with attention to the scope and focus, the particular variables considered, source of data, and approach, including speciality assessments.
- (c) Review other AID HSAs, with attention to differences from Asia Bureau HSAs.
- (d) Review similar health needs assessments done by other organizations which might provide insights into successful HSAs.
- (e) Interview AID personnel and others who have been involved in HSAs and in integrated Health/Nutrition/Family Planning delivery services to determine purposes and uses, problems, lessons for future efforts, and other relevant experiences.
- (f) Prepare a set of HSA guidelines based on the above information.

CHAPTER 2

REVIEW OF PREVIOUS WORK

2.0 Introduction

In this chapter we review both Health Sector Assessments (HSAs) and studies about HSAs and health planning. Our goal will be to draw lessons from that previous work that can help us in the design of HSA guidelines for the Asia Bureau of A.I.D.

First we review 31 HSAs performed on Asian countries, most but not all by U.S.A.I.D. Then we review several important documents about HSAs which collectively form the basis of the guidelines presented in the next chapter. Those documents include:

- An evaluation of three HSAs performed in Latin America: Reports for the Evaluation of Health Sector Assessments. Westinghouse Health Systems, Columbia, MD. June 30, 1978 (USAID Contract No. AID/AFR-C-1145 GTS, Work Order No. 8).
- Two World Bank documents: Guidelines for Nutrition Sector Work, May, 1981 and Health Sector Analysis: Issues and Methods (draft), May 8, 1984, both from the Population, Health and Nutrition Department.
- The International Health Planning Methods series (ten volumes) published by the Office of International Health, U.S. Public Health Service; Paul Ahmed, Series Editor.
- Syncrisis: The Dynamics of Health (Vol. III) Perspectives and Methodology. Woolley, P.O. Jr.; Hays, W. S.; Larson, D. L. June, 1972
- Determinants of Health and Nutritional Status. Daly, J. A.; Davis J. H.; Robertson, R. In Evaluating the Impact of Nutrition and Health Programs. Eds.: Klein, R. E.; Read, M. S.; Reicken, H. W.; Brown, J. A. Jr.; Pradilla, A.; Daza, C. H.; Plenum Press, NY.
- The Politics and Ethics of Cross-Cultural Research. Warwick, D. P. In The Handbook of Cross-Cultural Research in the Social Sciences, 1978. Chap. 8, pp. 319-371.

2.1 A Review of 31 Asian Health Sector Assessments

Thirty-one separate HSAs from 16 different Asian countries were reviewed, and are summarized in Appendix A. Most of the HSAs were supported by A.I.D., but not all; the collection includes a World Bank study in China, a Ford Foundation study in India, and

eleven Water and Sanitation Rapid Assessments performed by the respective countries for WHO. In addition to the WHO Rapid Assessments there are two other special collections: Syncrisis reports on Bangladesh and Burma, and DEIDS Reconnaissance studies on Korea, Laos, Pakistan, The Philippines, and Thailand. The studies vary in scope, from broad comprehensive assessments in China, Sri Lanka, India and Thailand, to a baseline survey in Pakistan, and to narrowly aimed reviews of infant and child mortality in India and Indonesia, and of water and sanitation in the WHO assessments.

These documents are a non-random sample of Asian country studies obtained from a search of the A.I.D. library and document system and from bookshelves of A.I.D. staff. While this collection of 31 certainly is not all such studies done in Asian countries, we hope that it is representative of the sort of work done. In any case, there are many interesting observations that can be made from reviewing this particular collection.

- 1) Generally the assessments spend most of their time reviewing data on health status, health facilities and health programs. Recommendations for action are often made, but usually on the basis of expert opinion rather than objective logic. (An important reason for this is probably the lack of time.) The assessments are rarely able to find adequate evaluations of programs upon which to base their recommendations.
- 2) While most of the studies expressed concern for data quality problems, very little effort was generally made to deal with the implications of this issue. A notable exception are the two studies by Puffer on infant and child mortality in India and Indonesia.
- 3) Health care financing is generally touched upon, but rarely dealt with to the degree that it probably deserves. For example, data on costs and financial structures was never analyzed to anywhere near the depth that Puffer analyzed mortality data, nor is there much attention to the increasingly dominant share of health expenditures taken by hospitals. The World Bank China study is a partial exception.
- 4) Five separate assessments were reported for India, stretching from 1971 to 1984. An early study in the states of Mysore and Punjab collected extensive survey data. None of the other studies referred to this data. In fact, none of the five referred to any of the others, except the last one in 1984 which referred to Puffer's work in 1981.
- 5) The Ford Foundation study of India is notable for its extensive analysis of the Ford Foundation and how it should and could best contribute to the development of the health sector in India. With the exception of the Sri Lanka assessment, which was done by AID/Washington personnel, the other A.I.D. studies do not do this in any depth.

- 6) Although not apparent from the documents, limited interviews suggest that the document is the primary output of the effort; the authors are generally not involved at all or only peripherally involved in subsequent planning or execution of health sector programs in the country. There are exceptions.
- 7) The assessments have very little to say about mental health problems, and while they do describe indigenous approaches to care, they rarely involve indigenous approaches in their recommendations.
- 8) Discussion of external donors and the programs they support is generally in terms of the contribution they are making to the development process, rather than as an intervention into the political and social processes of the country.

The above observations are not meant as, nor should they be taken as, criticisms of particular studies. Indeed, it is amazing that the studies were able to pull together as much information as they did in light of time and resource constraints.

2.2 Westinghouse Evaluation of Latin America HSAs

The Health Sector Assessment (HSA) process was first used in Colombia in 1972 and then in Bolivia and the Dominican Republic in 1973-74. As described in the original guidelines issued by the Technical Assistance Bureau/Health of the Agency for International Development (AID), the objectives were:

- To provide AID and other donors with a program planning document to guide grants and loans in the health sector,
- To improve the quality of health planning in the host country,
- To produce a document which could be used as the basis for a comprehensive national health plan and strategy by the host country,
- To stimulate and institutionalize changes in the health care system sector-wide,
- To upgrade the skills of those responsible for planning and administration in the health sector, and
- To stimulate and improve coordination within the health sector generally and among AID, the host country government, other donors, and the host country private sector specifically.

The end product of the HSA process was to be a program planning document containing a comprehensive assessment of the existing health situation in the host country (including health conditions; physical, financial, and human resources; and contributing socioeconomic, cultural, environmental, and institutional factors) and a strategy for AID/Mission interventions. The HSA was to serve as a mechanism through which host country needs and AID's mandate could be reconciled. Most importantly the HSA would help to identify and establish host country priorities for the health sector. The document and the process itself were to serve as vehicles or starting points for institutionalizing and improving health planning in the host country. The HSA was to be a long-range, on-going process and not a one-time, action-output effort.

This was a new program planning process for AID, and the first few HSAs, while designed to meet stated objectives, were also pilot efforts through which AID sought to develop a workable structure and procedures.

Westinghouse Health Systems undertook an evaluation of HSAs in Bolivia, Dominican Republic and Nicaragua. They completed 66 structured interviews in these countries with various individuals associated with the HSAs, in order to understand the objectives, planning approaches, methodologies, and constraints encountered in implementing the three HSAs and to ascertain the effectiveness of the HSAs implemented.

The evaluation reviewed a number of important issues:

- A. Conflicting interpretations of the HSA--AID staff in Washington and the Mission differed in their views as to what the HSA was or should be. A fundamental lack of definition at the start of each HSA as to the nature of each HSA has permitted these differing interpretations. This affected the degree of commitment brought to the process, the scope of the effort, and the pursuit of the various objectives.
- B. Conflicting HSA objectives--The HSA was designed to accomplish multiple objectives, from producing a USAID program planning document (the bottom line objective) to developing a comprehensive national health plan. Pursuit of the other objectives conflicted with the timely and efficient completion of the USAID document. On the other hand, that objective, which was tied to the AID funding cycle, imposed a severe time constraint which hindered the accomplishment of the longer-range objectives, such as institutional change. To attempt to accomplish all objectives required spreading resources so thin that no objective could be adequately addressed.

- C. Conflicting AID and host country objectives--The objective of producing an USAID program planning document limits the HSA to AID's narrower interest. This, in turn, conflicts with the host country's broader concerns, for example of preparing a comprehensive national health strategy and plan. Similarly, tying the process to AID's funding cycle conflicts with the intent of creating changes that must occur within the host country funding cycles.

A related issue is the choice of criteria for evaluating various aspects of the HSA. USAID and host country judgments of such elements as the adequacy of existing data or adequacy of existing national health plans were often opposed. Whose criteria or what criteria to use needs to be carefully negotiated to avoid unnecessary tension. The extent to which the standards of developed countries are applicable in countries doing HSAs is a fundamental question.

Finally, there is the issue of whether it is appropriate to ask a developing country to commit scarce resources to a planning process in the absence of such things as any guaranteed return for their investment, assurance of participation in the entire process, or the assurance of a project large enough to have impact on the host country health sector.

- D. Host country commitment to the HSA--The principal issue here concerns the extent to which USAID should become involved in a broad HSA without some guaranteed commitment from the host country. The commitment would cover the timely provision of adequate resources and assurance of the institutionalization of a program planning process.

Of special concern have been the assignment of participants to positions outside the health sector, after the HSA, the failure to push the involvement of significant health institutions and appropriate government staff in the HSA, and the failure to implement the recommendations of the HSA.

- E. Approach to Data--Data collection appears to have been a difficulty in all three HSAs. The reason seems to have been insufficient planning as to real data needs and feasibility of obtaining data. There is no evidence to suggest that the new data improved the outcome of the HSA to the extent that the effort of obtaining it was justified. Nor is it clear that the HSAs could not have been completed using existing data subject to improved analysis.

These conflicts can be clearly seen in attached Tables 1 and 2, taken from the Westinghouse report.

OBJECTIVES	Com mon to All	AID/W	AID/M	Bolivia	Dominican Republic	Nicaragua
A. AID Program Planning document as requirement for loan	•					
B. Improved Host Country Health Planning capability		•	•		•	•
C. Institution-Building/Improvement		•	•			
D. Improved Coordination:						
(1) AID and Host Country		•	•			
(2) Private sector and AID M and HC		•	•	N/A	N/A	N/A
(3) Host country government health sector		•	•			
(4) Other sectors and Mission		•	•	N/A	N/A	N/A
Other sectors and HC		•	•			
(5) Donors and Mission		•	•	•		•
Donors and HC		•	•			
(6) PVOs and Mission		•	•	N/A	N/A	N/A
PVOs and HC		•	•			
E. Attitudinal changes in host country	•					
F. Education (skill's upgrading)	•					
G. In-depth knowledge of health sector		•	•		•	•
H. Development of national health planning strategy including host country document from HSA		•	•		•	•
I. Justification of investment health sector		•				
J. Cost benefit analysis		•		N/A	N/A	N/A

Table 1: ACCEPTANCE/NON-ACCEPTANCE OF HSA OBJECTIVES. This table demonstrates that the participants in three Latin American HSAs did not share the same objectives for the HSAs. (Source: Reports for the Evaluation of Health Sector Assessments. Westinghouse Health Systems, June 30, 1978. Table 4-1, page 67.)

	COM- MON TO ALL	AID/W	AID/M	BOLIVIA	DOMINICAN REPUBLIC	NICARAGUA
Rural Health Emphasis		•	•	•	•	
Target Populations (poor majority, pregnant, locating women, children, infants)		•	•			
Population/FP Priority		•	•	*		
Nutrition Priority		•	•			•
Low Cost Rural Health Care Delivery Systems		•	•		•	
Socio/Cultural/Economic Analysis		•	•			
Multisectoral Analysis		•				
Cost-Benefit Analysis of Health Investment		•				
Host Country Participation	•					

* This particular priority was strongly opposed by Bolivia.

Table 2: AID/WASHINGTON PRIORITIES IN HEALTH. The data in this table demonstrates that the participants in three Latin American HSAs did not share the same health priorities in relation to the HSAs. (Source: Reports for the Evaluation of Health Sector Assessments. Westinghouse Health Systems, June 30, 1978. Table 4-4, page 83.)

Despite the problems encountered with the HSAs and the feeling that accomplishments could have been greater, the evaluation team concluded that the HSA is, with certain modifications, a viable and useful program planning process.

The manner in which the stages of the HSA was carried out clearly had an influence on the nature and scope of accomplishments and the effectiveness of the process.

- A. Scope of Work--The principal requirements in this stage are an assessment of the political climate and of likely host country commitment to any HSA process, selection of a suitable process, general definition of its content, preliminary scheduling and budgeting, identification of resource and data needs and availability, and negotiation of host country involvement.
- B. Planning and Organization--The evaluation team felt that this stage was, and is, the key to successful implementation of any program planning process. Adequate time should be allotted to planning and establishing methodologies. Those tasks should be completed before the work plan is begun. Key steps are definition of objectives and tasks (with quantifiable outcomes), development of a work plan, design of methodologies, laying the political groundwork within and without the health sector, staffing, team organization, management and administration, scheduling, and planning of training.
- C. Implementation--This stage involves carrying out and completing the work plan, especially the data collection and analysis tasks, report preparation, translation, and distribution. Key recommendations include: monitor data collection efforts closely, provide adequate supervision, involve host country participation throughout and especially in the analytic and policy recommendation stages, ensure that the host country complete its report, translate the USAID report into the host country language, and focus on educational aspects.
- D. Follow Up--The primary requirement is to sustain the momentum and continuity of the process, so that it does not become a one-time, immediate output effort. Activities fell into the categories of dissemination of findings and recommendations, implementation of recommendations, continuation and updating of planning activities, and evaluations. Key recommendations include: publicize the HSA and its outcomes consistent with political acceptability, involve participants in evaluation, provide follow-on educational opportunities, encourage implementation, and provide follow-on loan.

- E. Guidelines--Of particular interest is the matter of guidelines: What sort should be provided, whether they can be "cookbooked?" Guidelines need to be flexible so they can be adapted to country-specific conditions. This would seem to suggest that cookbooking is not suitable. However, there are many steps in a program planning process for which a general framework and approach can be developed, leaving the details to be worked out in-country.

Guidelines might provide for the following: definition of objectives, identify host country characteristics to be assessed for design of process model procedures, develop checklist of content, identify solutions to common problems and potential pitfalls, identify steps in a plan development and alternative methodologies.

Political factors, existing health planning activities, and USAID-host country relations are important background factors that can influence the success of the HSA in the long run, although they did not appear to greatly influence the short run. For example, broad based political support was more lasting than support from a single, politically strong and highly placed official. One of the countries studied had just completed a national health plan, and therefore their interest in the HSA "exercise" was only to obtain a USAID loan and not to develop their plan or planning capability. When a loan was not forthcoming, their interest dropped. In another country, the HSA corroborated projects that the country had already identified as high priority, AID loans to support them were forthcoming, and the country was quite satisfied with the "exercise."

The fact that the HSAs were tied to AID funding cycles and therefore had sometimes severe deadlines caused various staffing problems. For example, consultants had to be selected on the basis of availability rather than expertise, visits were sometimes too short, disorganized or poorly timed. Different work norms in the host countries also created difficulties, for example, short work days, many holidays, or holding of two jobs.

The most important criticism leveled at the implementation of the HSA was the failure to involve host country participants during the analysis and strategy formulation phases.

(This excellent report appears to have disappeared from the AID document system, but one microfiche copy did exist in the AID library at the State Department.)

2.3 World Bank Guidelines on Health Sector and Nutrition Sector Analysis.

The Department of Population, Health and Nutrition of The World Bank has prepared two documents that are particularly relevant:

Guidelines for Nutrition Sector Work, May 1981 and Health Sector Analysis: Issues and Methods, (Revised Draft for Discussion), May 8, 1984.

The Nutrition Guidelines is organized into four sections. Section 1 discusses how to assess the severity of the malnutrition problems by looking at data on food consumption, infection and morbidity, and nutritional status. Section 2 discusses how to find the determinants of malnutrition, particularly in relation to six groups of variables: food availability, prices, income, belief patterns, environmental sanitation, and use of health services. The difficulty of uncovering causal relationships in short-term assessments is recognized. Section 3 looks at the agriculture, food and health sectors in terms of their present effects on consumption and nutrition, and in terms of introducing change into these sectors in ways which are likely to result in a reduction in malnutrition. Section 3 also discusses the extent to which the host government is seriously committed to meeting nutritional and other basic needs of its low income population. Section 4 looks at specific nutrition interventions in operation or under consideration, following the organization in Harvard's multi-volume Nutrition Intervention in Developing Countries (i.e., supplementary feeding, nutrition education, formulated foods, food fortification).

The Health Sector Analysis is more extensive, and discusses the context and implementation of the study, as well as its content. The overall concern is improvement of health sector performance.

Nine possible purposes of a health sector analysis are identified: (1) Compile and integrate, often for the first time, detailed documentation of the actual health status of the population, identifying the priority health problems and population groups most at risk; (2) Establish a baseline for monitoring and evaluating sector development progress over time; (3) Generate new sector data, through surveys, etc.; (4) Identify key gaps in the data base that are essential to health planning; (5) By measuring the efficiency and effectiveness of the current system, indicate the existing capability in planning and management of the health sector; (6) Explore alternative resource uses, thus making explicit the tradeoffs in pursuing given sector strategies; (7) Contribute to the formulation of a coherent, integrated sector development strategy, focusing on design of a national program rather than the traditional discrete, fragmented project-oriented approach. Identify the appropriate nature, magnitude and timing of external assistance, and its feasibility; (8) Identify risks faced by future investments, such as low absorptive capacity. In summary, health sector analysis does not substitute for national planning, but contributes to health planning needs by systematically identifying critical issues, assessing past and anticipated sector performance, and exploring alternative strategies.

The author concludes that "there is no optimal design for sector work which can be applied across all countries". The diversity of nations and of areas within them, the varying relative importance of the health sector within total development priorities, and the distinct opportunities within each country--all underscore the need for flexibility in health sector work. Several factors influence the type, focus and timing of sector work, among the most important of which are: (1) current state of knowledge about the sector, (2) anticipated nature and degree of involvement in the sector, (3) the host country's interest and capability to participate in such analysis, (4) the Bank's capability and constraints in performing the analysis.

Three types of health sector analyses are identified: special studies, surveys, and reviews. Special studies, which constitute the majority of efforts, are highly focused on priority issues, often serving as the basis for modifying existing programs or designing new ones. Examples of such studies range from analyses of the causes or underutilization of services or high attrition rates in personnel, to a review of the economics and financing of health. Surveys of the sector or sub-sector are "quick but not too dirty" overviews that are comprehensive syntheses of previous studies. Reviews are broad but cursory examinations.

The author notes that "investment of time upfront, prior to field missions, can have significant returns, enhancing not only the efficiency of operations but the overall quality of sector work." In recognition, the Bank generally prepares Pre-mission Issues Papers, which discuss the major issues in relation to the focus and approach of the health sector analysis.

The composition of work teams to carry out health sector analysis is discussed. For broad reconnaissance survey, a three person team that includes a public health physician or epidemiologist, a health economist, and a health administrator or planner is suggested. But for the vast majority of specialized studies, more specialized personnel are required. The importance of work team leadership and coordination, and appropriate phasing of work schedules is stressed.

It is noted that health is the product of numerous, interrelated factors many of which transcend the health sector per se, as commonly defined. Thus ultimately a multisectoral analysis is required, but unfortunately methodologies for conduct of multisectoral analyses are still not fully developed in the international development community.

The document also discusses at length the variables and analysis that should go into a health sector analysis.

2.4 International Health Planning Methods Series

The International Health Planning Methods Series was developed by the Office of International Health, U. S. Public Health Service in the 1970s on the request of U.S.A.I.D.

The series consists of ten basic volumes which cover a variety of health issues considered vital for effective development planning. Each manual attempts to be both a practical tool and a source book in a specialized area of concern. Specific methods for collecting information and using it in the planning process are included in each manual.

These ten manuals are supplemented by six additional works in the International Health Reference Series, which list resource and reference material in the same subject areas.

Taken together, these publications are an enormous resource for those undertaking HSAs. They are available through the A.I.D. documentation system and the A.I.D. library. The titles of the different volumes are:

A. Guidelines for Analysis Series

1. Communicable Disease Control Planning
2. Environmental Health Planning
3. Health Manpower Planning
4. Socio-cultural Factors in Health Planning
5. Health Facilities Planning
6. Indigenous and Private Health Care Planning
7. Pharmaceutical Supply System Planning
8. Health Sector Financing in Developing Countries
9. Community Health Planning
10. Health or Wealth

B. Selected Bibliographies Reference Series

1. Communicable Diseases and Health Planning References
2. Environmental Health References
3. Health Manpower Planning References
4. Socio-cultural Factors in Health Analysis
5. Pharmaceutical Supply System Bibliographies
6. Health Facilities Planning References

Volume A-9, Community Health Planning, contains a paper by Paul Ahmed and Aliza Koiker on "Health Sector Assessment" which is a fine summary and critique of HSAs, particularly as practiced by A.I.D., and so we have included that paper as Appendix B.

2.5 The Syncretic Methodology

This is an abstract but useful document in thinking about the content of HSA's. It presents two perspectives of planning: sectoral and inter-sectoral. Sectoral planning attempts to maximize sector performance by manipulating variables generally considered to be under the control of that sector. Inter-sectoral planning attempts to identify effects of one sector on other sectors, and the impact of cooperation among sectors.

One aspect of health sector planning is determining the health status of the population. To do this, the following kinds of data should be collected:

- A. Mortality Data. Leading causes of death by age, and by: (1) % of preventable deaths, (2) % of deaths forming cluster groups, (3) % of deaths with common associated causes, and (4) % of deaths requiring specific action such as early care, continuing care, etc. Data from death certifications including: (1) % deaths not certified, with urban/rural distribution, (2) % of deaths attributed to obscure or ill-defined causes or senility, (3) frequency of medically certified death by disease type, and (4) discrepancies in certification mortality and case reports in diseases with high fatality ratios, e.g., tetanus.
- B. Morbidity Data. Reported cases of communicable diseases by age and urban/rural location. Data from medical consultations. Data from hospitalizations, including diagnosis, duration of stay by age and disease, bed occupancy.
- C. Disease Specific Data. These are overlapping sets of diseases used as indicators and diseases clustered according to associated cause or problem. For example, the degree of tuberculosis, infant mortality and maternal mortality is related to the socio-economic status of the population; complications of pregnancy and delivery and maternal mortality relates to the availability of health care; enteric infections and parasitism relate to environmental safety.
- D. Coverage. Determine the receipt of care from the perspective of the consumer from such data as: professional attendance at delivery, immunization rates, coverage for special populations such as MCH and % of deaths medically certified.

The above data allows the following judgments: (1) % of population receiving regular health care, % receiving occasional care, and % receiving no care, (2) definition of basic problems in health, (3) identification of potential intervention mechanisms, (4) identification of possible complicating factors, and (5) the role of extra-sectoral factors.

However, mortality data presents certain methodological problems. It provides no information about nonfatal or fatal concurrent diseases. Non-medically certified causes of death are subject to significant error due to inadequate medical knowledge combined with fads among lay and paraprofessional personnel. Mortality data does not provide clear insight into the disease load carried by the live population.

Assessment of health resources adequacy is another important aspect of sectoral planning. Seven types of factors are thought to be important to this effort: (1) disease characteristics, including incidence, prevalence, duration and severity, (2) preventive services and their coverage, (3) the quality and efficiency of professional practice, (4) accessibility of the population to health services, (5) quality of care received as modified by cultural, social, psychological and economic factors, (6) level of health education, awareness and expectations, and (7) extra-sectoral factors, such as housing, climate, seasonality of food and income.

Inter-sectoral problem solving and assessment of project impact are discussed at a conceptual level. One aspect of project impact is cost. Six types of costs of a disease, which might be reduced by an effective program, are:

1. direct costs of diagnosis and care
2. direct costs of social security payments
3. indirect costs of lost wages and productivity
4. indirect costs of the increased caloric needs of ill people
5. indirect costs of the loss of productivity due to premature death
6. indirect costs of the loss in investing in schooling and other social services in people who die before they become productive

2.6 Determinants of Health and Nutritional Status

There are many papers containing models of the determinants of health and nutritional status. For example, one simple and attractive model sees health status as determined by four factors: (1) genetic make-up of the population, (2) its behavior patterns, (3) the health services available to it, and (4) the environment in which it lives. (Starfield, B. Health Services Research: A working Model, The New England J. of Med., V289, n3 (July 19, 1973), pp. 132-6.) Another attractive model of malnutrition and its causes, called the nutrient flow model, follows the flow of various nutrients from production through harvest, storage, transportation, processing, distribution, preparation, consumption and absorption, measuring the losses along the way. (Wilson, D.; Lema, L. E.; A Systems Approach to the Nutrition Problem in Colombia, Nutrition Planning, vol 1, n1 (Feb., 1978), p. 17.) A more comprehensive and interactive model that attempts

to identify and relate variables in population, health, and nutrition in a dynamic framework is presented by Correa (Correa, H. Population, Health, Nutrition and Development. Lexington, Mass: Lexington Books, 1975.).

The paper by Daly, Davis and Robertson (Daly, J. A.; Davis, J. H.; Robertson, R. Determinants of Health and Nutritional Status. In: Evaluating the Impact of Nutrition and Health Programs, Eds. R. E. Klein, et al. New York, Plenum Press.) presents a balanced and concise model of determinants and their relationships. We believe it provides an appropriate guide for the overall framework of the contents of a HSA. Therefore we have included it here as Appendix C.

2.7 Ethical Considerations

For many years, ethical considerations were given little formal attention by those involved in cross-cultural development work. More recently, however, ethical considerations are coming to be seen as an important aspect of such activities, both in their own right and for practical considerations.

While not strictly applicable to AID sponsored HSAs because of its focus on social science research, the paper by Warwick on the politics and ethics of cross-cultural research is nonetheless a brilliant and disturbing analysis that has much to contribute to the way in which HSAs should be conducted (Warwick, D. P. The Politics and Ethics of Cross-Cultural Research. In: Handbook of Cross-Cultural Psychology). We summarize some of the relevant points from that paper.

Warwick defines "social intervention" as any act, planned or unplanned, which alters the characteristics or relationships of individuals or groups. Through its contents, its products, its processes, its personnel, or its auspices a cross-cultural study may impinge upon, or be perceived as impinging on, the characteristics and relationships of parties ranging from investigators and interviewees to one or more national governments. Even a study based on secondary sources may touch the image of the culture in question.

Politics refers to those social interactions revolving around power, influence and authority. Warwick believes that "it is difficult to imagine any piece of cross-cultural research that in its origins, implementation, and uses is completely immune to politics."

Ethics deals with questions of moral goodness or badness and with the proper standard for human action. Cross-cultural studies raise a host of ethical questions, some unique to the cross-cultural setting and others not. For example, a situation unique to cross-cultural studies arises when different cultures have diametrically opposed moral understandings about the proper behavior for an investigator.

While analytically distinguishable, Warwick argues that the politics and ethics of cross-cultural studies are tightly interwoven. Insensitivity to politics can be a grievous breach of professional ethics. Warwick observes that when a cross-cultural study is linked to the sponsoring nation's foreign policy objectives and large numbers of local professionals are co-opted to do "hired-hand" work, serious ethical questions can be raised about the macropolitics of the project.

Political sensitivity should be a means to exercise ethical responsibility rather than a way to avoid it. Political sagacity should not be used to get away with as much as possible.

The situation of professionals, and especially scientists, from developing nations is different from those in developed nations in several important ways. First, there are often fewer in a given field, so that they are well aware of each other. Second, active scientists in developing countries face incredible demands, including heavy teaching loads, low pay (with a consequent need to hold other jobs), lack of research facilities, paucity of publication outlets, often institutional turmoil, and possibly inferior training. Third, individual rivalries are often more intense than in North America. Finally, research is more entwined with national politics. Those allied with the government and dependent on it for financial support will keep a wary eye on the possible impact of any outside finance or collaboration on this relationship. Those who oppose the government or have other political agendas will be on the lookout for any ammunition that will serve their purpose. These differences set the stage for a variety of ethical issues.

Warwick discusses the power and problems associated with sponsorship, including the ability to decide the study content and method, and to select some personnel and not others. Some of the issues have to do with the internal politics of sponsoring organizations.

Another important area which raises ethical considerations is the politics of access, gaining clearance and support in the host country. This opens the door to negotiation by individuals in the host country who function as gatekeepers, and may also lead to significant delays. Warwick believes that questions of access can become the most tangled and electrified, as well as ethically complex, when cross-cultural research involves minority or ethnic groups. He quotes Joan W. Moore:

"In a general way, the minority sits inside a delicate and complicated structure of political and moral postures. Imbedded in this structure are the group's deepest aspirations and frustrations. To enter this fabric, no matter how gently, means that this structure of frustration and aspiration is somehow altered." (Moore, J. W. In: Sjoberg G. (Ed). Ethics, Politics and Social Research. Cambridge, MA: Schenkman, 1967, p. 225).

Other issues that arise in studies of minority and ethnic groups are knowledge and commitment. Can an outsider know enough, or have sufficient commitment, to be trusted by the group? On the other hand, insiders may be biased, in favor of the group as a whole or for particular sub-groups. Committed investigators, whether a member of the group or not, may tend to soft-pedal negative findings, an act fraught with ethical issues.

Finally, Warwick proposes some ethical guidelines:

1. There is an urgent need for joint projects involving knowledgeable and equal-status scientists from each of the participating cultures. In the interest of both genuine participation and cross-cultural equivalency, the study design should allow for some flexibility in both content and methodology.
2. Cross-cultural studies should incorporate formal mechanisms for surfacing ethnocentrism and political biases.
3. All collaborators should be fully informed of the sponsorship, funding sources, and purposes of the research, as well as the intended uses of the data.
4. Money and travel should not be used to lure professionals in developing countries away from their ongoing activities. The line here between paternalism and exploitation is ambiguous.
5. Individuals should not agree to collaborate in a cross-cultural study unless they are in a position to honor the time commitments and standards of quality required.
6. Publication arrangements should be discussed early in the study, should be the subject of mutual agreement among all collaborators, and should take account of varying national and local situations.

In addition, Warwick notes certain responsibilities which persons in positions of responsibility have to populations under investigation, and which professionals have to their professions. He enumerates eight responsibilities to populations: (1) avoid actions which violate ethical standards or cultural understandings of the culture under study, (2) show respect for and sensitivity to each situation by avoiding oversaturation, seeking approval, avoiding conflicts, etc., (3) disclose the purposes, etc. of the investigation, (4) tell the truth, avoiding even mild concealment, (5) take culturally specific steps to ensure informed consent and avoid invasions of privacy, (6) the investigation should not cause physical, mental or social harm, including degradation, humiliations, embarrassment, damage to reputation,

anxiety, psychological stress or significant political risks, (7) do not have, as a latent agenda, the modification of attitudes or behaviors within the populations studied, unless this meets with the requirements specified above, (8) some tangible benefit should accrue to the population studied.

Four professional responsibilities are enumerated: (1) don't participate unless you have the necessary background and skills, (2) no investigator from any culture should compromise standards of professional judgment to meet the demands of external groups, such as sponsors or host agencies, (3) with regard to publication, worthwhile scientific information should not be suppressed, reports should not contain information which violates express or implied promises of confidentiality, or which may bring harm to participants of those studies, and scientific presentations should meet proper canons of scientific accuracy (for example, avoid unwarranted policy recommendations), and (4) refrain from actions detrimental to the open process of scientific investigation, particularly incompetent, incomplete or slipshod work.

CHAPTER 3

GUIDELINES

3.1 Introductory Remarks about Guidelines

3.1.1 The Need for Flexibility

It is clear that a rigid, preprogrammed format for carrying out HSAs is not appropriate. Different countries and different situations call for different studies.

This same conclusion is reached by others. In their evaluation of HSAs in three Latin American countries, Westinghouse Health Systems (1978) concluded that the formal, year-long HSAs they evaluated were "Clearly not suitable for all program planning needs and should be considered only as one model in a spectrum of alternatives." (p. 6)

The World Bank Health Sector Analysis: Issues and Methods (Draft) (1984) states "there is no optimal design for health sector work which can be applied across all countries. The diversity of nations and of areas within them, the varying relative importance of the health sector within total development priorities, and the distinct opportunities which each country presents to accelerate health sector development--all underscore the need for flexibility and adaptability." (p. 5)

Warwick (19__) recommends flexibility in the content and methodology of all cross-cultural scientific studies on ethical grounds, so as to achieve genuine participation and cross-culture equivalency. (p. 358).

Schon concludes that what successful, professionals do is think about what they are trying to do. (Schon, D. A. The Thoughtful Practitioner _____) The orientation of these guidelines, then, is to assist the professionals who are involved in HSAs to think about what they are doing, rather than to set out marching orders for them to follow.

3.1.2 Wealth of Existing Literature

Fortunately, there is a wealth of good literature about health planning in general and HSAs in particular which applies to the objectives of this document. It includes well done syntheses on the content and method of HSAs.

We are reluctant to produce yet another synthesis. We have chosen, as a compromise, to clearly reference some of the best of this work (Chapter 2), to include copies of two concise papers as appendices, to point out how this applies to Asia Bureau needs, and to summarize in outline form some of the key issues in HSA scope and method (in Section 3.2 below) and some of the key variables and questions to answer (in Section 3.3 below).

3.2 Scope and Conduct of HSAs

In this section we follow the organization of the Westinghouse study (1978), according to the four stages of an HSA.

3.2.1 Scope of Work

We believe this is the single most important aspect of HSAs relative to the Asia Bureau. Further, we believe that more focused HSAs will have a better chance of improving health sector performance than sweeping HSAs that analyze the entire sector.

This is, in our opinion, our most important observation. It is based on readings of the literature, when the issue raises itself, both expressly and implicitly, time and again. The importance of this issue was corroborated in our interviews and by our own experiences.

The Westinghouse study (1978) gives ample evidence that the three HSAs they studied had: (1) multiple objectives, some of which were in conflict with one another, (2) different objectives for the different participants, (3) unclear objectives. Not surprisingly, this mess of objectives did not work very well. (See our summary in Section 2.2 above.)

The primary focus of the Asia Bureau is to use the HSAs as input to Country Development Strategy Statements, rather than, for example, as institution building efforts in the host country. As a result of this more focused objective, we believe that Asia Bureau HSAs have not suffered from the same confusion as those analyzed by Westinghouse.

Nevertheless, we believe there are several ways in which this stage of the HSA could be improved. First, we believe that studies which focus on a particular issue or sub-sector are likely to have more impact than broad reviews of the entire sector. Broad reviews tend to present as much data as can be accumulated in a short time, interview some knowledgeable people, and then more or less intuit with whatever dash of logic that can be put together in a short time the major deficiencies of the health sector and ways to improve them. The resulting documents are amazingly good in view of the constraints, but deeper analyses are needed. To wit, the analysis by Puffer of the meaning of infant and child mortality data in India (Puffer, 1981). This study not only reviews problems caused by the definitions used in cause of death statistics, but analyzes the interrelationships among the various causes and the implications thereof. She is able to establish much stronger logical linkages between descriptive data and important deficiencies.

Second, we believe more care needs to be given in Scopes of Work to the making of recommendations. It is not a step to be taken lightly if recommendations are to be taken seriously. In many HSAs, the recommendations seem to be based primarily on an identification of important problems and deficiencies in the delivery system, without due consideration of the absorptive capacity, political processes, priorities, etc. of the host country.

A further consideration, related to the advantages of more specialized HSAs and the need for more careful attention to recommendations, is the possibility of separating the collection and synthesis of descriptive data from its analysis. The systematic accumulation of relevant data takes more time, and probably requires different skills than its analysis. One consequence of mixing the two objectives ((1) gather all relevant data, (2) analyze the data and make recommendations) is that much relevant data is often missed. For example, in the five India HSAs, later studies did not refer to earlier ones, with one exception, including the extensive household survey data from Mysore and Punjab.

The Synchrisis reports are an excellent starting point. What is needed, perhaps, is not only a Synchrisis for each A.I.D. country, but a systematic method of updating and deepening the descriptive data base, so that future HSAs can concentrate on analysis rather than description.

Although not readily apparent from our review, we suspect that more attention should be given in the Scope of Work to the integration of the HSA into the Country Development Strategy Statement and to A.I.D. objectives and capabilities, particularly when the HSA is performed by consultants who are not A.I.D. staff persons.

Related to this issue is the follow-up. Is A.I.D. satisfied with a document as the major output? To what extent should debriefings and seminars be held, in Washington or the host country, involving some combination of the investigators, AID/ Washington staff, AID/Mission staff, and host country personnel?

Finally, the coordination of Scopes of Work between the Mission and AID/Washington are vital to its success, the AIDs continuing focus on this issue is certainly appropriate. Consultants called upon to undertake HSAs should be made aware of the importance of this issue and the kinds of problems that can arise around it in the context of time deadlines, imperfect international communication, and bureaucratic interplay.

The Westinghouse study also makes the following recommendations with regard to the Scope of Work: (1) negotiate host country guarantee prior to undertaking the HSA (this may be less important when the HSA does not involve inputs from the host country, but in any case, the relationship of the host country government to the HSA should be made clear.), (2) account for cultural and academic differences that can affect schedule, budget and task completion, and (3) assess actual data needs and determine a viable approach to data collection and analysis (We believe that HSAs generally should use secondary data rather than undertaking primary data collection, and that consideration should be given to focusing more on analysis and less on secondary data accumulation by separating the accumulation from the analysis.).

3.2.2 Planning and Organization

While functionally distinct from the Scope of Work, this activity is often merged with the preparation of the Scope of Work in Asia Bureau HSAs. It includes such things as establishing operational definitions of objectives, developing work plans, design of methodologies, laying of political groundwork, staffing, team organization, management and administration, scheduling.

In large, long-duration studies such as those evaluated by Westinghouse, this stage looms large. In fact, Westinghouse thought it the key to successful implementation.

In smaller, short-term, more highly focused HSAs, such as the Asia Bureau tends to undertake, this function is less critical. It must be done of course, but with fewer elements and shorter time, there is less need for formal mechanisms. It is important that competent team leaders are identified and given authority to participate in team member selection, to schedule, and to define assignments.

3.2.3 Implementation

Different people work in different ways. Results are what count. Clearly, the project should be accomplished so as to meet the objectives set forth in the Scope of Work, as well as leaving good impressions in the field and meeting proper ethical standards.

Generally, more stress might be given to the leadership responsibilities, as opposed to intellectual, of team leaders. The Westinghouse study identifies the following tasks within the implementation stage: (1) ensure availability of logistical support on time, (2) monitor data collection efforts closely, (3) provide adequate supervision, (4) involve host country participants, particularly in analytic, strategic and recommendation formulation steps, (5) prepare U.S.A.I.D. report, (6) ensure host country completion of its report, or whatever host country input is called for, (7) translate U.S.A.I.D. report into host country language, when appropriate, (8) focus on educational aspects of process.

3.2.4 Follow-Up

This stage includes such activities as dissemination of findings, implementation of recommendations, continuation and updating of planning activities, and evaluations.

We believe that not enough attention has been paid to this stage of HSAs, as noted above in Section 3.2.1. This should be addressed during the Scope of Work stage.

Some suggestions made in the Westinghouse study include: (1) publicize the HSA and its outcomes, consistent with political acceptability (this may or may not be appropriate and should not be undertaken unless it is specifically called for in the Scope of Work), (2) evaluate the process and outcomes, (3) provide follow-on educational activities to participants, (4) encourage

implementation of recommendations, (5) provide follow-on loans, (6) support updating of plan and data. Many of these suggestions may be appropriate for larger HSAs but are not necessarily appropriate to short-term, focused HSAs.

3.3 Content of Guidelines

What is the appropriate content of an HSA? What data should be collected, and how should it be analyzed?

The answers to these questions depend on the purpose and scope of the HSA. A narrow focus on some particular issue or subsector requires different data than a broad review of the entire health/nutrition/population sector.

We believe that the answers to these questions lie for the most part in the many excellent documents that already exist, some of which we have reviewed here. We refer the reader in particular to the International Health Planning Methods Series, the Synchrisis reports, the World Bank documents, and as a useful summary of interrelationships, the Daly, Davis, Robertson paper in Appendix C. Another useful document series is the Country Assessments prepared by the U.S. Center for Disease Control for the Program on Control of Childhood Communicable Diseases during the 1980's.

Nonetheless, we summarize here some of the types of information that might be sought in a health sector assessment, following the organization given in the World Bank's Health Sector Analysis: Issues and Methods (Draft).

3.3.1 Demographic Characteristics

- | | |
|---|------------------|
| (a) Population Structure | <u>Ref.</u> |
| (1) age and sex distribution | |
| (2) dependency ratio (non-economically active) | |
| (3) ratio in high health risk group | |
| (4) geographic distribution | |
| (5) socio-economic-cultural distribution (e.g.,
income, religion, caste) | |
| (b) Population dynamics | |
| (6) birth rate and trends | |
| (7) death rate and trends | |
| (8) position in development transition from
high fertility/high mortality to
high fertility/low mortality to
low fertility/low mortality | |
| (9) fertility rates and trends, by | |
| - maternal age | |
| - birth order | |
| - birth interval | |
| (10) infertility rates, particularly in
isolated populations | (Caldwell, 1983) |
| (11) migration rates and trends | |
| - rural to urban, internal rural,
out and in-migration, refugees. | |

3.3.2. Health and Nutritional Status

Ref.

(a) Mortality

- | | | |
|------|--|--------------------------------|
| (12) | aggregate mortality and life expectancy at birth | World Bank |
| (13) | infant mortality | Rustein,
1983 |
| | - perinatal (28th week of gestation thru 7 day of life) | |
| | - neonatal (8-28 days of life) | Tafari, 1978 |
| | - post-neonatal (one month to one year) | |
| (14) | child mortality (1 thru 4 years) | |
| (15) | maternal mortality | Chen, 1974 |
| (16) | for each of the above, obtain: | |
| | - rates | |
| | - causes | |
| | - consequences | |
| | - trends | |
| | - seasonality | |
| | - differentials among sub groups | |
| | - cross country comparisons | |
| (17) | accuracy and underreporting, especially for | Puffer,
1983, 1981,
1973 |
| | - mortality rates and trends | |
| | - cause of death | |
| | - compare to other countries, including proportion illdefined, and medically certified | |
| (18) | analyze for underlying and associated causes | Puffer,
1983, 81, 73 |

(b) Morbidity

- | | |
|--|-------------|
| (c) Growth | |
| () Birthweight | Ref. |
| () Weight-for-Age | Sterling, |
| () Length-for-Age | 1978 |
| () Weight-for-Height | |
| () Food consumption | |
| () Data reliability and misclassification | Drake, 1984 |

3.3.3 Environment

- () Income patterns and employment
- () Educational levels
- () Housing
 - Density and Crowding
 - Piped Water and non-potable water
 - Sanitation
 - Housing condition
- () Food availability, relative to income
- () Food vs. cash cropping
- () Seasonality and Trends
- () By altitude, location, political jurisdiction
- () Existing Knowledge, Attitudes and Practices
- () Marital patterns
- () Climate
- () Pests, insects, etc.

3.3.4 Health Delivery System

- (a) Structure of policy and plans
 - () Existing policies
 - () Existing plans
 - () Health sector planning capacity
 - position in government
 - number of staff
 - education and background of staff
 - financial support
 - espoused methods
 - local and national planning units
 - () information systems
 - () health planning training programs
 - () constituency and support for planning unit by others
- (b) Process and Outcome of planning and policy-making
 - () actual method of planning
 - () involvement with political process
 - () coordination with other organizations
 - () actual method of evaluation
 - () success in translating plans into funded projects
 - () success in translating successful projects into national programs

- (c) Legislative, Judicial and Regulatory Environment
 - () licensing of personnel
 - () import policies and customs procedures
 - () food and medical controls
 - () standards for housing, water, etc.
 - () work laws

- (d) Health Personnel
 - () Physicians (number, distribution, training, speciality)
 - clinical practice vs. administrative position
 - local or expatriot
 - () Nurses (number, level of training)
 - () Pharmacists
 - () Community health workers (be age, sex, training)
 - () Indigenous practitioners (various types, by distribution)
 - () Dentists
 - () Unpaid village workers
 - () Communication and supervisory arrangements
 - () Training capacity
 - () Support personnel
 - () Innovative categories or arrangements
 - () Payments, Wages
 - () Use of family (hospital patients)

- (e) Health Facilities
 - () Referral hospitals, hospitals, health centers, field clinics, etc.
 - () Referral relationships
 - () Beds by population
 - () In construction
 - () Condition of facilities, age
 - () Cost of operation, maintenance
 - () Equipment and supplies, nature, cost, shortages
 - use of local materials
 - vehicles, spare parts, fuel
 - losses
 - () Utilities
 - power
 - water
 - other
 - () Ownership
 - government, church, other
 - () Location relative to population
 - () Hospital accupancy
 - () Staff per occupied bed
 - () Admissions per bed
 - () Average length of stay
 - () Surgical procedures
 - () Cost per stay
 - () Fees

- (f) Pharmaceuticals (an important sub-sector)
 - () Sales
 - prices
 - what drugs sold
 - in what amounts (doses, money)
 - by generic vs. brand name
 - trends
 - () Selection
 - how selected
 - trends in number of drugs
 - licensing or controlling agencies
 - () Procurement
 - channels
 - dependability of sources
 - performance of procurement system
 - payment methods
 - quality control or problems
 - undersupplied drugs (e.g., anti-malarial)
 - () Production
 - domestic vs. imported
 - exports
 - trends
 - () Storage and inventory control
 - losses
 - warehouses
 - centralization, decentralization
 - () Distribution
 - criteria used to allocate
 - distribution points and system
 - method of transport
 - cold chain
 - regularity
 - () Utilization patterns
 - mix of prescription and over-the-counter
 - by therapeutic class
 - advertising
 - Is non-compliance a problem?
 - Is over or under-prescribing a problem?
- (g) Health Programs
 - () local and national outreach and health programs
 - () objectives
 - () structure, relation to other parts of system
 - () catchment area
 - () coverage, by risk level
 - () main services and activities
 - () technology
 - () costs, capital, operating
 - () source of financing

- (h) Economics and financing
 - () annual expenditures to GNP, per capita, and by
 - private vs. public
 - sub-sectors
 - geographically
 - type of disease category
 - type of facility
 - program
 - sub-groups of population
 - () under-financed areas
 - () potential cost-savings
 - () transfer payments
 - () underspending
 - () budgeting and accounting procedures
 - () revenues: fees, general budget, external grants
 - () insurance programs
 - () future problems

- (i) Management and Information Systems
 - () management structure, style
 - () decision-making at different levels
 - () training of managers
 - () communication network
 - () centralization vs. decentralization
 - () data collected routinely, used routinely
 - () value attached to data
 - () inappropriate data
 - () appropriate staff
 - () standard taxonomies
 - () data processing equipment

- (j) Process of care
 - () accessibility to system
 - () contact when care needed, with what part
 - indigenous, local health worker, etc.
 - () recognition of need for care
 - () provision of needed care
 - () for various types of conditions
 - simple acute care
 - prenatal care
 - infant and child care
 - chronic conditions
 - complicated acute care
 - mental health
 - problems not recognized in Western lexicon
 - () for various types of functions
 - screening
 - surveillance
 - education
 - diagnosis
 - treatment
 - follow-up
 - () by risk level, age, distribution, provider type.

(k) Outcomes of Care

Special studies are generally needed to establish that an expected positive occurrence is in fact an outcome of some structure and process. For example, it takes an evaluation to establish that a reduction in low birthweight babies was in fact the outcome of a supplemental feeding program for pregnant women. The performance of the health delivery system, or some part thereof, must be judged by the outcomes it produces compared to its costs.

3.4 On the Problems of Broad Assessment and of Making Recommendations

3.4.1 The Importance of Breadth

Health status data helps us to perform a screening function, in that it helps us to identify potentially important health problems. The demographic and health status data outlines above in Sections 3.3.1 and 3.3.2 are only a fraction of the indicators we might find and use to this end. But it is clear that such data by itself does not tell us which problems we should tackle nor how, for such indicators, in themselves, provide no information on anticipated impact.

Similarly, descriptions of the health delivery system helps us perform a screening function. By knowing about the structure, process and performance of the system, we can identify potential deficiencies. But to assure that they really are deficiencies relative to all other aspects of the system usually takes a more careful analysis of the interrelationships with all other components of the system. In this sense, it is a screening tool; it turns up possible pathologies which generally need more thorough diagnosis.

The major pitfall with such screening methods is not a lack of depth in every area, but rather the potential of leaving out some areas altogether. Thus, screening techniques need to be broad before they are deep.

That is the major concern with HSAs intended to provide a sweeping review of the health sector; that they will forget entirely to consider some important component of the sector.

In fact, that may well be a problem with past HSAs in the Asia Bureau. In measuring health status, HSAs typically ignore issues of mental health and other stress related problems, in spite of the fact that there is ample evidence that this can be a major problem in developing cultures. It is appropriate to consider this area even if it is not an AID priority because other AID programs may impact it, negatively as well as positively.

The problem of leaving out major components may be even more severe in the descriptions of the health delivery system. Four areas that are often not described or described inadequately are:

- (1) health care financing
- (2) the cost and effectiveness of hospitals
- (3) the pharmaceutical system
- (4) the indigenous system(s), which often is related to the parts of the pharmaceutical system.

The sweeping HSAs should first concentrate on making sure they are considering the entire health sector before developing in-depth indicators for some portion.

3.4.2. Making Recommendations

Recommendations for action carry with them the implied prediction that the recommended action is likely to achieve some desired result. In formal systems, such recommendations are supposed to identify the very best alternative from among all possible alternatives according to some criteria (such as cost-effectiveness, internal rate of return, etc.). In practice, most are happy if it's pretty good, or even if it works at all, because real success is difficult to achieve, particularly in the difficult environment of most developing nations. Many more projects fail than succeed, as has been amply demonstrated by numerous AID evaluations of past projects.

Thus, one problem with recommending action is that the probabilities are against the recommendation. Experienced investigators and consultants are aware of this, and surround recommendations with conditions and caveats.

Other problems face HSA recommendations. Data is usually not all that accurate, and worse, of unknown quality. Time is short with little opportunity to savor the ideas, and mentally test possibilities. Possibly most important, it is difficult to find small evaluated field tests in the local setting on which to base recommendations. So cross-cultural generalizations are made, both about the success of an action at a pilot level, and about its ability to be scaled up to a national program.

These considerations have led us to the comments made earlier, in Section 3.2.1, on the importance of paying more attention to the logic behind recommendations for action. New evaluation approaches, such as Reflection-in-Action (Drake, et al, 1984) and the Structure-Process-Outcome model well described by Donabedian (Donabedian, 1973) provide guidance on methods to establish such connections. After all, it is the "bottom line" of the HSA.

APPENDIX A

Abstracts of Health Sector Assessments

This appendix includes abstracts of 31 complete or partial health sector assessments performed for 16 different Asian countries. These documents were obtained by a literature search of A.I.D. libraries and document centers, and from personal collections of A.I.D. staff. They are not meant to be an exhaustive collection of such studies in Asian countries, but rather a representative sample.

The collection includes health/population/nutrition assessments from Burma, China, India, Indonesia, Korea, Pakistan, Sri Lanka and Thailand. All of the assessments were sponsored by U.S.A.I.D. except for China (World Bank) and one of the five India studies, which was for the Ford Foundation. Three of these studies were not strictly health sector assessments: the Pakistan study was a baseline study for a large primary health care project, one of the India studies was part of an A.I.D. research effort, and the Indonesia study was also part of a research effort.

In addition, three special series are represented: DEIDS reconnaissance studies are included for Korea, Laos, Pakistan, Philippines, and Thailand; Synchrisis studies are included for Bangladesh and Burma; and WHO Water Supply and Sanitation Reviews are included for eleven countries.

Burma - 1984

(Ref: Review of Selected Diarrheal Disease Mortality Reduction Components of the Socialist Republic of the Union of Burma's (SRUB) Community Health Program. Le Sar, J. W. The Pritech Project, Management Sciences for Health. May 19, 1984.)

A three-person team visited Burma for two weeks to review the diarrheal disease mortality reduction components of the SRUB's Community Health Care program. The report focuses on child mortality and diarrheal disease in Burma, looking at status and the Ministry of Health's policies, programs and plans.

The report reviews several small area studies as well as national statistics and concludes that significant improvements have been made in infant and child mortality and in incidence of diarrhea.

With respect to the Ministry of Health, the report gives a brief review of its history with regard to child mortality and diarrheal diseases, current policies, programs and plans, reviews training programs for health workers, and describes the management of diarrhea disease control. It then discusses strengths and weaknesses of the current efforts, concluding that this well run effort might be improved with a home-based approach to diarrhea case management, measles vaccinations, better coverage of pregnant women with tetanus toxoid, and selective improvements in training and monitoring.

China - 1984

(Ref: China, The Health Sector. Jamison, D. T.; Evans, J. R.; King, T.; Porter, I.; Prescott, N.; Prost, A. The World Bank, Washington D.C., 1984.)

This report is based on the findings of a World Bank rural health and medical education mission that visited China for four weeks in 1982. Thirteen persons were present for all or part of the mission. A draft of the report was submitted to the Chinese government in September 1983; discussed with the government in February 1984; with this version of the draft revised in light of government comments.

The report presents a comprehensive review of the health sector, drawing on extensive references and previous studies. Its scope includes: (1) a description of the population, including trends in population size and fertility levels, trends in life expectancy and infant mortality with regional variations, changing disease patterns, and changes in nutritional status; (2) the health sector and its financing, including policies, organization, personnel, facilities, pharmaceuticals and equipment, financing and expenditures, and impact of health resources; (3) food, water and sanitation, and population policies; (4) major issues (services for the rural poor, the emerging problem of chronic diseases, medical education). A large number of statistical tables are presented.

After the general review, the paper focuses on what it believes are the two major health issues facing China, namely, (1) reaching the large number of remote rural poor that have not shared in the general progress in health status experienced by the rest of China's population, and (2) finding cost-effective solutions to the chronic health problems (similar to those in the U.S.) that have now emerged as the primary type of health problem facing most of the population.

India - 1984

(Ref: India Health Sector Analysis. Walsh, J. Pritech Project, Management Sciences for Health. August 1984.)

This A.I.D. sponsored project had the following scope of work: (1) review all background papers on India's health sector prepared by A.I.D. during the previous three years, and (2) then write a health sector analysis based on that review. The document review was supplemented by interviews with U.S.A.I.D. and Government of India (GOI) officials.

After a review of economic and vital statistics, including geographical differences, the author presents an especially cogent review and discussion of infant mortality. Levels and causes of neonatal and postneonatal mortality are given along with an appendix summarizing the causes and consequences of prematurity and low birthweight.

A brief review is presented of: GOI health budget, infrastructure and programs, U.S.A.I.D. funded health programs, and voluntary agencies. Eight major deficiencies in the health system are identified, including: (1) lack of leadership, management and public health orientation by doctors; (2) inadequate skills among peripheral health providers; (3) inadequate information systems; (4) inadequate drug and vaccine supplies; (5) lack of cost-effective interventions for measles, respiratory infections, prematurity and several other important causes of mortality; (6) lack of clear provider orientation to highest risk group; (7) poor utilization by highest risk group; (8) inadequate supervision at all levels. Recommendations are made for correcting the deficiencies.

India - 1981

(Ref: Mortality of Infants and Children under 5 Years of Age in India. Puffer, R. R. October, 1981.)

This paper was one of several sponsored by U.S.A.I.D./India in preparation of a more comprehensive health sector analysis. It provides an extensive review of numerous small area studies that provide information about infant and child mortality in India.

Not only does the document synthesize diverse studies, showing general patterns and trends, but it delves deeply into the problems associated with most mortality data. Drawing heavily upon, and comparing the Indian data to her study of childhood mortality in the Americas, the author goes much further into the meaning of the data than most other health sector assessments.

For example, the complexity of the interaction between measles, diarrheal disease, nutritional deficiency and respiratory conditions is discussed. In the Americas study, pneumonia and bronchopneumonia were found as complications (and usually as the terminal cause) in 80.2% of the deaths due to measles. Measles was found to be the underlying cause of death far more frequently than it was reported, in fact 81% more. Furthermore, the underreporting was greater in the first year of life and in rural areas. Deaths with measles as the underlying cause were complicated by diarrhea 50.4% of the time and by nutritional deficiency 59.3% of the time, although these complications were generally not reported in official statistics. Similarly, causes of neonatal mortality are not clearly reflected in official statistics. "Perinatal conditions as causes are very important for understanding the factors responsible for excessive neonatal mortality. Low weight births are the consequence of maternal infections and conditions (such as malnutrition), and other complications of pregnancy, while for others, immaturity is a contributory cause."

The author concludes that the India studies "indicate the need for assignment of underlying causes according to the International Classification of Diseases in order to gain a better understanding of the causes of neonatal mortality and comparability of results." A WHO Center for Classification is proposed, along with studies of underlying and associated causes of death. Such studies are necessary for proper evaluation of health interventions, and could be the foundation of a satisfactory vital statistics system. In addition, the author recommends that since increases in birthweights are essential for any major reduction in infant or child mortality, accurate and comparable data on birthweights should be collected.

India - 1974

(Ref: Health and Nutrition in India: Recommendations for Ford Foundation Support. Gwatkin, D. R. January, 1974).

This is a private document written for internal use of the Ford Foundation. It presents a comprehensive review of nutrition and health status in India, and the theoretical impact on individuals and the national economy. It discusses a variety of possible solutions to health and nutrition problems (such as improving agricultural production, income, sanitation and living conditions, health and nutrition education efforts, campaigns against communicable diseases, food subsidizations and meal programs), and then describes the existing health and nutrition programs operating in India. It also discusses the government's strategic planning efforts in health and nutrition.

Finally, the report discusses reasons why the Ford Foundation should be interested in health and nutrition in India, and discusses ways in which it could best do so. This discussion is clearly related to the Foundation's desired direction, resources and capabilities.

The author is very careful about moving too quickly from identification of a health problem to a recommended solution. For example, in discussing the relative contribution that curative hospital care and preventive outreach programs might make to improvements in health status, he is careful to point out that in India there simply is no evidence to support a conclusion in favor of either approach. This same caution can be seen in his statement "To demonstrate the importance of an area is one thing; to show that the Ford Foundation can make a useful and unique contribution to it is something different." (p. 97).

India (Maharashtra) - 1971

(Ref: Health Sector Analysis, Maharashtra, India.
Landes, J. H. June, 1971. A.I.D. Library #IN-
614.0954-L256.)

This document describes the health status and programs of the Indian State of Maharashtra (which contains Bombay), and analyzes their effect on the State's development. It is not clear from the document whether the author visited the field, although this is probably the case, or obtained his data from documents in the U.S., nor is it clear for whom the document is intended.

The document describes health status (including topography and climate, people, demography, housing and sanitation, education, nutrition, food production, food intake, resources, and epidemiology), state health programs (including health workers, facilities, state programs in family planning, nutrition and disease prevention, and health expenditures), international assistance (from U.S.A.I.D, Foreign Disaster Emergency Relief, WHO, UNICEF, private foundations, and voluntary organizations such as CARE), health planning capacity, and U.S.A.I.D. development goals. Finally the paper analyzes the contribution of U.S. assistance, and identifies and discusses five key health problems facing Maharashtra.

An important lack of data about foreign assistance existed because contributions were not broken down by individual state. All foreign assistance flows through the national government and accounts are not available for expenditures by state.

India (Mysore, Punjab)

(Ref: Functional Analysis of Health Needs and Services.
Reinke, W. A.; Taylor, C. E.; Parker, R. L. Dept. of
International Health, Johns Hopkins University,
Baltimore, no date. A.I.D. Library #IN-614.0954-R372a.)

This paper reports a survey of the Indian states of Mysore and Punjab, with the primary purpose of demonstrating the application of a health assessment methodology which the authors call "functional analysis." They define eleven semi-independent functions of community health services that relate health needs to health resources. The methodology performs community surveys to measure health needs and to quantify health resources, activities and services, and then analyzes the relationship between the needs data and resources data using the functions.

The eleven functions include: (1) medical relief, (2) personal preventive services, (3) maternity services, (4) family planning, (5) communicable disease control, (6) environmental sanitation, (7) mass population control, (8) mental health, (9) general health education, (10) internal administration, (11) coordination and education for consumers and external groups. The first four are consumer initiated, while functions 5-9 are provider initiated.

Data on needs and services are obtained with a series of surveys. Most important is a household survey, in which a carefully selected sample of households is visited and revisited fortnightly for the duration of the study. A two-week work sampling of health centers is done to determine the cost of performing the eleven functions, for specific diagnoses and sub-functions within functions. A work sample is also done on health center workers performing field visits. A patient flow survey to determine what happens to individual patients as they go through a health center visit, and helps to relate patient characteristics to the content and quality of health center services. The household survey can be backstopped with a review of patient records.

Analysis of the data for Mysore and Punjab aimed at answering the following six questions: (1) What are the community health needs, (2) What is the quantity and quality of health services available, (3) How are the health services currently utilized, (4) What activities are actually occurring in the health centers, (5) What are desirable and practical alternatives for the organization of health centers, and (6) What are implications for training of health workers?

Over a 12-month period, data was collected in three villages within each of two health center areas (of 57,000-87,000 population each) for each state. The community survey included about 25 households in each village visited fortnightly throughout the year. These fortnightly interviews provided information about health problems and action patterns extending over the full course of a given illness.

The time to complete the various parts of the study has been estimated as follows:

Procedure	Description	Estimated Person-Days Required	
		Lower-Cost	Alternative Complete Survey
Regional and Village Assessment	4 areas, 300 villages	4	4
Village Leader Opinions	4 areas, 36 villages	18	18
Patient Records	One year of data	12	20
Household Surveys	400 households total	40	60
Work Sampling -Center	4 centers, 10 days	40	40
Work Sampling -Field		40	80
Patient Flow	1200 patients, 5 days	0	100
Total person-days for data collection		154	322

Conclusions are drawn from the Mysore and Punjab data more for illustrative purposes in this paper than for actual use.

Indonesia - 1983

(Ref: Infant and Childhood Mortality in Indonesia. Puffer, R. R. Paper presented to a Seminar on October 19, 1983 at the National Institute for Health Research and Development, Dept. of Health, Jakarta, Indonesia.)

This is not strictly a health sector assessment, but rather an analysis of infant and childhood mortality in Indonesia, followed by recommendations to improve the situation. It is an excellent example of a thorough, thoughtful and practical analysis of an important aspect of the health sector.

After summarizing relevant data from the Central Bureau of Statistics, it summarizes causes of mortality and morbidity as discovered in the Indonesian Household Survey of 1980. It reviews prospective studies in two subdistricts that established a sound method of collecting data on births, deaths and cause of death. Various hospital based studies are reviewed, which provide particularly interesting information on birthweight and its relation to infant mortality. The results from all of these studies are compared to study results from other countries, especially the author's work on childhood mortality in the Americas, and are discussed in depth.

Five recommendations are made: (1) additional prospective studies of births, deaths and cause of death; (2) pilot projects in a new vital registration program; (3) longitudinal research throughout the entire prenatal and infant period in order to better understand causal development; (4) possibly another household survey in 1990 using the International Classification of Diseases to establish both underlying and associated causes of death; and (5) an education and training program in health statistics.

Korea - 1974

(Ref: Towards a National Health Strategy for Korea. Scheyer, S; Epstein, R.; Norris, J. Family Health Care Inc. June 4, 1974. A.I.D. Document #PN-AAF-344. A.I.D. Library #KS=614.095195-F198.)

The purpose of this A.I.D. sponsored study was to "focus on the health delivery systems in Korea, analyze these systems, and perform a design and cost evaluation of 2 or 3 field experiments." However, by the end of the study, the team concluded that it could not recommend specific field experiments. The study applied three criterion--financial, managerial, and provider capability--to the existing health system in order to determine its institutional structure and capacity.

The following outline summarizes the type of information sought:

A. Health Service Delivery Capacity

1. Types of health workers (Physicians, Nurses, Pharmacists, traditional healers such as herbalists, acupuncturists). Their geographical distribution and training. Organizational practices of physicians. Training of physicians.
2. Institutions. Hospital and bed growth. Industrial clinics. Who controls institutions.
3. Accessibility, by income, location, class, employment, risk level.

B. Cost of Health Care

1. Per capita expenditure. Cost per unit. Affordability.
2. Financial viability of health institutions.

C. Health Care Financing

1. Insurance. Who pays? Coverage. Cultural view towards insurance. Financial viability of programs. Public versus private.

D. Public Policy, Laws, Allocation of Health Resources

1. Licensing of Physicians, institutions.
2. Planning institutions.
3. Government funding (Workman's compensation, social security).

The study team contained three persons, spent 43 working days in-country, and interviewed 63 people. Interviews are summarized in an appendix to the report.

Korea - 1973

(Ref: Preliminary Reconnaissance Sector Report, Health Sector, Korea. Alden, J.; Howard, L.; Dalton, J. ASIA/TECH/SPP/AID Washington, November 22, 1973. A.I.D. Library #KS-614.095195-A265.

This two week study by a three person team from A.I.D. Washington was in response to a proposal by the Korean government for funds to support construction of county hospitals. USAID/Korea decided to look at the need for and feasibility of low-cost rural health delivery systems. The Scope of Work calls for:

- A) Examine possibilities for productively extending Korean Health Services through the introduction of low-cost, integrated delivery systems,
- B) Assess Korean interest in experimental approaches to health delivery systems,

C) Identify the principle issues to be resolved, the intermediate analysis to be carried out, and the other essential steps that should be taken to design a project leading to the execution of a loan agreement.

Prior to the field visit an extensive literature search on Korea's health sector was undertaken, and interviews were held with persons knowledgeable about Korean conditions. Several excellent reports were available describing the Korean health sector. In Korea, the study team interviewed widely, journeying to 7 of Korea's 9 provinces. During the provincial visits, the team focused on looking at experiments in health/medical care insurance, and on the existing rural health systems.

The study identified and discussed five crucial health policy issues: (1) the need for a health planning capability that can achieve relatively quick results; (2) how to achieve country-wide health care at a cost compatible with other Korean development objectives; (3) efficient patterns for delivering health care, vis-a-vis urban and rural, private and public; (4) how can cost to consumer be reduced; (5) how to reach the ambitious but challenging family planning goals. It also made a series of nine recommendations.

In considering these questions, they looked at the following kinds of data: general health status; condition and utilization of existing health facilities; existing private and public delivery systems, including indigenous and experimental (coverage, costs, outputs); health policy, policy-making, and planning; effect of social organization and administration on health delivery; government and family budgeting on health; pharmaceuticals; health insurance; family planning programs, nutrition programs; potable water; relation to educational system; health research activities; health data resources.

Pakistan - 1984

(Ref: Pakistan Baseline Health Status Survey, Primary Health Care Project. Westinghouse Health Systems, Columbia, MD. October 1983-April 1984.)

The Pakistan Primary Health Care Project is a joint venture of the Government of Pakistan (GOP) and U.S.A.I.D. to improve provision of primary health care services in the rural areas of the country. It is a 5-year, \$20 million project. The Baseline Health Status survey, undertaken at the beginning of the project, will be used as the basis against which to measure program impact.

Data is collected on seven types of variables:

- (1) Census/identification variables: province, district, village, household number, respondent, and for each respondent, family size, name, sex, age, marital status, education, occupation.
- (2) Antenatal: perceived need by mothers to see medical person during pregnancy, perception by mothers of appropriate person to see for delivery, last delivery (by whom, where, when, TT given or not).
- (3) Immunization: coverage with WHO recommended vaccines, person administering vaccinations, maternal knowledge of immunization.
- (4) Oral rehydration: knowledge of ORT, did child have diarrhea in recent past, actual practices and intended practice for treating diarrhea.
- (5) Morbidity/information on Outreach: who has been sick during reference period, from where care sought, nature of symptoms/sickness, who treated, nature of treatment, was household visited by medical personnel, duration of sickness.
- (6) Mortality: children born alive but now dead, age at death, sex, who was consulted for care, signs/symptoms.
- (7) Nutrition: weight, height, knowledge (e.g., breastfeeding, weaning).

The data is analyzed according to: age and sex, socio-economic data, household size, literacy, type of potable water and sanitary facility, electricity, contraceptive usage, type of health care sought, and cross-tabulated by: education status with number of children, contraceptive usage, mother's knowledge of ORT, etc., nutritional status, and immunization; immunization rates relative to distance from health center; health center utilization rates; and nutritional status.

Sri Lanka - 1980

(Ref: Health, Population and Nutrition Sector Review for Sri Lanka - 1980. Lushman, K. P.; MacCorquodale, D. W.; Brady, J. R. July, 1980.)

This sector review was performed by three A.I.D. staff persons during a three week visit. Its purpose was to help in resolving issues raised concerning the proposed A.I.D. Country Development Strategy Statement for 1982. It attempted to assess: (1) national health, population and nutrition (HPN) policies and priorities, (2) current activities and problems, (3) apparent gaps in meeting HPN needs, and (4) possibilities for U.S.A.I.D. assistance. Less attention was given to population because a UNFPA needs assessment team had just visited Sri Lanka. Similarly, A.I.D. had an ongoing nutrition assessment activity, but recent controversy over government food subsidies made it essential to deal with certain nutrition issues.

The report considers data limitations, current goals and priorities and resource allocation problems. A health profile contains data on population trends and dynamics, epidemiological patterns, age, socio-economic status, ethnic group, and most vulnerable group. The most critical health problems are identified as: malaria, high-risk pregnancies, diarrheal disorders, and malnutrition. It is opined that the universal availability of modern contraception would be the most cost-effective strategy for improved health.

Gaps in various program areas are discussed at length in relation to potential U.S.A.I.D. assistance. This is an extensive review and relates HPN issues in Sri Lanka directly to U.S.A.I.D. and its potential impact.

Thailand - 1983

(Ref: Thailand Health Sector Assessment. Benjamin, R.; Donaldson, D.; Piyaratn, P.; Regli, S.; Rogosch, J.; Valayasevi, A. U.S.A.I.D., Sept. 5-Oct. 5, 1983.)

This A.I.D. sponsored study was aimed at identifying priority areas wherein future A.I.D. assistance would have the most impact.

After a review of general country characteristics, the structure of the public health system (national policy, community participation, rural health delivery, and public and private financing), and trends in fertility, mortality and morbidity (including degree of data reliability), an extensive review of health, nutrition and water/sanitation programs is presented. Programs on primary health care, nutrition, diarrhea and immunization are discussed in depth, each discussion covering the nature of the problem, current efforts to solve it, problems and constraints with those efforts, donor assistance, and recommendations. Water supply and sanitation is discussed in a separate section, dealing with piped and non-piped water and sanitation. Constraints on effective solutions are discussed in each of these areas.

Finally a brief description is given of Thailand's health planning and management, health financing, and health and medical research. A variety of recommendations are made in this regard that would be appropriate for A.I.D. sponsorship.

This is an extensive, detailed, and well-organized report with ample references.

DEIDS Reconnaissance Studies

(Ref: Korea - March 1973. A.I.D. Document # PN-AAB-583, KS-614-A512;
Laos - Oct., 1974. A.I.D. Document # LA-614-A512;
Pakistan - Aug., 1972. A.I.D. Docu. # PK-614-A512;
Philippines - April, 1973. A.I.D. Docu. # PN-AAB-568, RP-614-A512;
Thailand - Jan., 1973. A.I.D. Docu. # PN-AAB-567.

DEIDS (Development and Evaluation of Integrated Delivery Systems) is a project which sought to establish through detailed planning, trial, and evaluation a practical program for the development of an integrated health delivery system through which maternal and child health, family planning, and nutrition services could be made available to the majority of a population in a predefined, predominantly rural area. DEIDS projects were carried out in numerous countries and consisted of three phases--reconnaissance, detailed planning, and pilot project operations--and could last up to 8 years. The program was carried out by the American Public Health Association under a contract from U.S.A.I.D.

The purpose of the reconnaissance studies was to visit a nominated country and to ascertain jointly with that country's officials the feasibility of a DEIDS project in that country. The reconnaissance studies gathered information about disease patterns, health services, local resources, cultural aspects, community involvement, potential for integration of various parts of public health, opportunities for innovation, existing and potential staffing, training, supervision, emphasis on preventive services, outreach, cost and evaluation. Often, the most important criteria for judging feasibility appeared to be the understanding and commitment of key officials.

Syncrisis: The Dynamics of Health

(Ref: Volume XVII, Bangladesh Loomis, S. A. Office of International Health, PHS, DHEW. March, 1976. A.I.D. Document # PN-AAC-135.
Burma. Liberi, D. M. Dec., 1979 (draft).)

These are two examples of the Syncrisis reports prepared by the Office of International Health. What is unique about the Syncrisis reports is that they attempt a comprehensive description of the health sector of a country based only on published information available in Washington D.C., without a trip to the country itself. The published information is generally supplemented by interviews with "old hands" familiar with the country in question.

As noted in the preface to the Bangladesh study, the Syncrisis studies "are intended to acquaint the generalist in development administration with (1) interventions in the health system of the country which will contribute to socioeconomic development, and (2) the effects of other developmental activities in health. To the specialist in comprehensive health planning, they will provide both a preliminary document for his work, and an indication of the sources of information available for health planning in that country. For the specialist in a specific aspect of health care, Syncrisis studies are intended to provide insight into the relationship of the subsystem with which he is concerned to the comprehensive health system and the larger society. For each of these professionals, Syncrisis studies are intended not as a final definitive document, but rather as a point of departure from which their own professional skills can be applied to develop activities that will benefit the country."

The general organization of the Bangladesh study is: Background Information (geography, climate, history, government, economy, transportation, communication, education, housing, culture), Population (distribution, migration, age, sex, ethnic composition, marital status), Health Status (mortality, morbidity, communicable diseases), Nutrition (deficiencies, programs), National Health Policy and Administration, Health Services and Programs (government, private), Population Programs (fertility, past programs, existing situation, external assistance), Environmental Sanitation (sewage, manpower, food-sanitation), Health Sector Resources (health manpower, health facilities, traditional medicine), Financing Health Care, Donor Assistance (multilateral, bilateral, non-governmental organizations).

The draft Burma study is similar, but with some differences. For example, the Background section also contains information on religion, status of women, and personality; the Health Status section information on collection and registration of vital statistics; the Environmental Sanitation section information on water supply, solid waste, industrial pollution, and land defoliation; and the Nutrition section information on diet. There is no Population section in the Burma draft (it is included in the Background section), but there is a section on the Burmese Concept of Health and Illness which includes discussion on Buddhism and Supernaturalism, and appendices on the History of Burma and Its Present Political Structure, Economic Factors Affecting Burma, and the Burmese Personality.

The Syncrisis studies generally took 3 to 4 months of effort, and often included a more junior person in literature search and review and a more senior person in analysis and writing. The cost in the early 1970's was roughly \$15,000-20,000 per country report.

WHO Rapid Assessments of Water Supply and Sanitation

(Ref: Bangladesh, Burma, Fiji, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Solomon Islands, Western Samoa.)

These eleven studies were all done by the respective governments in 1978 and 1979 in response to a WHO request in preparation for its Decade (1981-90) on International Drinking Water Supply and Sanitation. All follow the same format.

They provide data on present and projected coverage of the population (urban and rural) with various types of water and sanitation systems. (These systems differ from one country to the next.) The operation of systems is discussed, along with the performance of various agencies responsible. This generally includes data on expenditures, personnel, information gaps and planning. Finally, prospects for accelerated sector development are discussed along with recommendations. Most of the studies focus on the types of systems and coverage, rather than on their effect on health.

APPENDIX B

"Health Status Assessments"

Paper by P. I. Ahmed and A. Kolker

HEALTH SECTOR ASSESSMENT*

Paul I. Ahmed, M.A., L.L.B.

Aliza Kolker, Ph.D.

Introduction

The decades since World War II have witnessed growing concern in developing countries about upgrading their health services, and a reciprocal desire among developed countries and international donor agencies to provide technical and financial assistance for that purpose. A growing recognition of the inefficiency and waste resulting from haphazard programming and from uncoordinated aid has led to the development of several methodologies for assessing the health needs of developing countries and for developing rational, integrated health programming.

In this paper we analyze a major methodology for health planning, Health Sector Assessment (HSA), employed principally by the United States Agency for International Development (AID). Although health planning techniques have been used by international agencies and national governments for at least two decades, the concept of Health Sector Assessment as a specific methodology is relatively recent (for other methodologies see, for example, Chasse, 1975a & b; PAHO/WHO, 1965; Ahmed, 1976; Cutierrez, 1975; IBRD, 1975). The purpose of this paper is to briefly describe the goals and design of the Health Sector Assessment and to explore its uses and limitations as a tool for health planning. The paper is based largely on the author's personal familiarity with this and other health planning methodologies, on internal papers and memos circulated by the Agency for International Development, and on informal interviews with health officials in international agencies.

Health Sector Assessment is conceptualized as a tool for coordinated and integrated planning directed toward improving health conditions in developing nations. It involves a process of gathering, organizing, and analyzing data on the health policies and resources of a developing country for the identification of possible solutions to its health problems. The purpose of a health sector assessment is to develop a strategy or set of strategies for health improvement in developing countries. As mentioned above, the concept of Health Sector Assessments as a specific methodology is relatively recent; it has only been used in a few Latin American and Middle Eastern countries since 1972. The demand for health sector assessment arose from the need for long term planning, on part of the donors, international financial communities, and the countries themselves.

Several factors have converged to create a need for integrated, long-term planning in the Third World. These factors include:

- . More demand for health services;
- . A scarcity of resources;

* The authors are deeply grateful to Joseph Hackett of FDA who shared a communication on the description of Health Sector Assessment. They are also grateful to Dr. Joseph Davis for an internal memo entitled "Guidelines for Health Sector Assessment." Both documents have been amply used in the development of this paper. In addition, they are grateful to Nicholas Fusco of Westinghouse Health Systems and to Dr. Kenneth Farr for reviewing and commenting on earlier drafts of this paper.

The views presented in this paper are those of the authors and not necessarily those of the institutions to which they belong.

- . The transfer of new technology, vaccines, and drugs; and
- . Strong donor interest in providing preventive health services.

Congressional and administrative mandates in the United States have reflected these factors and have created the climate for this new approach. President Carter recently reemphasized the U.S. policy in his statement of May 2, 1978, announcing a program to strengthen U.S. participation in efforts to overcome disease and ill-health. The President stated: "Our efforts will be based on the following principles: -- a basic minimum level of health, nutrition and family planning services should be available to the world's poor, whether they live in rural areas or urban slums. Developing nations can eventually meet their own needs if we assist them in strengthening their institutions and building their own health systems. Community-based health care, including the use of community resources and the training of appropriate health personnel as near as possible to where they deliver services, is the most effective means of achieving the standard of health we desire for all people." The above affirmation of goals of U.S. international health policy by the President has led to active involvement of all of U.S. international health agencies in long term planning, this interest is also expressed in terms of interest in development of new methodologies for health planning. Assessment is one of the tools the USAID has used for long term planning. In order to understand its usefulness to planning, we need to know its purpose, methodology, and the nature of its final product.

The first section of this paper will describe the goals and design of this method.

The Concept of Health Sector Assessment

Health Sector Assessment, designed for efficiency and comprehensiveness, involves a team effort. It is important that members of the host country play a large part, since, ideally, the planning and design of future health programs will evolve out of the HSA.

The ultimate goals of Health Sector Assessment are:

- . To provide a data base for programming AID support to the health sector;
- . To contribute to the improvement of the country's institutional capability in health planning by (a) structurally analyzing health sector problems and alternative solutions, (b) assessing the country's health planning requirements and developing estimates of the manpower and resource requirements needed to accomplish those requirements;
- . To establish a basis for national and AID investments within the health sector.

In order to accomplish these goals certain intermediate objectives must be met. Most of these are accomplished in the host country in the process of the assessment. These are:

1. Clarify the nature of existing health problems within the total social, economic and political context. (In particular, the political climate and the human and technological resources of the country appear relevant to the HSA; see Westinghouse, 1978).
2. Place in clear focus the important interrelationships of the health sector with the social and economic sectors.

3. Choose among several HSA models the one most appropriate to the host country's situation (more on the various models follows below).
4. Help to elaborate alternative health strategies in a format that constitutes a basis for choice and that is useful for decision-makers.
5. Promote and facilitate implementation of health development programs in high-priority areas.
6. Identify program areas requiring well-managed development projects. Such areas may include existing programs, possible revisions of those, and areas not yet addressed by existing or planned programs.
7. Strengthen national capabilities in health planning, in project formulation, and in program evaluation.
8. Identify program areas and projects for which foreign assistance may be forthcoming (e.g., from bilateral agencies, from the International Bank for Reconstruction and Development, from the United Nations Development Program, from the World Health Organization, or from the World Food Program).

It should also be noted that the idea of developing and implementing a health sector program that extends over several years and integrates multiple projects, is another possible objective of a Health Sector Assessment. Ideally, such a program should lead to more efficient utilization of resources in the service of national health goals. Long-term planning attempts to avoid the pitfalls of uncoordinated, haphazard health projects that in the past have sometimes diminished the effectiveness of foreign assistance programs.

The Initiation of an Assessment

The intricate processes that precede the Assessment offer insight into both the function and limitations of the method. What follows is a brief description of these processes.

The Director of the USAID mission and his technical staff are responsible for the first step in that it decides to provide assistance to a particular country. The kind or extent of health assistance that might be provided is determined on the basis of suggestions formulated by the Country health Ministries. With the aid of the technical staff's advice the mission Director develops a plan concept (PID for an aid program). The PID is then approved in Washington, after which the Mission Director can make a decision to implement the project on site, provided the cost of the project is below specified levels. If the costs exceed a specified level the project is developed in detail, submitted to review committees in Washington, and approved again, before implementation.

It is important to keep in mind that political interests of the United States Government and those of the government of the receiving country underlie and determine the total amount of assistance that can be given or absorbed at any time, the nature of the projects which might be undertaken, and the allocation of resources and sites of proposed projects within the receiving country. Following are a few of the factors that must be considered in determining what health projects are suggested:

1. What has the host government formally requested or indicated through informal discussions? Does it meet the AID legislative mandate of helping the poor majority? Is it in areas of AID priority such as MCH services, integrated health delivery, environmental sanitation etc?

2. What would be the receptiveness of the host government to the idea of any American influence over its health policies?
3. What is the attitude of the existing economic leadership toward partial support of potential projects in the initial stages of growth and full support for maintenance in future years?
4. What are the political or economic motivations of the central government? Has the government developed a sincere interest in the health of a segment of the population? Does the government believe that improved health conditions of that segment will be advantageous to the economic development of the entire nation? What pressures are being brought to bear on the government to solve certain countrywide health problems? Does the government require help for a specific area of the country perceived as neglected for one reason or another and where the population is believed to have a disproportionate burden of disease and poor environmental conditions?
5. What countries or organizations are now participating in joint health programs or are urging that new programs be undertaken? Do they clash with U.S. interests or use up valuable resources or can they be coordinated to supplement or complement any U.S. proposals?
6. What sizable existent programs that have demonstrated their benefit to the population are being phased out because of inadequate support?
7. How many American nationals will be involved in the project? Can the AID mission provide the necessary support?
8. What obvious budgetary, political, or other constraints would affect the initiation and continuation of any project?

The process of project selection is multi-faceted. Sometimes projects are selected without long term planning. Other times, planning aid is requested in the form of health sector assessment. Prior to the initiation of assessment, the Mission or the Regional Bureau of AID may request a preliminary background paper on the country, or a Synccrisis. The "Synccrisis" is based on secondary research, varying in format and scope. It is designed to present a summary of known geographic, demographic, economic, and health data about the country, as well as a statement of the major health problems and an estimate of the resources needed for a full-scale HSA.

The Nature of a Health Sector Assessment

Several alternatives exist at this point, depending on AID policy considerations, on the interest and commitment of the host country, and on the constraint of available time, money and manpower resources. First, it is possible that, for whatever reasons, no further action will be taken. If a decision is made to proceed with an HSA, several alternative models are available, ranging in scope from a very limited effort to a rather comprehensive one. The following alternative models which a given HSA may adopt were developed during a recent Westinghouse evaluation of three past HSAs. (For a fuller discussion, see Westinghouse, 1978):

1. Preparation of an AID program plan only. This plan is the least expensive and places the minimum burden on the Mission and on the host country's government. Prepared entirely by AID staff or by consultants, it is tied to the AID funding cycle and addresses the HSA objectives as discrete projects rather than as components of the program-planning process.

2. Preparation of an AID program plan with selected additional objectives. This model is essentially similar to the first, except that a limited number of additional objectives may be included (Examples of additional objectives are formal training or a survey of nutritional conditions). The objectives, as well as the degree of involvement of the host country's staff, are decided on the basis of detailed negotiations with the host country's representatives. As in the first model, primary responsibility for program planning rests with AID.
3. Preparation of an AID program plan, with a parallel multi-objective health planner effort. This model is designed to reconcile AID's need for a program-planning document tied to its funding cycle with the host country's interests in broader or longer-range objectives. Such objectives may include extended training or otherwise expanding the health-planning capability of the country. This model calls for much greater commitment on the part of the host country, and is partly independent of the AID funding cycle.
4. Preparation of a national health plan, with other HSA objectives, followed by preparation of an AID program plan. This model aims primarily at producing "a comprehensive national health plan, from which the AID program plan would derive, and it would be carried out independently of the AID funding cycle" (Westinghouse, 1978: 8). This model requires the largest investment in resources and the most extensive commitment on the part of the host country.

If a decision has been reached to proceed with a "full-scale" HSA (model 3), a multidisciplinary team is put together. Team members come from the AID staff, from the U.S. Public Health Service, from consulting firms under contract with AID, and from the host country. Strong emphasis is placed on participation of professionals from the host country, since the concept of a full partnership in development is perceived as a crucial element of the HSA philosophy and process. The actual composition of the team depends upon the specific objectives of the assessment, but may include any or all of the following professionals (of course, several specialties may be combined in the same person):

1. Public health physician and primary care specialist, who may act as team leader;
2. Maternal and child health physician and family planning specialist;
3. Health manpower and training specialist;
4. Nurse-midwife, nursing education specialist;
5. Epidemiologist/environmental health specialist;
6. Pharmaceutical, medical supply and logistics specialist;
7. Health development economist/financial analyst;
8. Social anthropologist;
9. Program design specialist;
10. Vital statistics specialist; and
11. Sanitary engineering specialist.

Although team members usually have extensive overseas experience as advisers to AID missions, it is desirable that they have two or three weeks to collect and digest background materials before they assemble in Washington for briefings and departure.

The team may be aided by methodological and technical tools such as the Guidelines for Health Sector Analysis, a series of manuals published by AID and the Office of International Health of the U.S. Public Health Service. These guidelines, which are also intended for use by the host country's officials as well as by their American counterparts in planning or administering projects, cover such areas as the following:

- . Financing the health sector.
- . Economic appraisal of health projects.
- . Planning for health manpower.
- . Controlling communicable diseases.
- . Planning for health services facilities.
- . Cultural, social, and behavioral aspects of health planning.

The assessment team's visit to the host country varies in length, depending on the scope of the HSA. Typically, it may last three or four weeks. In advance of the visit, AID officials in the host country make certain preparations to facilitate the work of the team. These include briefings of officials in the Ministry of Health, in international health organizations in the country, and, ideally, in other governmental ministries relevant to health. Also briefed are staff members who are expected to work with and to host the visiting team. In addition, logistical preparations and work schedules are laid out as far in advance as possible.

The Health Sector Assessment

Depending on the model followed, the HSA will vary in length, format, and substance. The following are examples of elements that may be included:

1. Demographic data and forecasts. Information may typically include the age structure of the population, its rural/urban distribution, crude birth and death rates and fertility rates, infant mortality rates, and as many of the vital statistics as are available. Existing sources of data are used; usually no new data are collected. The purpose of assembling demographic data is to produce the best possible set of population (and population composition) forecasts. This is necessary not only for assistance in setting health targets, but also for developing strategies.
2. Economic data. The data may include, as a minimum, existing and projected health budgets and estimates of new program costs. Other data may include projections of the Gross National Product or of the growth of revenues and expenditures in the public sector. There are many uses for economic data of this kind, but the basic ones are: (a) to fit some boundaries on potential growth of the national health budget, (b) to take into account the likely impact of general development policy on the setting of health priorities, targets, and strategies, and (c) to estimate recurrent cost implications of new health investments.
3. Health status data. The data may usefully include a good national picture of the incidence and prevalence of disease by age, sex, location, etc. Possible tables

presented may include ones showing mortality rates and morbidity rates by disease class. It is most useful for these tables to include relevant inter-country or intra-country comparisons. These tables are used by the team to assist in the setting of health priorities and in the identification of targets for the program period.

4. Health Services and Environmental Health Services. Summary tables are presented of existing health establishments, environmental health services, and health manpower categories. The tables, showing the distribution of health services and environmental health services in different geographic regions, should provide an estimation of the extent to which the population in rural and urban areas has access to or utilizes such services.
5. Unit cost data. After determining the appropriate units of output (e.g., vaccinations performed, hospital bed days, health clinic visits, etc.), an attempt is made to calculate the cost per unit. These data, if available, are used in analyzing the feasibility of alternative strategies and programs.
6. Policy data. The team collects relevant data on a) national development policies, goals and objectives, b) national health policies, c) the extent of understanding of health planning and health policy analysis and of commitment to them.

The Impact of the HSA on Health Programs

The suggestions resulting from the team's efforts, are discussed within AID and in negotiations with the host country. These negotiations may (it is hoped) lead to the development of objectives and projects agreed upon by all sides, objectives and projects arising from, and supported by, the HSA. If AID is to partake in future projects, it may need to recruit long-term advisors and/or short-term consultants for assignment to the project.

An important part of the agreement concerns the organizational framework for carrying out the project. This framework may be the use of counterparts, the use of a joint organization for planning and administration, or the so-called "liaison approach."

The counterpart relationship, the one most frequently encountered in AID overseas missions, involves the appointment of local partners from the Ministry of Health to work with each senior American technician for the purpose of coordinating the work and of exchanging information. In practice, this system works well only when the counterpart is actually the head of a department and the American is acting as his advisor.

The joint plan is a small temporary organization composed of "technicians" from both sides led by "administrators" of equal authority. Ideally, all work together with a clear common interest and mutual confidence and make decisions jointly. For this work, the joint group must have a sizable degree of authority.

The liaison approach implies a separation between the two countries in both technical and policy-making functions. AID provides the funds, the commodity support, and the approval of the project. The host government plans and executes the project. This approach, although inefficient, may be used out of political necessity when a country does not desire foreign technicians, or when AID does not deem it advisable for American technicians to be directly involved in field operations.

Finally, it should be noted, if only for the sake of completeness, that (no joint projects or planning at all result from the HSA). This may be due to reasons explored below.

Criticisms and Limitations of Health Sector Assessment

Having briefly described the purposes and process of Health Sector Assessment, we will now discuss a number of problems and issues raised by the implementation of HSA in several Latin American and Mid-Eastern countries. The following issues were highlighted by the 1978 report of Westinghouse Health Systems to AID:

1. Conflicting HSA objectives. The HSA was designed to accomplish multiple objectives which often may turn out to be incompatible. These include a program planning document for AID, a comprehensive health plan for the host country, and building up institutional capabilities in the host country (the latter will be discussed below). AID requires a program-planning document tied to its funding cycle. This is a short-term effort which must be met in a timely and efficient matter. The host country's need for a comprehensive health plan is a long-term goal which requires considerable resources. An attempt to meet both of these goals impedes the achievement of both goals and strains resources heavily. Of the alternative models outlined above, only one addresses this dilemma; yet the relative weight assigned to the different objectives needs to be further clarified, and the distinct endeavors more clearly separated.
2. Inadequate fulfillment of the institution-building goal. If a major objective of the HSA is to enhance the host country's institutional capabilities in health planning and management, different resources and commitments are called for. Not only formal training of personnel, but reorganization of the health sector is required. Yet this is rarely achieved. One reason is the pressure of time; another is the failure to institutionalize the new skills on a permanent basis, since after the HSA is completed the host country's participants may return to their previous jobs or may even be transferred outside the health sector. A further reason is outlined below.
3. Inadequate involvement of host country nationals. Whether because of lack of skills, lack of time for training, scarcity of manpower, or the pressures to produce a timely and efficient planning document, a discrepancy often arises between the roles of visiting team members and those of the host country nationals. The latter commonly contributes little to the endeavor beyond descriptive statistics, while the former perform the high-powered analysis and eventually write the document. This undermines the value of the HSA as an educational or institution-building tool.
4. Conflicting AID and host country objectives. While AID is concerned with producing a program planning document, the host country may have longer-range goals, such as preparing a comprehensive national health plan or building up institutional capabilities. The host country may view the HSA effort as a "donor project," a bureaucratic requirement unrelated to its own real needs or duplicating already existing efforts. The need to withdraw scarce, highly skilled manpower from other areas of the already strained health sector presents further problems.
5. Inadequate follow-up. On several occasions the HSA has turned out to be a one-shot effort, instead of the hoped-for basis for future planning for cooperative projects. This has resulted from AID's failure to translate the documents into Spanish and, in some cases, from the host government's reluctance to disseminate a document perceived as harmful to its image.

6. Policy limitations. The HSA must operate within the framework of AID's changing policy constraints as well as those of the host country. Consequently, it may neglect to look at the total health picture from an open-minded point of view and to offer fresh policy options. One example is the current policy of AID not to build new hospitals. This policy obviously limits the options that may be considered. Similarly, current AID priorities do not include several important areas of health, such as mental health. The HSA will therefore not address itself to these problems. These constraints limit the utility of the HSA as a comprehensive health planning document.
7. Cost/effectiveness analysis. HSA's have ranged in effort from two man-years in one country to several dozen man-years in another. Given the limited uses of the HSA, it is difficult to justify such variations in expended resources. A more realistic appraisal of the different possible outcomes of the HSA may help to tailor the expenditure of resources more closely to the expected benefits.

As it stands now, the HSA has proved to be more useful as a short-term, program planning document than as an ongoing, comprehensive effort to reorganize the health sector of a country. As an educational tool, the HSA has proved more useful in increasing the awareness of host country's personnel of the significance of health problems than in upgrading institutional capabilities in analysis and planning, or in significantly re-directing their health policies. As in the case of any attempt to reorganize major sectors of government on a more rational and efficient basis, political, economic, and bureaucratic forces combine to limit the impact of the change. This is the case not only in developing countries but in Western countries, too, of course. This does not call for abandoning the efforts to apply scientific analysis and planning techniques to social problems. But it should lead us to realistically appraise both the objectives and the priorities of such techniques, to consider the limitations of resources and of external factors, and to direct our efforts to where they will produce the most good.

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APPENDIX C

"Determinants of Health and Nutrition Status"

Paper by Daly, Davis and Robertson

DETERMINANTS OF HEALTH AND NUTRITIONAL STATUS

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This volume stresses the impact of health and nutrition services on health and socio-economic well-being. In the breadth of focus, and in the explicit recognition of the mediating role of other socio-economic factors, we feel the approach is innovative.

This paper, however, complements the remainder by treating the impact of social and economic conditions on health and nutrition. Our intent is to go beyond the collection of intermediate and control variables described in other papers. We regard health as a fundamental indicator of the quality of life, and believe that health is affected by the human ecology and by complex social and economic policies of the society to an even greater extent than it is affected by health services *per se*. Consequently, in the following pages we sketch a model of the health and nutrition impacts of key public policies.

In practice, the great complexity of the interaction of health and nutrition programs with socio-economic development should lead us to great caution. The topic is among the most complex in modern society, and our theoretical understanding and measurement capac-

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ity are frail indeed. Impact evaluation in these areas is of paramount importance, but should be approached with humility, and results interpreted with caution and restraint. We suggest that the major benefit from improved evaluation programs will come as many investigations contribute information to a growing worldwide understanding of health, nutrition, development, and social service programs.

At a minimum, professionals involved in evaluating the impact of health and nutrition services should be aware of this larger context of public policy. Service evaluations should certainly keep track of key policies affecting health, and should plan and modify evaluation activities in the light of major socio-economic policy shifts.

We look forward, however, to a future time in which health and nutrition status will be among the key indices for the planning and evaluation of public policy. If economic, agricultural, educational, and other major policies profoundly affect the survival and health of the public, is it not reasonable to expect indicators such as life expectancy to play as important a role in national planning as does per capita income?

The following discussion is a very modest step in the direction of socio-economic planning for health. Figure I illustrates the model that will be developed. Six major policy areas are discussed. For each, key elements that affect health and nutrition

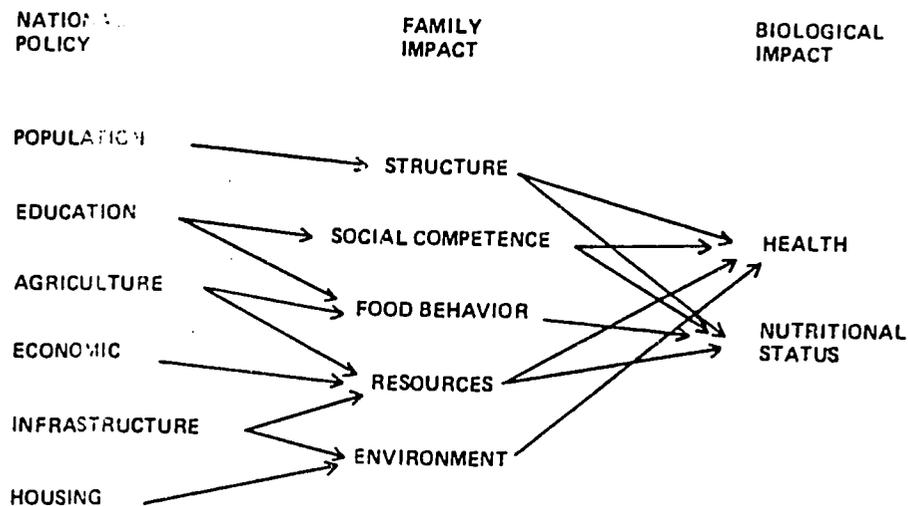


Fig. I. Conceptual Linkage of National Policies (Other than Health) and Health and Nutrition.

are isolated, and causal paths are suggested by which the impact is made. The analysis deals with the structure of the family and the behavior, competence, resources, and environment of the family and individual.

In general, we believe in the following propositions. Development of food systems generally makes food more affordable and available, contributing to increased consumption, which at least early in the process of development reduces malnutrition and its sequelae. Demographic transition, specifically the lowering of birth rates accompanying development, results in women with high medical risk having fewer children. Fewer children per family in turn result in more family income and wealth being available for each member, in longer child spacing (allowing more attention per child), and finally in less interfamilial contact with communicable disease. Increasing personal and familial wealth and income allows purchase of a better diet, of more adequate clothing and shelter, and of services which contribute to health. Similarly, the infrastructure of aqueducts and sewage systems allows better personal hygiene, reducing the transmission of disease, and access to more potable water, reducing the incidence of water-borne disease. Education increases the individual's and the family's understanding of disease processes and thereby leads to increased capacity to prevent or treat illness. Finally, housing and urbanization alter the relationships among man, disease agents, and health services.

BIDIRECTIONAL CAUSAL SYSTEMS AND THEIR ANALYSIS

The major theme of this paper is that health and nutrition programs and improvements in health and nutrition have significant impacts on family economics, education, social competence, family size and structure, and other socio-economic factors. We also suggest in the following discussion that the latter factors strongly affect health and nutrition. The argument can obviously be generalized to the individual and community levels. Thus, the causal relationships between these socio-economic and biological variables are bidirectional.

The observations that the sick are often poor and the poor are often sick should not cause great surprise. The difficulty arises when one tries to ascribe causality -- people are sick because they are poor or are poor because they are sick. Impact evaluation techniques must be chosen to answer these questions, or rather to identify the importance of each of the various causal processes which interact.

Simple models often incorporate unidirectional causality, whereby an outcome is determined by the influence of a number of control-

lable and non-controllable independent variables (1,2,3). We are postulating a more complex situation in which changes in each health and socio-economic variable tend to depend on all other variables (i.e., our model has few or no truly "independent" variables, and highly complex feedback situations exist). Data representing either a cross-section of communities or a history of one community will not be equivalent to the outcomes of independent experiments. Rather, they may be thought to represent a set of solutions to complex systems of social equations. In theory, this viewpoint suggests that two or three stage linear regressions are more appropriate than linear regressions (or to simple analysis of variance techniques comparable to linear regressions) (4).

We stress further the importance of this point. If economic conditions, educational and social behavior, demographic conditions and family structure, and health and nutrition are best analyzed as a set of simultaneously interacting causal systems, then the analysis will usually be complex, and data will generally be needed for collateral variables. Behavior of variables may often be non-intuitive or counter-intuitive. The task of assuring that communities or families are really comparable, and should be used as data for the same system, will not be trivial. Moreover, different hypothetical models may lead to serious divergencies in the estimation of the importance, or even the direction of key causal relations. In general, the explication of complex systems of bidirectional causal relations in social systems is extremely difficult in theory, and more difficult in practice. However, as the paper by Chernichovsky later in this volume observes, evaluators of nutrition and health programs and non-economist social scientists can learn a great deal about these matters from the theory and methods of econometrics.

THE IMPACT OF AGRICULTURAL AND FOOD POLICIES ON HEALTH AND NUTRITIONAL STATUS

In most developing countries, the primary problem of malnutrition is insufficient food consumption. To resolve problems of malnutrition, sufficient amounts of appropriate food must be available, local taboos or cultural practices must not prevent its consumption, and individuals and families must have the economic power to acquire that food. If there is insufficient food, or if people are too poor to buy an adequate diet, there will be malnutrition.

This simple statement has profound consequences in terms of nutrition planning. It suggests that an appropriate organization of major national socio-economic systems is required to assure food availability. In fact, macroeconomic planning for nutrition is being actively promulgated by international organizations (5, 6, 7)

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The variable describing food as seen by the consumer, the major output indicators for agricultural and economic policy at the national level, are key variables for understanding nutrition. In principle, one would wish to monitor these national policies, their direct impacts on key intervening variables, and their further impacts on health and nutrition. Such a conceptual framework for evaluation would be useful for evaluating micro- or macro-programs. 1/ Some of the most important variables of this frame of reference are shown in Figure II.

Agricultural production policies are the most obvious ones determining food availability (8): Investments in land and water resources, improvements of technology, improvements of agricultural input and product markets, subsidies and taxes all modify the production of food. Policies implemented with sound agricultural bases, such as those directed toward improved balance of trade or maximization of agricultural income, may have profound negative impacts on food availability when farmland is devoted to high value, low nutrient crops such as coffee or tea. Alternatively, such policies may be nutritionally appropriate where comparative advantage favors purchase of food grains or other nutritionally appropriate foods with export earnings.

Food processing activities must also be considered. Increasing attention is being directed to the reduction of post-harvest food losses in developing countries. Such losses contribute significantly to reduction of availability of food grains and are very important for more perishable foods. Obviously, food storage and preservation is critically important in the case of seasonal food shortages. Similarly, fortification and the development of new foods offer significant potential for improving nutrient availability at low cost (8).

Food distribution systems also play key roles in determining food availability. Historically, famine has been a problem of local failure of food production rather than of global shortages. Crop failures in large geographical areas of the developing world can engender almost insuperable obstacles in moving adequate stocks of food. However, even in non-critical periods the food distribu-

1/ We define micro-program as one composed of direct medical or food services organized primarily for health or nutritional effects on individuals. A macro-program is one composed of macro-economic or socio-economic policy actions to achieve health and nutrition objectives for large groups of the society.

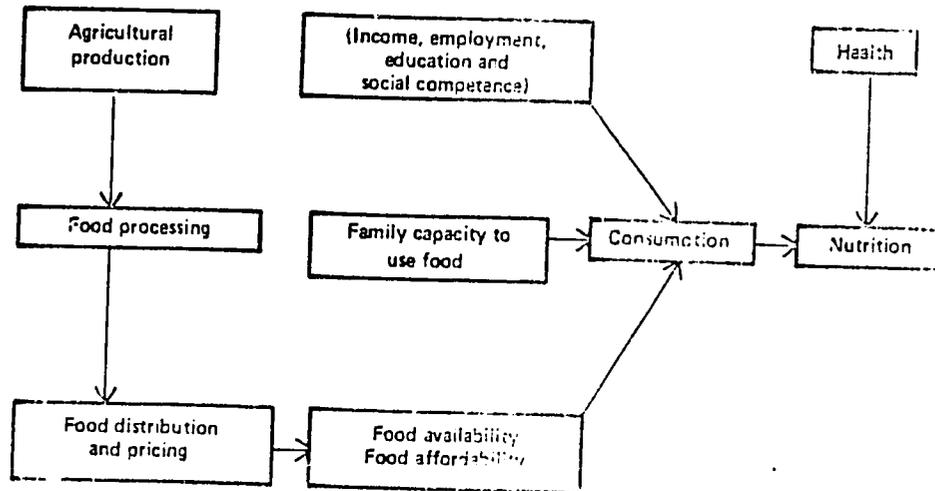


FIG. II. Some Variables Involved in Food and Nutrition Policies.

tion system involves relatively high costs, significant losses of perishable foods, and invariably leads to geographical variation in per capita amounts and prices of foods.

Food availability is defined as the amount available per person. It is normally measured by nutrient categories: calories, proteins, vitamins, minerals, etc. As discussed in a following paper by Habicht and Butz, per capita food requirements are subject to considerable uncertainty; nevertheless, it seems appropriate to construct a standardized value of availability. In this respect, demographic information on age structure and age-specific fertility of the population would be needed.

Another major concern in evaluating food availability is the degree of disaggregation of the data itself. We suggest that at least three dimensions known to influence availability must be used: geographic, temporal, and economic.

The affordability of food is determined by the price of food relative to the income and wealth of the individual. Even in the case of the subsistence farmer, the costs of food production must be compared with the total resources he controls. When income for the poor increases more rapidly than inflation, nutritional status tends to improve (9). Thus, national policies that influence levels

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of income and wealth are of key concern. Such policies as employment, income distribution, and land reform are obviously central to Latin American concerns for food affordability.

The capacity of the family to use its economic resources appropriately to acquire a good diet must also be mentioned. Where ignorance or superstition interfere with the family's ability to acquire and prepare the most adequate diet available within its economic means, there is considerable potential for malnutrition, even in the presence of food availability and affordability. Education and modernization tend to overcome informational and cultural barriers to good nutrition.

Obviously, health and nutrition are also closely interrelated. Specific public health measures, particularly environmental sanitation, are often included in land and nutrition policies and programs. Poor health may reduce appetite, reduce absorption of food consumed, and increase the food requirements of the individual.

It has been suggested that national, regional, and local policies that affect agricultural productivity, food processing, food distribution, per capita income, education and modernization should be monitored as they relate to food availability, affordability, and consumption. These in turn can be related to changes in nutritional and health status. Practically, it appears unreasonable to develop a comprehensive monitoring system for such variables, except in the context of evaluation of exceptionally ambitious national, macro-economic, nutrition programs. However, in evaluation of a health or nutrition service, a record might be maintained of important changes in food or income policy, and this record used in interpreting control variables of food price, local food availability, and family income.

Food sanitation practices should also be monitored. Public health practices normally include monitoring of quality of milk and milk products, water, meat, and establishments which process or sell these products. Obviously, as contaminated food causes disease, and disease in turn influences nutritional status, strong direct influences are possible. Often in Latin America, input data for such analyses exist in health ministries but may not be centralized nor regularly summarized in reports nor used in evaluations.

Lactation and weaning may be identified for special attention because of the extreme vulnerability of the young child. Ideally, child development in Latin America would involve an extended period of breast feeding with an appropriately timed gradual transition to high quality weaning foods. Breast feeding is advised for immunologic, food quality, and sanitary reasons. Food marketing

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policies (10), public policies regulating advertising and nutrition education can all influence breast feeding and weaning behavior.

THE IMPACT OF POPULATION POLICIES ON HEALTH AND NUTRITIONAL STATUS

Population policy is an important consideration in designing social programs to affect health and nutritional status (11). Some of the more important relationships are shown in Figure III. For instance, effective population policies may be directed toward the provision of family planning services or motivational and educational programs, and may even extend to direct governmental incentives to the family to have additional children. Socio-economic programs are also generally conceded to indirectly influence demographic trends. These would include education and employment programs, especially those focusing on women and income redistribution. Generally, it is perceived that socio-economic interventions which increase the social competence and economic well-being of the poor (who have high birth rates) will result in smaller families (12).

The principal macro-economic rationale for reduced population growth have obvious repercussions on family health:

- a. Reduced population growth allows a higher rate of sustained growth in GNP, reflected in higher per capita production and income growth. This, in turn, should improve the poor families' socio-economic status, potentially facilitating improved health and nutrition.
- b. An increasing national ratio of wage earners to dependents would be a reflection of families where economic pressure from dependents on the wage earner should decrease and well-being should increase.
- c. As family size decreases, the number of persons in the average dwelling eating together and in close proximity should decrease. Since the highest rate of transmission of communicable disease is among proximate individuals, decreasing crowding of the household should decrease incidence and prevalence of disease.
- d. As the number of births is reduced, they may be confined more nearly to the optimal period in the life of the woman, and child spacing may be increased. These effects reduce biological strain and risk for both the mother and the child (13, 14, 15, 16). Specifically, the nutritional status of mothers and birth weights of offspring should

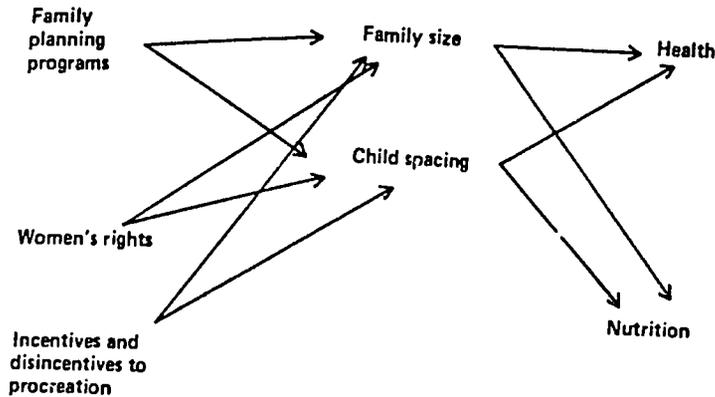


Fig. III. Relationship Between Population Programs, Health and Nutritional Status.

increase and infant mortality rates and birth defects should decrease (17).

In addition to these mechanisms, changing age, fertility, and sex structures have profound impacts on health status indicators. These demographic characteristics are very strong predictors of morbidity. Specifically, as the population becomes older, the relative importance of heart disease and tumors increases and that of infectious diseases and diseases of childhood decrease. Consequently, changes in disease prevalence and use of medical services must be considered in light of community demographic changes.

We postulate that family size is conditioned by a number of socio-economic factors. These include such things as the prevailing attitudes of the family concerning the most desirable number of children, the availability of information and means for controlling fertility, the costs of raising children, and the economic value of children to the family.

Many of these factors are related to the status and role of women. Women's earning power increases with education and status. Increased earning power both increases the opportunity costs of bearing children and decreases incentives to early or repeated marriages. Similarly, as social competence and income increase, it may be postulated that couples have more opportunity and capacity to use health and family planning services, and are less prone to fatalistic reasoning and behavior. On the other hand, as economic incentives outside the home increase, there may be a tendency to reduce child care. Reduced child care may in turn

cause nutritional problems and increase disease prevalence in children.

For purposes of evaluating the impact of population and socio-economic policies on health and nutritional status as reflected through demographic mechanisms, a number of indices are available in many countries. These include estimates of the age of men at the initiation of sexual activity, marriage, and birth of first and later children, as well as estimates of fertility and fecundity. Other such estimates are available only on the basis of data derived from vital statistics and from sample surveys. Birth rate, marriage, divorce, legitimacy, and illegitimacy rates are often available.

Indicators of the coverage and effectiveness of direct and indirect family planning programs are available and include estimates of awareness, knowledge, and use of family planning for women. These include records of numbers of condoms, contraceptors, and persons using family planning services, and age-specific birth rates and estimates of births averted. Program statistics are also often available for education and nutritional programs for family planning program targets. Type of contraceptive use and key indicators are also available.

In general, indicators of the indirect impact of family planning programs on health and nutrition are less available than those for direct impact. Indirect impact is often assessed through the use of indicators such as the educational level of women, the literacy rate, and the percentage of women in the labor force. These indicators are useful.

For national plans are included a population projection which shows the impact analyses of national plans have been prepared. It will be possible to select a number of key variables in the future work and to evaluate their impact. This will be possible since it will be possible to disaggregate the data available in the national health and nutrition project evaluation. In the future, the national survey on the status of key variables may be considered as a means of assessing indirect impact.

THE IMPACT OF POPULATION AND ECONOMIC POLICIES ON HEALTH AND NUTRITIONAL STATUS

In this section we will deal with two principal areas of "key hold-overs" variables: (1) relating to income, (2) economic well-being, and (3) employment.

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It is obvious that improved health and nutritional status may lead to higher levels of income through a more productive work force (18, 19, 20). The impact of expected illness or mortality on savings-investment decisions is not well understood (21). Theoretically, savings and investment should be reduced as the investor's expectation decreases that he will be alive and healthy to realize the returns from that investment. On the other hand, as survival increases through better health care, there are complex effects on saving and investment (22).

Hypotheses as to the ways increased incomes can benefit health and nutrition are found throughout this paper. Increased income should allow the family to buy a more adequate diet, to use health services more often and more appropriately, to improve the family environment by reducing crowding and improving sanitation, and to take advantage of educational opportunities, thereby to improve its competency to protect its health. Thus, in health as in other areas of human welfare, the advantages of increased income appear almost self-evident.

Since the initial computations of national accounts, the *per capita* values of national income, or closely associated magnitudes such as gross national product or gross domestic product, have been considered to be the principal indices of economic development. However, recently this point of view has been undergoing a change.

"There has been a growing realization in the development community as a whole that gross national product *per capita* alone is not an adequate measure of development and of its effect on human welfare" (23, p.24). A logical outcome of this realization for the World Bank and others has been increased attention to income distribution and to the social sectors (23). This focus includes a renewed concern with employment (discussed below). An important reason for this modification of view was the accumulation of evidence for the 1960's that "many countries experienced rising *per capita* incomes, but the lives of the people did not improve at all. Indeed, it seems to be the case that in the early stages of *per capita* income growth, the lot of the poor deteriorates". (24, as cited in 25, pp. 18-19).

Obviously, alternative economic measures are needed. One promising attempt is an indicator of the level and distribution of welfare based on a combination of current income and current net worth (assets minus liabilities), (26, pp. 13-15); with net worth being converted into an annual income stream by treating it like a lifetime annuity (27). Applying this measure to illustrative data for families in the United States, it was found that inequality increased when net worth was considered in contrast to income alone.

Whatever the exact selection of the indicators of economic and welfare status, the problem of analyzing the relationship between levels of income and of health and nutrition exists.

In the simplest terms, income and wealth are the vehicles whereby individuals and families implement their consumption decisions. Some changed consumption patterns directly influence health and nutrition, such as increased use of health services, purchase of a better diet, substitution of infant formulas for breast milk, or drug abuse. Other changed consumption patterns indirectly influence health, such as the health effects of improved water supplies or of a modified transportation system.

In general, those health conditions most characteristic of poor populations are the ones expected to change most with increasing levels of family income. Some of them are infant mortality, childhood mortality, malnutrition, diarrheal disease incidence, and infectious disease incidence.

To obtain a more precise idea of the relationships being studied, analysts might wish to attempt to identify the value of income of other economic level that denotes the cut-off points of ill health or malnutrition. Of course, such a value will depend upon one's notion of health or nutrition problems, and it probably will vary among populations. Still, the approximate "poverty line" for malnutrition, disease or death would have powerful appeal to many public decision makers. In principle, such a poverty line could be identified for ill health of one sort or another. In practice, there probably has been a closer approach to application of the concept as it relates to nutritional deficiencies.

Income elasticities of demand for health services, food and shelter could be used for more detailed analysis. Income elasticity of demand is the expression used to refer to the relationship between percentage change in income of the demanders in question and the corresponding percentage change in the quantity of product demanded, implying ability as well as willingness to buy. An elasticity coefficient greater than one would denote a greater than proportionate increase in demand as income rises. Elasticity is generally greater than one for "luxuries" and less than one for "necessities".

Thus, for poor populations in Latin America, food grains and pulses may be expected to have elasticities less than one. On the other hand, meat, as a relative luxury for the poor, may have an elasticity greater than one.

It is far easier to define the concept and to theorize on its values than it is to estimate it empirically, especially in poorer

countries with weaker data bases. There has been enough field research to indicate income elasticities for various foods, with important nutritional implications, but the values for health services are not well established. Among the reasons are the limitations of field survey instruments and the high random element in health care utilization. A measurement problem that must be acknowledged is the likelihood that available demand data will be in terms of monetary expenditures instead of product quantities, as required technically for elasticities. In that case, price movements can confound apparent income-induced demand variations.

Among the diverse items of evidence regarding income elasticity values, two might be cited to point to additional work in the health and nutrition fields:

- a. Working with data from 13 well-developed countries, Newhouse decided that "both cross-nation and time-series (within nation) data support the conclusion that the income elasticity of national medical care expenditure is greater than one" (27, p.16). The applicability to developing countries is open to serious question.
- b. A recent review of 1971 cross-sectional consumer expenditure data in Colombia yielded no consistent income elasticities for urban or rural areas for a variety of possible reasons (28, p.38; based on 29). More important findings of the project were the differences in patterns of health service utilization by different income classes in Colombia and in Santo Domingo, Dominican Republic (28, pp. 42-43).

The research of Swanberg and Shipley (30, pp. 111-125) contains useful cautions for future investigators on the relationship between income and health/nutrition. They obtained suggestive data from two areas within the same rural region of Colombia. We cannot do full justice to their experiment here, but their conclusions of chief interest are:

- a. Incomes are probably not as important as other factors (perhaps, disease and unsanitary living conditions) in affecting overall health status (e.g., height and weight of preschoolers);
- b. "Protein and calorie intake were found to be more highly correlated with expenditure (and income) than were calcium, vitamin A or riboflavin" (30, pp. 123-124).

EMPLOYMENT AND OCCUPATIONAL HEALTH

There are many well-established indicators of employment or labor activity in a country, including the proportion of the adult population participating in the labor force, level of employment, and level or percentage of unemployment. Less settled but potentially important measures exist to estimate job vacancies and also the degree of underemployment or underuse of human resources.

This section will deal also with occupational health. Here too, there are fairly well accepted indices such as industrial accident rates and time lost from work due to health problems. Admittedly, data needs remain great, especially in obtaining broad-based information on population health status and in separating the effects of job-related problems from others. Most notable, besides the obviously positive effect of employment on income, is the perverse relationship, at least in the short run, between employment opportunities and health; increased chances for employment might worsen the health level of the affected population in the near run (e.g., several years).

There are two reasons for this strange situation. The first is that innovations creating employment may also create new health hazards. Thus, the development of new regions has led to a rise in certain diseases, like malaria. Development projects, such as dams, might have aggravated other threats, like schistosomiasis.

The second reason is exposure of more people to occupational health hazards. The nature of industrial accidents and of job-related sicknesses is well known (31). With or without good statistics on these problems, we can note their importance in poorer, as well as more highly developed, nations. Agriculture -- the backbone of a typical developing country's economy -- is notoriously unsafe, especially as mechanization increases. But the bodily threats multiply as industrialization proceeds. A body of information is accumulating through the efforts of agencies like the International Labor Organization and from case studies in developing countries (32, reviewed in 33; 34).

Health problems related to growing employment opportunities point to several needs for future work. One is to develop better data, such as data on industrial illnesses. Another is to devise programs or interventions to ameliorate the difficulties. By way of illustrating the challenge here, we point to the fruitful possibilities for combining market incentives (such as insurance contribution rates for companies) and governmental regulations to attack occupational health problems. The payoffs to such policies -- clarified by better data on health impacts -- can be great in

the form of decreased absenteeism, increased productivity, lowered labor turnover, lessened disability and mortality, and reduced medical service requirements (35).

Health and nutritional status also have frequent impacts on the use of manpower resources (36). A malnourished or an ill labor force results in a different mix of factors of production than would be the case otherwise. This impact on labor force productivity is very difficult to measure, as it is subject to long-term adjustments in expected labor force productivity and levels of unemployment.

IMPACT OF INFRASTRUCTURE DEVELOPMENT POLICIES ON HEALTH AND NUTRITION

In a simple model, disease may be considered the result of a biological, mechanical, or chemical toxic agent and a host -- for our purposes, man. The influences of the agents are specific to them, but their effects on the host are conditioned both by other factors in the host's environment and in the host himself.

The conditioning factors which can exist in the host-agent environment and confound the measurement of impact are almost limitless. The causal agents of diarrheal disease are only infrequently identified and include factors entirely unrelated to sanitation (37). The specific host-agent environmental changes produced by utilization of adequate amounts of potable water are almost never identified.

The most important host factors are physiological and dietary. Physiological conditioning factors include age, body size, immunological competence, level of nutrient intake, and presence of other debilitating factors. Among these, the most important factors to take into account appear to be those associated with the diarrheal-malnutrition complex, which will be discussed in other papers in this volume.

The impact measurement problems, therefore, appear to be inversely proportional to the directness of the contact between the host and the agent. In the case of waterborne epidemic disease or direct human contact with toxic materials, impact measurements are relatively simple. In the case, however, of sanitation measures that alter the environment of the host-agent contact, impact measurement and the specification of causality becomes enormously complex. Take the example of utilization of adequate amounts of potable water. Water can influence the environment of food preparation, personal cleanliness, and many other factors. We have little

knowledge concerning the impact of these factors on diarrheal disease; and all vary markedly with climate as well as social, cultural, economic, and educational levels of households involved (38, 39, 40).

Different types of infrastructure mainly influence health, but also may affect nutritional status, modifying the environment within which the agent and the host interact. In a lesser number of instances, toxic agents are a direct by-product of development investments.

Two mechanisms for the influence of water supply can easily be identified. Water can serve as a vehicle for bacteriological or toxic substances which cause ill health upon ingestion of contaminated water. This was most vividly portrayed by John Snow's incrimination of the Broad Street pump as a source of cholera in 1951 (41). Despite the attention paid to such incidents, they are relatively infrequent when viewed from the perspective of total water-related diarrheal case load. Although waterborne epidemics continue to be identified (42, 43), currently the most frequent type of health impact by ingestion of contaminated water supplies is that due to metallic and chemical pollution of the water supply (44, p. 128).

The utilization of water as a cleansing and dilutional factor to diminish contact between the host (man) and biological agents is the mechanism whereby potable water has its greatest impact. Several studies have indicated that the major impact of potable water depends upon its adequate utilization (45, 46, 47). The utilization of greater amounts of water promotes more frequent bathing, washing of hands, household cleanliness, cleaner eating utensils and so forth.

Industrialization and other types of infrastructure development can also lead to air pollution, which in time can have a negative effect on health. The variety of potentially detrimental air pollutants is quite large, but the most important ones from the health perspective are hydrocarbons, sulphur dioxide and carbon monoxide (44, p. 228). Rather difficult measurement problems exist when calculating the impact on the environment outside the industrial plant due to the effect of climatic variation on pollutant density.

Investment in infrastructure for refuse disposal may be useful for health. This includes investments for garbage disposal and latrines, as well as disposal of toxic waste substances. By means of these, a mechanical separation of disease agents and man is achieved.

Configuration and components of the transportation system have very important direct effects on health. In many societies they

form the largest single cause of death in the young adult population (48). Factors like seat belts, speed limits, public buses or trains instead of private automobiles, and pedestrian overpasses in urban areas, have significant impacts on accidental injury and death rates (49).

A second area of potential impact of transportation infrastructure is the alteration of patterns of spread of infectious disease. Improved transportation systems both increase the probability of introduction by transportation of a large number of individuals into a region from a wider source area outside the region and increase the frequency of contact among individuals (50). The literature cites many examples of the introduction of communicable diseases into previously unexposed populations (51). These examples are becoming less frequent, but they continue to occur in some instances, like the incidence of cutaneous leishmaniasis in workers on the Trans-Amazonian highway (52). A more frequent occurrence at the current time is the more constant reintroduction of common communicable diseases into the child population. This frequently implies higher mortality and complication rates than would otherwise be the case.

Transportation and communication systems have major impacts on relative prices for foods, health services and nutrient distribution services. Occasionally, transportation of foodstuffs costs as much as the food itself, with a resultant marked impact on family diets. Also, travel costs measured both in real payment for transport and in time lost due to slow or non-existent transport facilities, impacts on the frequency of utilization of health services. Reduction of real costs or travel time will be expected to have an impact on demand for services as effective cost decreases. Although the existent literature cites many examples of health problems influencing the construction of transport systems, this aspect presents fewer problems today (53, 54).

IMPACT OF EDUCATION ON HEALTH AND NUTRITION

Next we will consider formal and non-formal education in terms of their impacts on health and nutrition. While recognizing again that causality is bidirectional, we wish to emphasize here the cases in which health and nutrition are dependent variables.

The continued use of traditional (i.e., non-modern) health services and foods in poor countries suggests serious cautions for analysts in examining conventional variables and drawing policy conclusions from their assessments.

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It is often pointed out that education is positively correlated with health status. A simplified indication of this is the high (negative) coefficient of simple correlation between literacy and infant mortality from a world-wide, cross-sectional United Nations study (24, as cited in 25, pp. 18-19). While users of such results should be properly cautious about the interpretation of that correlation in the absence of control for other variables (with the knowledge that education and income are intercorrelated), they would be encouraged by research in the United States that seems to demonstrate "a strong positive correlation between health and length of schooling..... after allowing for the effects of such other variables as income, intelligence, and parents' schooling" (56, p. 46).

The natural question that follows such findings is: "Why?" Unfortunately, surprisingly little is known about the causal mechanisms behind these associations. Speculation over the reasons for the impact of formal education, via schooling and literacy, on health and nutrition has included at least the following: encouragement of better personal hygiene; improvement of child rearing; increase in safety practices; adoption of better diets and other living habits; modernization and proclivity to use modern health services; and ability to comprehend lessons from health education (23,25,55,56). Clearly, the subject is wide open for additional research.

Education, one may suggest, permits closer descriptions of health deficiencies, diagnoses of (certain) causes, and suggestions of (partial) remedies. Educational institutions can play roles besides schooling the population and developing (even supporting) researchers. In many countries, they fill the additional role of providing health services. School health programs including inoculation, screening and first aid are common in Latin America. Similarly, health personnel extend services as part of their training in many medical schools. More ambitiously, a medical school can operate its own community health and nutritional service programs (again linked to educational objectives). Out of the many examples which can be found, we might cite the widely-publicized experience of Universidad del Valle, Colombia, with its health center-hospital in Candelaria, along with other outreach activities (57,58,59).

Properly conceived, education extends to non-formal activities that potentially develop a wide range of economic and social skills. Their breadth is so great that analysis must be selective in order to use a few tractable independent and dependent variables for applied research. Customary manpower training programs and many systems of extension services resemble formal education in their possible effects on health and nutrition. They have potentialities for affecting human behavior -- as in the case of use of health services. They can offer external benefits in the form of direct service activities as part of the training or related processes. They can

also affect the availability and perhaps deployment of specialized manpower, with important nutritional and health impacts (60,61,62).

Non-formal education forms a vital component for changing health and nutritional status, *particularly* for those aspects most subject to change by other sectors. Mass media, education by extension workers and multi-purpose information dissemination all become extremely important to the amelioration of problems determined by other sectors.

A rather different facet of non-formal education comes in the form of public campaigns to enlighten would-be users of services. "Health education" or "education of consumers in the use of health services" can have important effects on nutritional practices and on utilization of medical care and environmental and other public health services. It seems wise at this point to defer to health education specialists to explore the massive area. We close by noting that innovative delivery systems -- possibly integrating health, nutritional, and other services -- draw on the training programs mentioned above in order to obtain auxiliary health personnel of various skills (61,62,63).

IMPACT OF HOUSING AND URBANIZATION ON HEALTH AND NUTRITIONAL STATUS

For more than a century, there has been an active interest in and study of the relationships among health, urbanization, and housing. Historical perspective indicates that in early industrialized societies, increased communicable diseases resulted in a marked deterioration of health status (52). With advances during this century in the technology for prevention and treatment of communicable diseases, the magnitude of the health implications of urbanization and housing has markedly decreased. Still, there remains a significant problem related with urbanization in the least developed countries (64).

A variety of potential relationships exist through which housing and urbanization may influence health and nutrition. The three most important appear to be: 1) housing and urbanization as environmental factors in which the relationship between man and disease agents is altered; 2) the direct production of certain factors deleterious to health such as transportation, accidents and air pollution; and 3) health and nutrition factors which lead to increased urbanization due to increased accessibility to health and nutrition services (65,66).

The density and the quality of housing potentially influences health and nutritional status in a variety of ways. Density in-

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creases the probability of effective contact with communicable disease agents (67). Probably the two most important aspects of density are, (a) the larger size of the contact pool, and (b) crowding within the household, school, or neighborhood (68,69,70,71). There are data on animals and suggestive studies from prisons that crowding may also have psychosomatic effects on health and nutrition.

Housing, per se, has various aspects other than density of inhabitants which impacts on health and nutrition. General household sanitation, secondary to utilization of adequate amounts of potable water, was discussed in the previous section. Other aspects are related to safety, such as propensity for accidental falls (the most frequent accident-causing disability in most countries) and fire hazards. Other aspects relate to type of flooring and roofing materials, cooking and food preparation surfaces, and sanitary facilities.

Urbanization also results in breakdown of traditional cultural and familial factors. Some of these changes are beneficial to health but some are detrimental, such as increased alcoholism, drug abuse, and mental illness (72). The major causative factors are probably the breakdown in familial responsibility patterns and the increased likelihood of contact with a broader set of behavior patterns in urban areas. Urbanization is also associated with changes in fertility, which, in turn, has secondary effects on nutrition and disease (73).

Urban areas are frequently characterized by more readily available social services of all types. Specifically, health, nutrition, and water supply services are almost invariably more available to inhabitants of urban areas. This factor probably accounts for some of the improved health of urban populations and almost certainly accounts for some decisions by individuals or families to move to urban areas (50,64).

Lastly, the urban environment introduces new disease agents such as infant food alternatives for breast milk, air pollution, and new hazards from accidental injury or death such as occupational hazards or transportation accidents.

The two major impacts of all those outlined in this section appear to be those of the new health hazards characteristic of an urban environment and the tendency towards urbanization produced by the greater availability of health, nutrition, social, and environmental services.

Many measurement problems arise with regard to these two principal aspects. The health hazards of the urban environment can be measured directly and compared to hazards implicit in the rural en-

environment. The extent to which the availability of health services influences decisions of urban migration is very complex, however. Many other determinants effect the urbanization decision, and multivariate analytical procedures are required to separate the health and nutrition services impact.

CONCLUDING REMARKS

We have presented very quickly a complex view of a large number of national policy instruments and variables which interact among themselves, and which are thought to impact on health and nutrition through a wide variety of direct and indirect mechanisms. An enormous quantity of literature deals with these hypotheses but, given the complexity of the subject, it appears fragmented and confusing (74,75). Not only are we not sure of all the mechanisms to include in a conceptual framework, but we are uncertain of the magnitude and even the direction of the major effects. In the face of this complexity, we have tried to identify general references which will provide the reader with a more extensive and useful understanding of the phenomena than is possible in this paper.

We have also tried to motivate the effort to begin evaluating the impact of socio-economic policies on health and nutrition. The effects are so strong and pervasive that they must be taken into account in the evaluation of the impact of health services. More important, health officials must more effectively monitor the health impact of these national economic policies if they are to be able to speak in national councils to protect the health of the public. Finally, it would be most useful in the future for health officials, armed with a quantitative knowledge of these interrelations, to plan with leaders from other sectors for national development programs that would maximize the health of the people.

Underlying the concern for health and impact evaluation of social and economic policy instruments is our belief that there are real differences among socio-economically similar policies in terms of health impacts. Agricultural policy may find little to choose between two crops in terms of employment generation, income, or foreign earnings, but there may be major differences nonetheless in terms of nutrients produced or occupational safety. Too often we have seen agricultural policies stressing luxury export products at the expense of domestic nutrition, or economic investment plans leaving a legacy of greatly increased prevalence of tropical disease.

Finally, the socio-economic policies of a country have a very large impact on health. Observers contrasting mortality rates among developing countries with similar per capita gross national

products suggest health is most affected by the degree countries attend to the basic human needs of their populations. That is, health may be more affected by overall socio-economic policy than by the availability of medical services.

In summary, we have tried to indicate the size and form of a formidable intellectual problem, and simultaneously we have stressed the benefits if solutions were available. The result should be a fairly high degree of frustration. In the following paragraphs, we will try to ameliorate that frustration.

This paper does not allow for an in-depth treatment of methods which could be utilized for impact evaluation. However, some suggestions are presented below. A first step for a project or program evaluation could be simply the maintenance of a record of socio-economic and other policies and events of potential major importance. Thoughtful review of socio-economic events and possible health impacts could be done by an *ad hoc* committee. Simply relating such events to trends of key health indicators through graphs may be informative.

A more ambitious approach would involve the formalization of the best judgments and intuition of knowledgeable observers of the society and its health. It is suggested that a multidisciplinary group of individuals knowledgeable in health, nutrition, and the other particular sectors involved could be convened and charged with the following tasks: 1) identification of potentially important intersectoral impacts; 2) development of impact measurement criteria; and 3) development of exogeneous group process techniques to specify the most important impacts to be measured. Subsequently, variables would have to be grouped.

Following the stage of variable specification in conjunction with a health service impact measurement program, programs can be established to measure complementary socio-economic variable impacts on health. Given the greater uncertainties of approaching impact measurement in the way described above, it is preferable to develop the measurement procedures such that they can be added to and made more complex in the future if it proves feasible and useful to do so.

We suggest that one or more of the major international assistance agencies seriously begin to analyze the relation of socio-economic policy to health and nutrition. A major study to define the state-of-the-art and clarify the conceptual framework for future analysis is a necessary first step. Useful information for this purpose is now accruing from a number of sources: evaluation of the Colombian and other national nutrition programs; population

impact analyses of development programs, and environmental impact statements. Thereafter, a careful program of field studies might be considered. A few extensive studies in developing countries with relatively high socio-economic stability and good information would be advisable. Such countries should obviously be those with governments vitally interested in the topic.

The utility of information on the health and nutrition impact of socio-economic policy will increase with a greater understanding of their interrelationships, as well as with the authority of the user. A health official evaluating a relatively small health project will find such information most useful in determining how much of health status change he can attribute to his project's efforts. However, a national planning office, using an organized body of knowledge from many studies in several countries, might significantly improve national plans and programs. Thus, much of the benefit to be gained from such health impact studies will accrue not to the health project or researcher involved, but from the contribution to an international body of knowledge which may eventually be of great importance to a number of governments.

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COMMENTS

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Daly, Davis, and Robertson deal with three topics: (a) the environmental and social variables that influence the level of health and nutrition in a population; (b) the problem of evaluating the impacts of the specified variables on health and nutrition; and (c) the bi-directionality of the relationships between environmental and social variables on the one hand, and health and nutritional status on the other.

The authors have managed to cover the main environmental and social factors influencing health and nutrition, while dealing with the influence of agricultural and population policies; changes in the levels of income and employment; and development of infrastructure, education, and urbanization. In most cases they refer to relevant research and point out some of its limitations. Despite differences of emphasis or detail, I do not think much can be added to their treatment of these topics.

As mentioned above, the authors, while dealing with problems of evaluation, limit themselves to references about problems of estimating the impacts of environmental and social variables on health and nutritional status. However, the subject of the Conference is program evaluation for decision-making; this type of evaluation goes far beyond estimating parameters of some relationships among variables.

A first point to consider in an evaluation for decision-making is that the scale of the evaluation, and even whether it should

be performed at all, depends upon the benefits likely to be provided for the program being evaluated. Therefore, evaluations of programs which are not likely to be modified as a result of evaluation are not worth the cost, whether the impossibility of modification results from political pressures or is because information that could be obtained from the evaluation does not substantially modify the information that already exists.

Also, evaluation for decision-making is likely to change with the alternatives open for consideration. For instance, an evaluation to determine whether "education" or "nutrition" programs should be implemented to improve nutritional conditions in a community is likely to be quite different from an evaluation to select among alternative "nutrition" programs.

The authors frequently remind us of the importance of considering the bi-directionality of the relationships between environmental and social variables, on the one hand, and health and nutrition on the other. They refer to the fact that the causal relationships move in both directions, that is, from environmental and social variables to health and nutrition, and vice versa.

Daly, Davis, and Robertson clearly state they are intentionally leaving out discussion of causal relations that go from health and nutrition to environmental and social conditions. Their choice, although regrettable, is understandable given the limitations of time and space. However, they also give the impression that lack of data and limitations in available methods make it unlikely that a model integrating the bilateral relationships could be constructed at the present time. For this reason it is worthwhile to mention that an integrated model of the relationships among economic, educational, demographic, health and nutrition variables has been constructed and applied to Mexico (1). In this application, the model is used to choose among different types of investments in the sectors previously mentioned in order to maximize the growth rate of *per capita* income. According to the results obtained, investments in population control seem to produce the highest returns.

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GENERAL DISCUSSION

Most of the discussion concerned the impact of overall food availability upon health. The first speaker emphasized the influence

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of food availability upon infant mortality and upon fecundity. He and a later speaker stressed the similarity of human and animal populations in this regard. He further noted that a few years ago, a ten percent decrease in food availability had led to a ten percent increase in his country's infant mortality rate. Regarding fecundity, he said that in a community he had studied, the provision of adequate nutrition caused the average birth interval to drop from 27 to 17 months, due to a shortened period of post-partum amenorrhea. Two other speakers agreed that the direct *biological* consequences of better nutrition would initially be higher population growth rates, but suggested that increased child survival could eventually lead to lower fertility as a *behavioral* consequence.

It was also observed that global food shortages, evidenced by the high prices of recent years, may have impacted more unfavorably upon the urban poor than upon the rural poor in the Third World, and that such effects deserve clinical consideration. A speaker cited one study that showed adverse nutrition effects when farmers switched production from locally consumed food to export crops in response to improved export prices. It was also observed that international development agencies may sometimes exacerbate nutritional problems by inducing subsistence farmers to adopt cash crops.

One speaker warned against generalizing about the situation in a country on the basis of aggregate food availability data, since not only will rural areas show different response patterns from urban areas when food availability changes, but also there will be differential responses (within the rural or urban sectors) depending upon previous levels of program services in the various areas. Several speakers stressed a need to look at the general orientation of a nation's health policy and at the influence of overall social and economic development policy upon health and nutritional status.

It was observed that even in cases where one can show adequate food for each family, it is possible to document relatively high levels of malnutrition among children due to maldistribution *within* families. In fact, a survey in a Caribbean country showed a reduction in malnutrition of children in 1975, just after the large increases in world prices of oil and food. The speaker suggested the nutritional improvement in this case might have come from better household management, even though overall living costs were increasing.

Citing the strong export performance of agriculture in many poor countries, one speaker felt that food production for local consumption also could be quite efficient and responsive if demand were strong, i.e., if crop prices were competitive with prices for export crops. This reasoning led him to conclude that nutrition is especially affected by income distribution, particularly urban

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income. Another speaker cautioned, however, about the likely conflict between interests of farmers, who need high prices in order to produce abundantly, and poor urban consumers, who need cheap food. The consequences of such a conflict may be that nutrition frequently will become a serious political problem.

It was noted that many countries are seeking to establish multi-sectorial food and nutrition plans that encompass some or most of the variables cited by Daly, Davis, and Robertson. This interest in impact evaluation is growing as governments attempt to select the most appropriate interventions or programs while also assessing which programs are achieving the desired goals. The exploration of food and nutritional surveillance systems is one part of this effort. These range from fairly limited data gathering and interpretation efforts tied to specific programs to more ambitious efforts to collate, analyze, and interpret data regularly gathered on a national basis by the many ministries and agencies working in a given country. Regardless of the scale of each proposed surveillance system, it is recognized by all, that fairly simple and reliable indicators are required for regular monitoring of changes in health and nutritional status.