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TOWARDS A SYSTEM OF COMPREHENSIVE HEALTH PLANNING

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1. INTRODUCTION

Every health service decision-making group is confronted with a series of choices which concern the justification for funds, the selection of alternative health strategies, and the allocation of resources. To make the required decisions in a rational manner, the group must have available to it methods for assessing the needs of the population, techniques for synthesizing effective and feasible tactics, means for projecting the outcomes of alternative courses of action, and procedures for learning from past efforts and results.

Although these may be considered the essential components of a health decision-making process, there are few, if any, examples of such a process to be found anywhere. Perhaps the main reason for this is the lack of appreciation by many decision-makers of the potential benefits of such support. This lack of appreciation has not been mitigated by the research which has been conducted in this area. Too often, this research, by over-emphasizing one aspect of the planning process, has neglected the necessity of an integrated and balanced support to decision-makers. Also, by concentrating on purely descriptive techniques, it has neglected the fact that planning is basically a process of projecting and selecting from alternative futures. Furthermore, only lip-service has been paid to evaluation; there is little evidence to show that errors made in the past have led to an improvement in the process of making decisions.

Further research could now take either of two directions. It could investigate individual aspects of the planning process in the hope that the pieces could eventually be fitted together into a cohesive whole. The lack of success of such attempts in the past suggests little promise for this direction. The other approach would be the evolution of a system of planning. Such a system would be designed to interrelate all the individual aspects of the planning process, so as to

- (a) provide the information required for making good decisions in a timely and efficient manner, and
- (b) improve the decision-making process by providing the means for feeding back knowledge gained through evaluation.

This paper is concerned with the evolution of a system of planning and with its major operational and technical problems.

2. A MODEL OF A SYSTEM FOR HEALTH PLANNING

2.1 Identification of basic system elements

In order to develop an operating health planning system, the characteristics of the system as well as its methodologies, tools, personnel requirements, organization and administration must be clearly specified.

Much has been written on the desired and necessary characteristics of an effective system for health planning. Rather than review this literature in any detail, the following list is offered as a summary of functions which such a system should be able to perform:

- (a) Manage the available health resources in an efficient manner to achieve well-defined, desired alterations in the health of a population.
- (b) Synthesize effective, feasible new tactics which take into consideration the complex interrelationships of man, disease and environment.
- (c) Examine the problem of generating and allocating new health resources in its entirety so as to avoid an unco-ordinated piecemeal approach.
- (d) Project the outcomes of analysed tactics.
- (e) Perform a decision analysis to govern the integration of new tactics into an existing health strategy.

- (f) Prepare a plan of action which specifies procedures, schedules, activities, responsibilities and major decision points necessary for successful strategy implementation.
- (g) Evaluate the results of past planning efforts.
- (h) Use the results of evaluation to improve the health planning method.
- (i) Reconcile the cost of planning and evaluation with the increase in benefits gained through planning.

The number of methodologies and tools required to be able to carry out these functions is considerable. As a result, we must immediately be concerned with the organizational elements within which these functions can be performed effectively and efficiently.

A tentative list of these elements is as follows:

- (a) situational analysis,
- (b) tactic synthesis,
- (c) decision analysis,
- (d) plan preparation, and
- (e) evaluation.

These are outlined in detail in Annex I.

The selection of these elements rests on the necessity for any planning process to include provision for:

- (a) the gathering and analysis of basic information;
- (b) the determination of alternative tactics and strategies which may be used;
- (c) the analysis of these tactics culminating in the choice of one to be implemented;
- (d) the specification of detailed methods for implementation, and
- (e) a retrospective evaluation of the manner in which these planning steps have been carried out, so as to improve the entire process.

2.2 Description of the functioning of the conceptualized system of planning

At the present time, such a description has been formulated only on a macro level as illustrated in Annex II. This macro description of the system of planning may relate to each other and to the decision-makers responsible for the allocation of the available health resources.

The decision-makers guide and control the support of the elements by:

- (a) identifying priority health problems;
- (b) establishing major constraints (political, institutional, timing, etc.);
- (c) identifying major criteria of effectiveness;
- (d) deciding on which experimental tactics require further study (e.g., pilot health service project extension, gathering of more information on the change in population health status, etc.);
- (e) deciding whether or not to implement a strategy;
- (f) deciding on the direction and scope of evaluation necessary to lead to an improved planning process, i.e., to improving the decisions to be made in the future.

In order to handle the great complexities of an effective health planning system, a number of technical methodologies will be necessary. Annex I includes a listing of some of the methodologies which at this time appear to be relevant to the planning system being discussed.

The health planning system being proposed parallels the approach of operations research to solving decision problems. The elements of planning broadly identified in Annex II are a representation of the organization which would be developed to carry out this problem-solving approach. In other words, the sequence of situational analyses, tactic synthesis, decision analysis, plan preparation, and evaluation, is representative of the steps required to solve any decision problem. Thus, while problem solutions may differ from region to region and problem to problem, the system for finding good solutions is the same.

3. SOME MAJOR OPERATIONAL CHALLENGES

3.1 Composition of the planning group

The elements and associated methodologies outlined in Annex I will require a large staff of technical personnel. A sizeable portion of this staff will be analysts of varying kinds who will be concerned with the development of models for projecting outcomes of alternative tactics. The modeling efforts, which will be mostly descriptive for situational analysis, operational for tactic synthesis and predictive for

The desired characteristics of a comprehensive health planning system listed in 2.1 require a great number of disciplines, e.g., portrayal of the "complex inter-relationships of man, disease and environment" requires epidemiological, ecological, sociological, demographic, economic, anthropological, public health, etc., inputs and analysis. This comment applies equally well to the other characteristics presented. It would be difficult to include all of these disciplines in the planning group. On the other hand, a means must be found for assuring that each discipline "has its say" in the planning process.

3.2 Management of information

The previous point highlights what is likely to be the major technical problem facing the planning group, namely, the possibility of being overwhelmed by the data that comprehensive analyses are capable of producing. Each discipline will want the data structured in a way compatible with its interests. Counterbalancing the tendency of generating too much data will be the decision analysts who will argue that data should not be collected until its potential utility (improved decisions) can be assessed. Nevertheless, the basic data needs for situational analysis are likely to be great, and are likely to be demanded by all as a prerequisite to any efforts to synthesize new tactics. The group must possess the ability to learn how to work with and display this and subsequent data effectively.

3.3 Co-ordination of planning activities

The processing and analysis of data, the development of mathematical and simulation models, the synthesis and analysis of alternative tactics, etc., are basic planning activities. The planning group will often find itself simultaneously involved in two or more such activities. This process of working out different aspects of different problems in parallel will pose major co-ordination and communication problems. These must be overcome for otherwise the planning process will disintegrate into disjointed operations.

4. SOME MAJOR TECHNICAL CHALLENGES

4.1 Use of situational analysis for the synthesis of alternative tactics

A tactic is a well-defined action taken to bring about a desired change to the health status of a population. In other words, the selection of one tactic over others is based on one or more disease end-points. Selection of one tactic over others at a minimum

requires ability to specify expected costs (types of resources involved and level of their use) and expected benefits (reduction of risk to defined population groups).

Situational information is needed to provide a basis for estimating the costs and benefits associated with any given tactic. Greater detail of information may lead to improved tactic cost/benefit "ratio" as a result of

- (a) more precise definition of population at risk;
- (b) improved ability to tailor tactic to specific situational variations, e.g., increase acceptability to population being served;
- (c) estimating cost/benefit requires a knowledge of the population theoretically being served, resources being used and assumed usage patterns.

Any given tactic has risks associated with it (outside of the risk of having been formulated erroneously from a medical viewpoint):

- (a) unacceptability to potential users (present and future);
- (b) new knowledge offering possibility of a better tactic;
- (c) changing situation:
 - movement of population,
 - basic changes to risk levels,
 - changes in resource costs

Reduction of unacceptability to the population and increasing the cost/benefit ratio of any given tactic could be achieved by improving definition of populations at risk. Epidemiological and ecological understanding of the health problems of a population is required to achieve this.

Sound epidemiological and ecological understanding involves relatively sophisticated ways of classifying populations and portraying their health status. Basic concepts include awareness of:

- (a) constitutional variation from individual to individual and associated variation in risk status;
- (b) impact of individual's environment on his risk status;
- (c) varying ability of individuals to "adapt" to situation.

Basic technical questions include:

- (a) Are there better ways of classifying populations, i.e., ways which yield more effective tactics?
- (b) Are there efficient ways for learning what such classification schemes may be?

Reduction of the adverse impact of a changing situation could be achieved by improved means for projecting the situation into the future. Basic demographic growth and distribution models associated with elementary models of available health services would be the basic tools required for such an analysis.

4.2 Decision analyses and the value of information

Situational information in general can be classified according to the general difficulty of acquisition. This in turn is a function of:

- (a) number of variables involved;
- (b) degree of difficulty associated with measurement;
- (c) variation from situation to situation in definition of variables.

Ideally, one should be able to justify the acquisition of information by the accompanying increase in the possibility of synthesizing a better tactic.

The process of determining the appropriate level of information required could be approximated by guessing at results not yet known and then synthesizing the best tactic as if the guess were accurate. Variation in the tactic synthesized as a function of the guess made could then be used to evaluate whether or not a real measurement should be made.

The problem of what information is worth gathering is aggravated by the difficulty of utilizing the information properly. In the previous paragraph, it was stated that "guessed at" results would be used as the initial bases for tactic synthesis. Unfortunately, the task of synthesizing a tactic and estimating costs and benefits is often a difficult one. In fact, one is again confronted with a choice which in many ways is more difficult than the problem of choosing what information to gather. This is the problem of what kind and how much of a modeling and analysis effort should be made in search of improved tactics.

4.3 Role of evaluation

One cannot state simple rules which specify how much of an effort is required at each stage. Lacking such rules initially, it would seem that we must learn by doing and report very carefully what we are doing, why, what we are learning about the inadequacies of our own procedures, and what we are doing to improve them. This is the major responsibility of evaluation.

Evaluation, thus, is a retrospective look at past decisions for the purposes of improving the process leading to decisions. "Evaluation is best considered to be that systematic planned feedback of information needed for guiding future actions. In a sense, evaluation is the mirror-image of planning in that it is the process of looking back upon action, making a judgement about it in order to provide necessary information for the future."¹

The evaluation element must possess a technical competency to review the effectiveness and efficiency of all of the methodologies utilized to synthesize a comprehensive plan of action.

¹ Blum, H.L. et al, Notes on comprehensive planning for health, Western Regional Office, American Public Health Association, P.13.02

SYSTEM FUNCTIONS AND POSSIBLY USEFUL METHODOLOGIES

I. SITUATIONAL ANALYSIS

Functions

1. Identification of basic attributes of situation, e.g.,
 - A. Health problems.
 - B. Population characteristics: demographic, behavioural.
 - C. Environment.
 - D. Resources: distribution, usage, growth potential.
 - E. Available health tactics: resources required, risks served, benefits.
 - F. Constraints: organizational, legal, political, economic.
2. Resolution, classification, and grouping of basic attributes into useful categories.
3. Measurement and estimation of the population status in terms of these categories.
4. Projection of future population status in view of population and economic trends.

Methodologies

1. Ecological, epidemiological and social survey techniques including sampling procedures.
2. Pattern recognition techniques.
3. Demographic, economic and health resource projection techniques.

I. TACTIC SYNTHESIS

Functions

1. Relation of applicable tactics to the following service delivery systems.
 - A. In-patient care facilities.
 - B. Ambulatory care facilities.
 - C. Home care services.
 - D. Environmental control services.
 - E. Health education programmes.
2. Establishment of the relationship between the resources required for, and services offered by, each type of delivery system.
3. Combining of tactics into service delivery systems to meet major constraints and criteria.
4. Establishment of the relationship between services offered and satisfied and unsatisfied health needs.
5. Identification of tactics worth further analysis.

Methodologies

1. Operational modeling - linear programming, scheduling and assignment techniques, simulation, etc.
2. Cost/benefit and cost/effectiveness analysis.

III. DECISION ANALYSIS

Functions

1. Projection of possible outcomes (population health status, cost, etc.) of tactics: modeling.
2. Measurement of sensitivity of outcomes to identify crucial variables.
3. Assessment of uncertainty in projected outcomes and determination of the value of reducing uncertainty in the crucial variables.
4. Development of the most efficient information gathering programme for reducing uncertainty.
5. Determination and portrayal of competing strategies open to the decision-makers.

Methodologies

1. Mathematical and simulation modeling of diseases and tactics.
2. Dynamic programming.
3. Applied decision theory.

IV. PLAN PREPARATION

Functions

1. Specification of constraints governing implementation.
 - A. Resources present and required.
 - B. Costs.
 - C. Scheduling.
2. Development of a plan of action which includes:
 - A. Operational and administrative procedures and associated responsibilities.
 - B. Flow (PERT) chart which assigns:
 - (i) activities and schedules,
 - (ii) personnel hiring and training,
 - (iii) time intervals for resource acquisition
 - (iv) major operational milestones
 - C. Identification of critical activities - those, if delayed, which would cause delay in the whole project.
 - D. Identification of interim decision points and assignment of decision responsibilities.
 - E. Creation of a monitoring plan, with definitions of critical variables and limits which signal a review of schedules, costs and benefits.

Methodologies

1. Network flow techniques: Programme evaluation and review technique (PERT), critical-path, etc.
2. Management information systems.

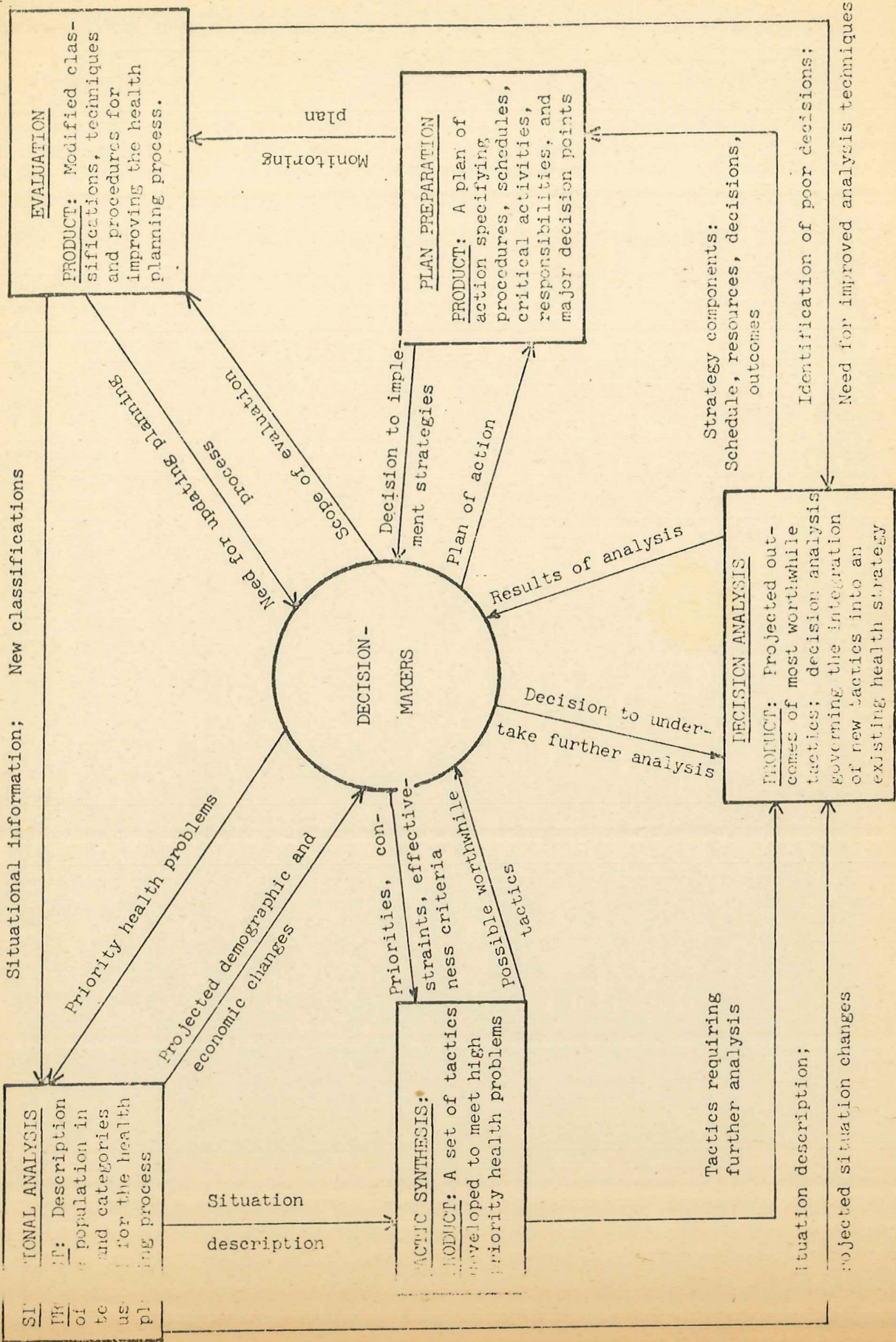
V. EVALUATION

Functions

1. Monitoring of tactics and strategies in operation.
2. Retrospective analysis of major decisions taken leading to these tactics and strategies.
3. Identification and exploration of events not previously foreseen in decision analysis.
4. Identification of poor decisions.
5. Development of modified classifications, techniques and procedures for improving the health planning process.

Methodologies

Evaluation being a "mirror-image of planning in that it is the process of looking back upon action, making a judgement about it in order to provide ... necessary information for the future" must make use of all of the methodologies for planning in order to assess their utility and adequacy.



ELEMENTS OF SUPPORT FOR THE DECISION-MAKERS

SUGGESTED READING LIST

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