

a. Development and Demonstration Activities

Utilizing the grant authority of Section 316 of the Public Health Services Act, the Kidney Disease Control Program actively promotes the development of community dialysis demonstration programs in various areas of the country. In addition to demonstrating the feasibility of the treatment in the community setting, these programs allow exploration of methods of financing dialysis programs, provide expanded training opportunities, and allow testing of new patterns in the provision of dialysis services. A total of 15 community dialysis programs are presently being funded.

b. Training Activities

In addition to providing training opportunities through the grant program, the Branch is responsible for development of training materials and techniques for use in both community centers and home dialysis programs. This extends to all types of professional and technical personnel and complements the limited direct assistance for training in centers receiving grants.

c. Public and Professional Information and Education

In this area, the Branch is responsible for the development and distribution of both technical and non-technical materials related to the dialysis method, and for the provision of accurate information on all aspects of the problem to the public through the various media.

d. Data Collection and Analysis

The Branch engages in a continuing data collection and analysis function directed towards the acquisition of quantitative information

from dialysis programs--regardless of the mode of support--and analysis of the information in order to gain an accurate assessment of the current status of the method. The data is disseminated to interested parties inside and outside government, and is utilized in the long-range planning functions of the Branch.

A summary of the Kidney Disease Control Branch Program's expenditures are presented in Table V.

Table V

SUMMARY OF KIDNEY DISEASE CONTROL BRANCH PROGRAM EXPENDITURES IN 1966

Program	1966 Expenditures
Community Dialysis	\$2,617,000
Prevention	385,000
Basic Data Development	156,000
Information and Training Materials	<u>249,000</u>
Total	\$3,407,000

3. Bureau of Health Services

Present program activities of the Bureau of Health Services related to kidney problems include basic and clinical research programs which are being conducted at four Public Health Service general hospitals. These programs encompass investigations in normal renal physiology as well as a broad range of primary and secondary renal abnormalities. A cooperative study involving seven general hospitals is attempting to

define the pathogenesis and natural history of chronic pyelonephritis and to assess the response to long-term suppressive antibiotic therapy. One of the hospitals has established a kidney disease screening clinic to evaluate patients with suspected renal abnormalities. A second cooperative study of hypertension includes the renal causes and complications of this entity. Both cooperative studies are funded by the NHI.

With regard to training in this subspecialty, it has been necessary until recently to provide training outside-the-Service in order to develop career investigators for the Bureau and the Service. Individuals, who received this training, now provide the competence for the present research programs and for future training programs.

Expenditures by the Bureau of Health Services for research and training for 1966 are presented in Table VI.

Table VI

BUREAU OF HEALTH SERVICES KIDNEY DISEASE RESEARCH AND  
TRAINING EXPENDITURES FOR 1966

Program	1966 Expenditures
Training	\$24,000
Research	<u>50,000</u>
Total	\$74,000

4. Vocational Rehabilitation Administration

At present the magnitude of specifically identified support for the Vocational Rehabilitation Administration for patients with kidney disease is not readily ascertainable.

B. The Veteran's Administration

The Veteran's Administration is charged with the responsibility of providing medical care, and to conduct medical research, designed to maintain or improve the health of its beneficiaries. Within this broad mandate the Veteran's Administration has exerted a significant effort in the kidney disease area.

The large majority of Veteran's Administration funds directed towards kidney diseases is expended in the area of clinical care. Information as to the level of effort in this area is scanty, and overall costs are not available. However, discharge diagnoses from the Veteran's Administration hospitals can provide clues on the size of the problem. In calendar years 1962-64, patients discharged from Veteran's Administration hospitals with selected principal and associated renal diagnoses averaged nearly 50,000 per year. The number of deaths with kidney disease as a principal diagnosis has remained relatively constant at roughly 1,600 per year although the distribution of diagnoses has changed somewhat.

A little over three years ago the Veteran's Administration decided to include a chronic hemodialysis capability within its hospital system. Since that time, 13 hospital units have been established. Actual cost analysis of this program is very difficult since a large share of the cost of the activity is supported from basic hospital budgets and is not separately identifiable. Specific allocations by the Veteran's Administration Central Office for unit activation over and above these basic hospital costs has been estimated at \$2,476,000.

At the present time, the Veteran's Administration estimates that approximately 175 patients are being maintained on chronic intermittent hemodialysis. It further estimates that the future development of units already established

would enable it to perhaps double this caseload. Analysis of the mortality data mentioned earlier has led the Veteran's Administration to estimate that roughly 200 to 600 of the 1,600 individuals dying each year due to kidney disease would be suitable candidates for chronic hemodialysis programs.

Kidney transplant efforts are being conducted within the hospital system of the Veteran's Administration and generally are associated with a chronic hemodialysis program. Reliable data on veterans treated with kidney transplantation, however, are not available. At a recent meeting, surgeons from most of the Veteran's Administration hospitals estimated that approximately 100 such operations were reported as having been performed during the past three years. However, a considerable number of veterans have been referred to non-Federal institutions for transplants.

Research efforts sponsored directly by the Veterans Administration constitute only a very modest part of the overall national investment in kidney research. Research projects are underway in transplantation and dialysis as well as in other kidney research areas.

A summary of estimated expenditures for VA kidney disease research programs in 1966 is presented in Table VII.

Table VII

ESTIMATED VA EXPENDITURES FOR KIDNEY DISEASE RESEARCH PROGRAMS IN 1966

Program	1966 Expenditures
Research (dialysis and transplantation)	\$ 734,000

C. Other Federal Agencies

Program efforts by other Federal agencies include those of research by the Department of Defense, Atomic Energy Commission, U. S. Department of Agriculture, National Aeronautics Space Administration, and National Science Foundation.

With the exception of the Department of Defense, expenditures by other Federal agencies in kidney disease are for research and are summarized in Table VIII. Expenditures by the Department of Defense for treatment of kidney disease have not been included.

Table VIII  
KIDNEY DISEASE RESEARCH PROGRAM EXPENDITURES BY  
OTHER FEDERAL AGENCIES IN 1966

Agency	1966 Expenditures
DOD	\$ 440,000
AEC	65,000
USDA	105,276
NASA	85,400
NSF	22,034
Other Nonspecified	<u>617,290</u>
Total	\$1,335,000

### III. NONFEDERAL EXPENDITURES FOR KIDNEY DISEASE PROGRAMS

There are numerous state and local programs which expend money for various types of kidney disease programs including construction of facilities, treatment and prevention. These have not been included in this report.

Certain nonfederal agencies carry on active research, education, and general service programs in kidney disease. A description of some of these follows.

#### A. The American Heart Association

In general, the aims of the American Heart Association are to combat diseases of the heart and circulation and to provide positive benefits for the health of the people of the United States. Because of the association of renal diseases to those of the circulation, the American Heart Association's program activities include a substantial effort directed toward the control of renal diseases. Although the Heart Association has traditionally placed its primary emphasis on the support of the acquisition of new knowledge through research, it also has embarked on broad programs of public and professional education and has supported specific community programs designed to contribute to the understanding and prevention of cardiovascular diseases as well as to provide support for the individual patient with cardiovascular disease. In the renal disease area, the largest portion of effort has been expended in the areas of research with particular emphasis on the relationship between hypertension and kidney disease. It is anticipated that future efforts to be expended in this area will remain at approximately the present level and the Heart Association does not plan to extend its efforts in renal disease into areas of other than research. Table IX shows the 1966 level of effort in renal and directly related research.

Table IX

## AMERICAN HEART ASSOCIATION EXPENDITURES IN RENAL RESEARCH FOR 1966

Program	1966 Expenditures
National	\$ 618,000
Local	<u>442,000</u>
Total	\$1,060,000

B. National Kidney Foundation

The aim of the National Kidney Foundation is to improve the care and treatment of those afflicted with kidney disease through the support of research into the incidence, causes, treatment, prevention, and cure of kidney diseases. The foundation also aims to promote professional and public education directed toward improving care and treatment of those afflicted with kidney disease. Through its lay and scientific advisory groups, the National Kidney Foundation cooperates with other agencies, public and private, to achieve these aims. Over the last five years the National Kidney Foundation has engaged in several broad areas of activity. Patient care services have included the distribution of drugs and medication, at cost or gratis, through its Drug Bank Program. A number of renal clinics has been promoted and assisted throughout the United States. Direct support of research activities has consumed the major portion of its resources, although a substantial effort also has been directed toward public and professional education. Table X shows the 1966 level of expenditures by the National Kidney Foundation for renal research, services, and education.

Table X

## NATIONAL KIDNEY FOUNDATION EXPENDITURES FOR 1966

Program	1966 Expenditures
Research	\$350,000
Services	200,000
Education	<u>200,000</u>
Total	\$750,000

C. John Hartford Foundation

The John Hartford Foundation expended money for renal disease primarily in the area of research on dialysis and urinary disease problems. Expenditures for 1964 totaled about \$796,000.

## Chapter 4

### Research Methodology

#### I. INTRODUCTION

This chapter presents the methodology used in the analysis of projected kidney disease programs. This methodology is designed to identify significant kidney diseases in the United States, to postulate programs designed to alleviate the effects of these diseases, and to estimate the benefits and costs associated with such programs. A schematic of this methodology is presented in Figure 1.

#### II. DISEASES STUDIED

Because of the complex diffuse etiologies and the large variety of diseases that affect the kidney, it was imperative that the disease spectrum be narrowed in order to identify meaningful categories of kidney disease which will serve as foci for important research and control programs (please see Chapter 2). Prominent kidney diseases were identified and grouped in the following manner:\*

##### 1) Infectious Diseases of the Urinary Tract

<u>Disease</u>	<u>ICD Code</u>
Infections of the kidney	600
Cystitis	605
Urethritis (non-venereal)	607
Pyelitis and pyelonephritis of pregnancy	640

\*

ICD-1/ codes and nomenclatures were used to identify diseases of interest as most available statistics on mortality and morbidity follow these classifications.

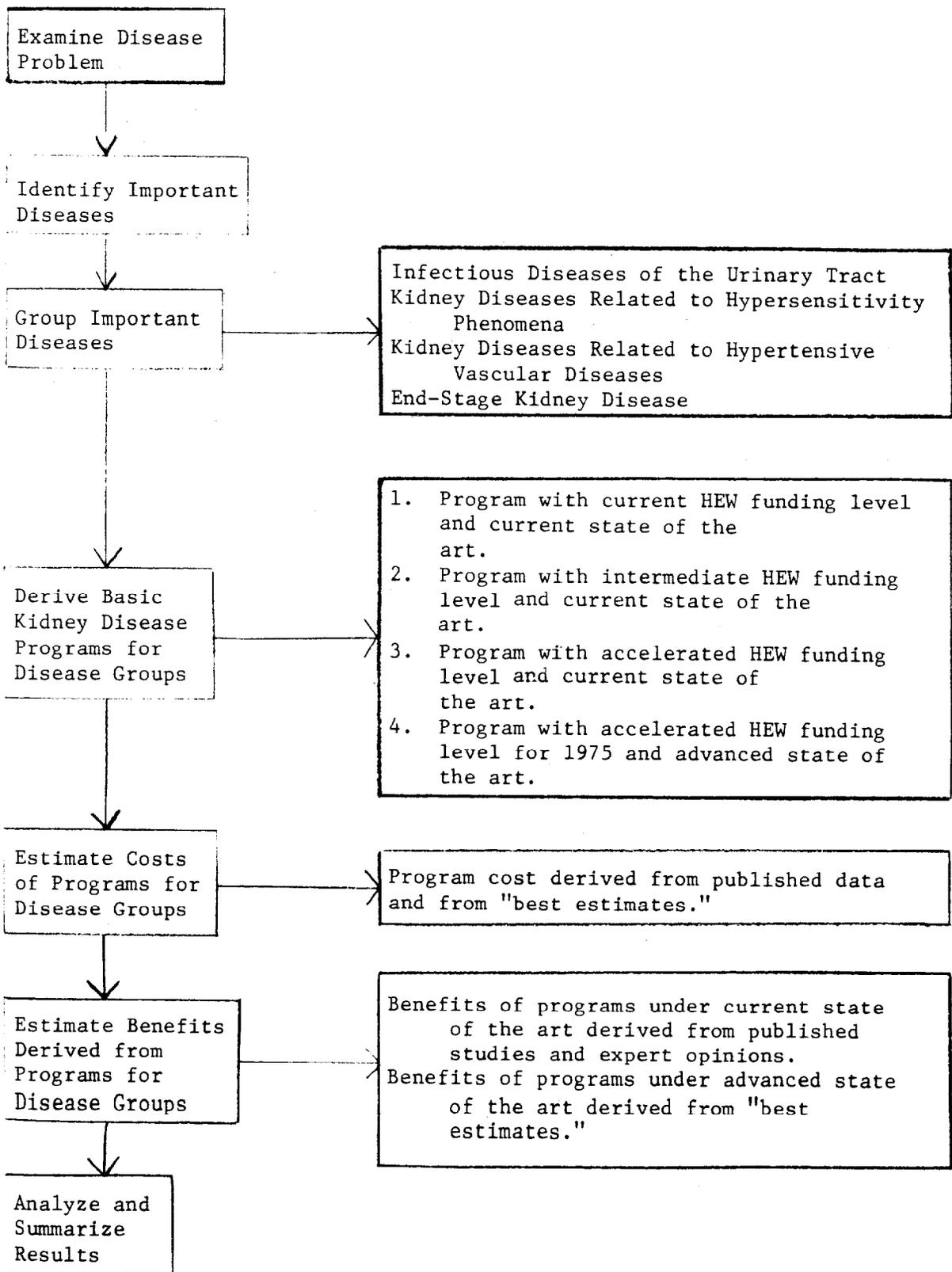


Fig. 1. Methodology Schematic.

2) Kidney Diseases Related to Hypersensitivity Phenomena

<u>Disease</u>	<u>ICD Code</u>
Acute nephritis	590
Nephritis with edema, including nephrosis	591
Chronic nephritis	592
Nephritis not specified as acute or chronic	593
Other renal sclerosis	594

3) Kidney Diseases Related to Hypertensive Vascular Diseases

<u>Disease</u>	<u>ICD Code</u>
Essential benign hypertensive heart disease	440
Essential malignant hypertensive heart disease	441
Hypertensive heart disease with arteriolar nephrosclerosis	442
Other and unspecified hypertensive heart disease	443
Essential benign hypertension	444
Essential malignant hypertension	445
Hypertension with arteriolar nephrosclerosis	446
Other hypertensive disease without mention of heart	447

4) End-Stage Kidney Disease

Although end-stage kidney disease is the eventual result of advanced or untreated primary renal disease, it is considered separately because of the unique treatments which can be employed; i.e., chronic intermittent dialysis and kidney transplantation.

5) Other Diseases Affecting the Kidney

A variety of other diseases falls within this category. Some

(i.e., neoplasms of the kidney) fall within other disease control programs. These diseases have not been considered in the detailed analysis for reasons stated in Chapter I, E, 1 & 2, but many should be considered in a more comprehensive study.

### III. KIDNEY DISEASE PROGRAMS STUDIED

A limited number of hypothetical kidney disease programs were studied. These programs are delineated by time, state of the art, and funding level. The time periods used included fiscal year 1966 (a year for which reasonably complete costing data are available) and 1975 (a year for which significant advances in the state of the art are anticipated). Both current and advanced states of the art are considered in this analysis; the current state of the art refers to 1966 modus operandi in the control of kidney disease. The advanced state is that which would exist following significant research advances in kidney disease. Program funding levels were considered from the standpoint of HEW participation (third party payments and general direct health expenditures were not considered) and include the current level of expenditures (1966), an intermediate level of spending, and an accelerated expenditure level. The hypothetical intermediate funding level is two to three times greater than the current level and is used to analyze various programming possibilities at a more accelerated level. The hypothetical accelerated funding level is even greater than the intermediate level (about six times greater than the current level). Using these parameters, four major programs were developed under which each disease group is studied. These are:

1) Program A

This program describes the distribution of the total funds available from HEW (currently approximately \$47,000,000) and other kidney disease programs for fiscal year 1966 for which benefits are maximized within the current state of the art for 1966.

2) Program B

This program describes an intermediate HEW funding level (two to three times greater than the amount available for fiscal year 1966) for which benefits are maximized within the current state of the art for 1966.

3) Program C

This program presents an "accelerated" HEW funding level (about six times greater than fiscal year 1966) for which benefits are maximized within the current state of the art for 1966.

4) Program D

This program describes an accelerated HEW funding level (as in Program C) for which benefits are maximized within an advanced state of the art for 1975. The advanced state of the art as used here implies that significant advances in research have been made and that the control of renal disease is operational.

In general, the effects of the various programs projected are mutually exclusive. First, the programs proposed for any given year do not affect the programs proposed for any other year; this assumption is necessary in order to estimate fully the benefits and costs of a single program. Secondly, the programs proposed for a given disease group are not assumed to affect the programs for other disease groupings. Again, this is done to estimate

closely the effects of a single program. Moreover, within the imposed time period (1966 to 1975) it is felt that important inter-effects would not have occurred; this is especially true when considering the preventive program components and their effects on end-stage kidney disease.

In addition, the programs are in a steady state, that is, the full effect of the programs is assumed to have been attained within the year under consideration. It is assumed that personnel build-up, initial costs, etc., which are inevitable in establishing a program, have already been arranged.

#### IV. COSTS OF KIDNEY DISEASE PROGRAMS

The costs associated with the various kidney disease programs were arrived at by utilizing various sources and assuming a constant 1966 dollar value throughout. PHS publications<sup>2/</sup> and a current study at the Research Triangle Institute<sup>3/</sup> provided basic cost data. Unpublished data from the National Center for Health Statistics,<sup>4/</sup> the National Drug and Therapeutic Index,<sup>5/</sup> the Professional Activities Service,<sup>6/</sup> and published data from the American Hospital Association<sup>7/</sup> provided information on the costs associated with morbidity and mortality relating to kidney diseases. "Cost to HEW" refers only to the direct health expenditures of HEW (excluding third party payments) generated by the programs described. "Total cost" refers to all expenditures anticipated for the programs described.

While the costs of certain specific treatments such as dialysis are available (although subject to range errors), other costs such as that of implementing kidney disease prevention programs, including mass screening,

were not generally available. Accordingly, it was necessary to make "best estimates" based upon informed medical judgment. As such, these figures represent a first approximation of the desired data. Implicit in such methodology is that as more data becomes available, these estimates can be refined.

When screening and educational programs are described in the text, the assumption is always made that the particular program component studied is part of a general screening and educational program.

#### V. BENEFITS OF KIDNEY DISEASE PROGRAMS

Benefits derived from proposed kidney disease programs are measured only in terms of the impact upon mortality, prevalence, and morbid days in select population groups, i.e., number of lives saved, number of cases reduced, and number of morbid days prevented. Reduced mortality, reduced prevalence, and reduced morbid days (defined as days of restricted activity), are benefits measured in disease groups 1, 2 and 3 above. Reduced mortality only was used for disease group 4 above. No attempt was made to estimate the benefits derived from a reduction of indirect costs. In addition, no attempts were made to estimate the returns made to the general economy by an individual whose life has been saved or lengthened or where disease has been terminated.

In the case of the disease groups related to infection, hypersensitivity, and hypertension, a select or high-risk population group was identified and data were collected on current mortality, prevalence, and morbidity. Estimate were then made on the effect of a projected program on morbidity and mortality for these groups. The difference between current mortality and morbidity per year and those estimated to be the effect of the proposed program

(assuming the program has become fully established) comprise the short-term benefits discussed in this analysis. Long-term benefits for these groups (not accounting for changes in these groups over the years) were estimated in terms of reduction in the number of cases of end-stage kidney disease, both on an annual and on a cumulative basis.

Annual long-term benefits assume that a sufficient length of time has elapsed after the implementation of the programs to decrease maximally the yearly number of cases of end-stage kidney disease which would eventually have occurred in the high-risk groups without such a program.

Cumulative long-term benefits refer to the summary effect on the number of cases of end-stage kidney disease which would have occurred without the projected program. Each program is analyzed for a surveyed population and does not take into account changes in that population over the years.

For the end-stage kidney disease group, the treated population was identified and estimates made as to the number of deaths prevented as a result of the program in a particular year. No attempt was made to measure short-term benefits in terms of reduced morbid days. Because of the relatively high incidence of death in these groups, the uncritical estimation of morbid days can be very misleading. For example, it can be shown in some cases that a patient in kidney failure may have fewer morbid days if he succumbs to his disease after conservative treatment only, rather than if his life were prolonged with the aid of chronic dialysis.

## VI. METHODOLOGY LIMITATIONS

Because of the time limits involved, this study has several limitations.

Among these are:

- 1) A limited number of kidney disease control programs were considered;
- 2) A limited number of diseases were analyzed;
- 3) Diseases were grouped rather than studied singly;
- 4) Benefit measures employed did not include reduction in indirect costs;
- 5) Only two time periods, 10 years apart, were studied;
- 6) Only 4 funding levels were considered;
- 7) Only high-risk population groups were considered;
- 8) Cohort analysis was not used in estimating benefits. In future studies the benefits attributed to various programs could be followed in a cohort of some fixed size from birth to death;
- 9) Inflationary trends were not taken into account;
- 10) Associated benefits such as the simultaneous effect on rheumatic heart disease of a program to control acute glomerulonephritis were pointed out but not measured; and
- 11) The effect of possible changes in the general standard of living was not taken into account.

All of the above limitations should be examined in any continuation of this study. Despite these limitations, however, the results of this study are significant insofar as it provides some idea of the dimension of the problem and a rather specific indication of benefits to be derived from alternative programs and funding levels.

## FOOTNOTES

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National Drug and Therapeutic Index, Inc., Unpublished Data on Drug Costs and Physician Visits, Ambler, Pa., (1967).

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## Chapter 5

Program Analysis

## I. INTRODUCTION

This chapter discusses in detail the programs designed for the four disease groups under consideration in this study. As mentioned earlier, the disease groups include infectious diseases of the kidney and urinary tract, hypersensitivity diseases of the kidney, kidney disease related to hypertensive vascular diseases, and end-stage kidney disease. These disease groups are studied within the constraints of four hypothetical programs varying in budgetary level, state of the art, and time. Three hypothetical programs for fiscal year 1966 have been postulated based on a low (reflecting current HEW expenditures of about \$47,000,000), intermediate (with \$117,000,000 HEW support), and high (with \$290,000,000 HEW support) expenditure level. In addition to these three programs, a fourth program reflecting advances in the state of the art on an accelerated (\$293,000,000 HEW support) level which could be operational by 1975, is considered. Possible activities for each disease group are projected within the framework of each of the four programs mentioned above. In each case attempts have been made realistically to evaluate what will happen within the constraints of the program and the disease under consideration.

As each disease group was being studied within the program constraints, realistic program components were postulated including their costs and estimated benefits. The following components were used:

- 1) Prevention, Diagnosis, and Treatment

This component refers to the screening, confirmatory diagnostic tests, relevant treatment follow-up, and related general educational and administrative steps needed to ameliorate or control the disease. (This includes postgraduate physician education and relevant lay education).

2) Research

Research includes problem-focussed laboratory and clinical studies as well as fundamental, individually oriented research supported by grants.

3) Training

The training of researcher workers and other specialized medical personnel other than the general educational efforts referred to in the first program component is of concern here.

4) Facilities

Included here is the real estate and hard core equipment that support any disease control program.

Both short and long-term benefits were estimated. Short-term benefits were determined in terms of reduction per year in mortality, prevalence and morbid days. Long-term benefits were determined on the basis of an annual reduction in end-stage uremia, and on a cumulative (life-long) basis for the high-risk population being considered by the specific program.

As indicated in the methodology, in many instances it was necessary to use "best estimates" based on informed medical judgment. These estimates are obviously subject to range errors, but are representative, by and large, of the facts that can be drawn from current information.

The remainder of this chapter is divided into major sections, according to the various disease groups. Within each of these sections the four hypothetical programs are considered.

Benefit-cost tables summarize the analysis of each hypothetical program.

The reader of this chapter is referred to Chapter 1 of the report (Introduction and Overall Summary) for a textual summary of the various analyses and for a discussion of the findings within the overall framework of the kidney disease problem.

## II. INFECTIOUS DISEASES OF THE URINARY TRACT

### A. Introduction

This section pertains to programs needed for the control of infectious diseases of the urinary tract.

In 1966, 10,550 deaths<sup>1/</sup> were estimated to have had infectious disease of the urinary tract as the underlying cause of death. In 1966, there were an estimated 1,963,000 cases of known infections of the urinary tract and an associated 38,197,000 days of restricted activity, 17,277,000 days of bed disability, and 4,185,000 work-loss days.<sup>2/</sup> The actual prevalence of the disease is at least 3 to 4 times higher (i.e., 6,000,000 to 8,000,000).<sup>3/</sup> The discrepancy is due to the presence of numerous asymptomatic and unreported cases.

The statistics and estimates used and described in the text are based, in most cases, on information gathered from the literature. In many instances the validity of such data, upon which projections are based, might be questionable. However, the information is often quite reliable and has been used realistically to project the findings onto overall population figures.

Four programs have been considered in this analysis (see Chapter 4, Research Methodology). The following sections describe these in detail.

### B. Infectious Diseases of the Urinary Tract, Hypothetical Program at Current HEW Expenditure Level, Based on Current State of the Art

#### 1. Introduction

This program has four components:

- 1) Screening, diagnosis, treatment, and supportive physician and lay education and administration;

- 2) Research;
- 3) Training; and
- 4) Facilities.

As illustrated in Figure 1, the total cost for this program is estimated to be \$158,265,000. Of this amount, HEW funds would account for \$9,203,000. A discussion of the various program components follows.

2. Screening, Diagnosis, Treatment, and Supportive Education and Administration

Within the present state of the art, a program would be developed to screen high-risk patient groups for the presence of urinary tract infections.

The highest number would probably come from:

- 1) Hospitalized in-patients,
- 2) Non-hospitalized pregnant females, and
- 3) Non-hospitalized diabetic patients.

These population groups are known to have a high incidence of urinary tract infections.<sup>4/</sup> Furthermore, screening tests can be applied to these groups with a minimum of organizational development, since they are usually already under a physician's care. The development of this program presupposes the presence of an accurate screening test, such as a refined Greiss Test (nitrate reduction test), which will be incorporated into a routine examination of the urine in these population groups. The selection of these high-risk groups has been somewhat arbitrary, and further study may indicate that other groups such as school children and college students should also be screened. It was felt, however, that the groups selected would be most likely to derive maximum benefits under this program.

a. Relevant Population and Program Component Costs

It is estimated that during 1966, 29,147,000 individuals were

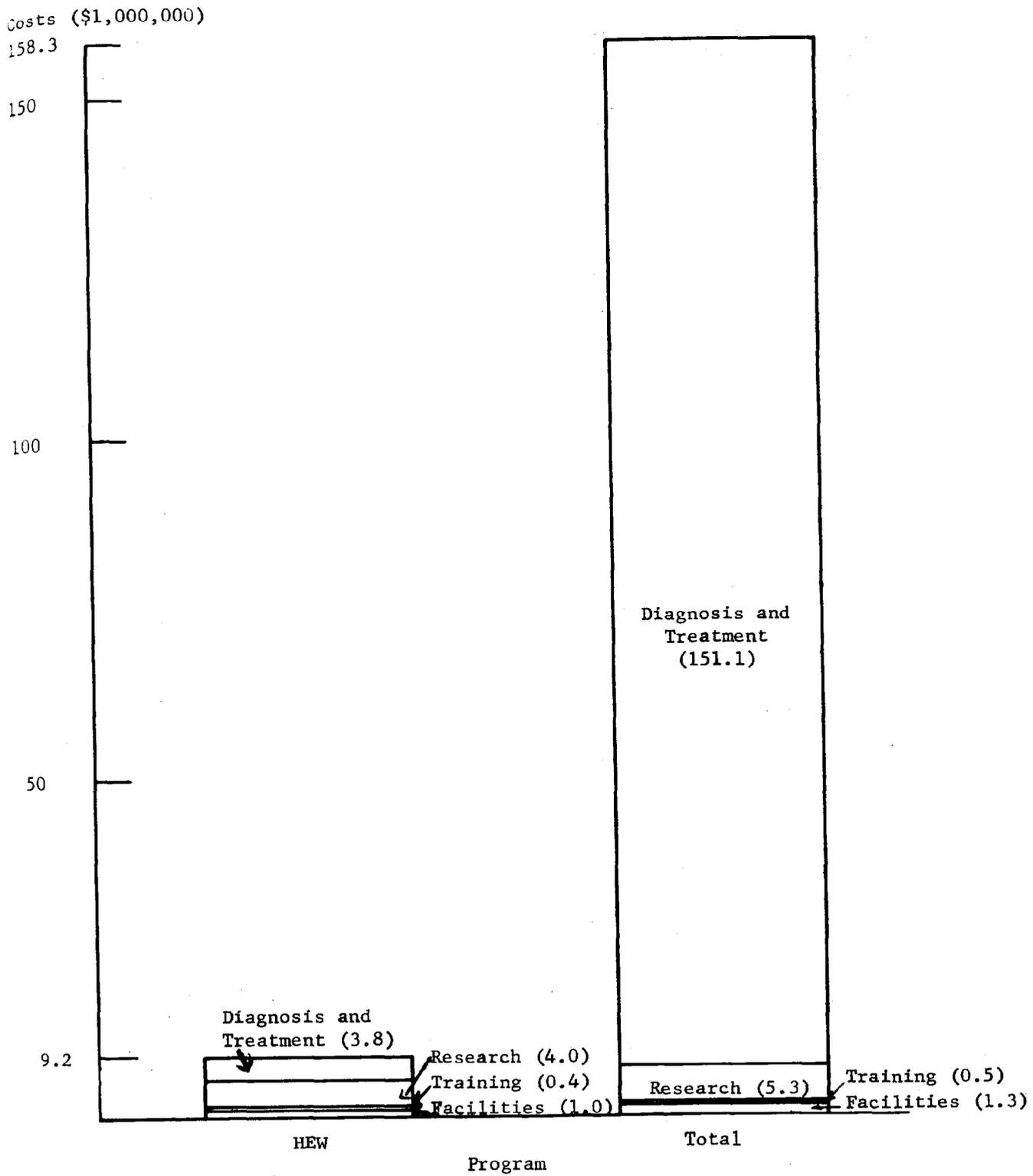


Fig. 1. Infectious Diseases of the Urinary Tract, Hypothetical Program Costs at Current HEW Expenditure Level, Based on the Current State of the Art.

short and long-term residents in hospitals and nursing homes in the U. S.<sup>5/</sup> In addition, in the U. S. it is estimated that there were 4,497,000 non-hospitalized pregnant females<sup>6/</sup> and 2,422,000 non-hospitalized diabetics.<sup>7/</sup> Thus, the total high risk group was comprised of 36,066,000 individuals. It is also estimated that significant bacteriuria exists in 20% of the hospitalized in-patient population, 6% of non-hospitalized pregnant females, and 15% of non-hospitalized diabetics.<sup>8/</sup> The projected prevalence in this population is then estimated to be 6,462,520 cases of bacteriuria<sup>9/</sup> (about 18% of the population at risk).

It is also estimated that a screening program will be able to detect 85% (5,493,140) of the patients having significant bacteriuria.<sup>10/</sup> Assuming a 5% false positive screening rate, 5,767,800 positive tests will appear in this program (105% of 5,493,140).<sup>11/</sup> Those individuals with positive screening results will require a confirmatory urine test (urine culture, bacterial colony count and antibiotic sensitivity test). A second repeat procedure for the 5,493,140 confirmed cases is necessary following therapy in order to ascertain the degree of success of treatment.

The estimated cost for the detection test as part of a general screening program is \$0.25 per person tested (\$0.125 for the cost of the test and \$0.125 for the cost of administration).<sup>12/</sup> The total cost is calculated to be \$9,017,000<sup>13/</sup> of which HEW will contribute \$1,803,000 for technical and financial support. The cost for a single confirmatory urine culture, colony count, and sensitivity test is \$7.50,<sup>14/</sup> and the total cost for confirmatory tests is then \$84,457,000 which will be contributed by sources other than HEW.

Treatment costs are estimated at \$10.00 per patient (note that these individuals are already under physicians' care and that most of

this cost is for drugs). The total cost of therapy would be \$54,931,400 for the 5,493,140 individuals with confirmed infections. This method of detection and treatment would not require individuals who are not already hospitalized to be placed in such treatment care facilities; therefore, additional costs for hospitalization are not anticipated. However, it is quite probable that an individual with an infection of the kidney may require hospitalization. It should also be emphasized that this projected cost (most of which will be borne by sources other than HEW) is a bare minimum estimate and allows only for detection, diagnosis, and drug treatment. It does not allow for inquiries into associated or predisposing factors of infection, follow-up therapeutic courses, or laboratory studies when needed.

Extensive educational and administrative financial support is anticipated from HEW. Any screening program that is to be instituted in hospitals throughout the country would require a vigorous educational program concerning proper interpretation of tests, adequate therapy, and appropriate follow-up procedures. It is felt that the 7,000 or so hospitals in the U. S. should be exposed to an educational program regarding the entire problem of urinary tract infections in order to achieve maximum program effectiveness (i.e., eradication of bacteriuria). About \$1,000,000 (\$140 per hospital) as part of a kidney disease general education program will be required from HEW, and \$335,000 is expected from other sources for the education of medical personnel.<sup>15/</sup>

\$1,000,000 is required from HEW for administrative purposes plus \$335,000 from other sources.<sup>16/</sup> The total cost to HEW is \$2,000,000,