

tion. We at Kupat Holim believe that the ability to initiate changes in the system comes from a unique linkage between financier, provider, and consumer. These three groups share common aims of quality and equity in the care provided.

The ability to succeed in the implementation of change goes beyond this relationship within the organization.

Here we are dependent on planning, a process that begins with the study of changing needs and demands and ends with evaluation. Effective change must reflect our ability to link epidemiology and health policy through the planning method.

## Epidemiology, Health Policy, and Resource Allocation: the Israeli Perspective

SHRAGA HABER  
BRUNO LUNENFELD, MD

Mr. Haber is Assistant Director General and Head, Division for Planning, Budgeting, and Health Economics, Ministry of Health, Jerusalem, and Director, Institute of Endocrinology, at the Chaim Sheba Medical Center, Ramat Gan, Israel. Professor Lunenfeld is Counselor for External Relations, Ministry of Health, Jerusalem. This paper is a background document on interrelations of epidemiology and health policy, presented at the Second Binational Symposium: United States-Israel, which was held October 17-19, 1983, in Bethesda, Md.

Tearsheet requests to Shraga Haber, Ministry of Health, 2 Ben Tabai St., Jerusalem, Israel.

### Synopsis .....

*Israel represents a developed country as far as demand and consumption of health services are concerned. The analysis of the Israeli health system reveals a significant trend of expansion in the intensity and the utilization of health services as well as an accelerated development of sophisticated technology, while the percentage of Gross National Product used for health expenditure re-*

*mained constant and even decreased. Competing needs, reflecting population growth, a rapid aging process, new areas of treatment, and changes in use of health services, illustrate the aggravating issue of setting priorities.*

*The permanent dilemma of the health system is oscillation between opposite trends:*

- *enlargement of public eligibility and technological capabilities and*
- *economic reduction and budget limitations.*

*Is there a possibility that the insufficiencies of the system are built into patterns of thinking of those in the system, into its structure, and into its organization of health services delivery? Does the formulation of health policy influence, in terms of the outcomes of the system, priorities and allocation of resources? Does the process of decisionmaking reflect in an appropriate manner the epidemiologic data?*

*Under the objective constraints, decisionmaking and health policy formulation become critical determinants of the ability to cope more efficiently and effectively with growing and changing needs. The authors suggest an alternative strategy of health decisionmaking that is more instrumental in order to prevent setbacks and to open new horizons for the future.*

**W**E WOULD LIKE TO DISCUSS THE PROCESS of making health decisions in a country that has very special problems, many of them unique. The process of decisionmaking at the national level is always multifaceted and multidimensional. In addition to the usual factors to consider, decisionmaking in Israel is subordinated to security priorities as well as immigration considerations and possible influences on the continuing social, cultural, and ethnic integration—all essential components in the national priorities. When decisions involve alloca-

tion of resources, one must also bear in mind the continuous inflation, an unstable economic situation, and unpredicted cuts in the national budget for health care. These factors contribute to the difficulties of trying to plan under pressure and in uncertainty.

While a permanent social and cultural laboratory, Israel has developed rapidly. In many ways, it can be considered a developed country; health care and health services are but one example. We can, indeed, point to many impressive achievements in the organization,

*'We ask ourselves if health is given its real due among other national priorities.'*

scope, and delivery of health services. However, if levels of demand, consumption, and expectation are taken into account, Israel represents an "overdeveloped" country.

Health care today is more than a combination of patients, manpower, facilities, technology, and the humanitarian goal of comforting pain and suffering. Health care is a significant sector of the economy. As such, the development of health care is inevitably subordinated to the rate at which public expenditure is allowed to grow.

The demand for health care, defined as needs or public expectations, always outstrips the availability of resources. No health system can ever command enough resources to respond in the way those in the system would like or the public expects.

In the United States as well as in Israel, the health care system has reached a stage where the knowledge, skills, facilities, and technology devoted to it are a significant share of national resources. The two systems provide a complex range of services for a growing variety of needs. By being sensitive to gaps in care available to certain population groups and to geographic areas, both countries can make the best possible use of resources they command, redeploying existing resources when necessary.

How does one meet that challenge and use epidemiologic data in decisionmaking? We will try to analyze this question with regard to Israel.

### **The Israeli Case**

The magnitude of resources available to the health system is continuously on the agenda of the senior staff at the Ministry of Health at the decision levels and in its contacts and negotiations with other agencies and local services. We are troubled by limited resources because of additional needs and because fuller use of modern technology might prevent, improve, or cure diseases and sometimes save lives. The problem is aggravated by the public's constantly growing expectations for the general welfare, including health care.

We ask ourselves if health is given its real due among other national priorities. We still see some facilities and hospitals housed in old and unsuited buildings; the image causes disappointment, and it is augmented by the public and the media. Much more justified are the feelings of frustration when one cannot deliver services and treatment because of lack of economic resources.

The dilemma of resources has become a day-to-day issue that the leaders of the Ministry of Health have to face and struggle with. But, aside from the fact that competing needs have to be met simultaneously, we are witnessing an expansion of demands as well as an intensification of treatment processes in the various fields of care. Some examples of the growth in demand for services are described in the next section.

### **Demands for Health Services**

The number of patients with chronic renal insufficiency treated in hemodialysis units is about 1,000 today, compared with 400 in 1976—an increase of more than 140 percent. The rate of patients treated for that condition per 1 million population is 238.1, among the highest in the world. As a matter of fact, hemodialysis is available to every citizen in Israel who needs it, regardless of age or economic barriers.

The case is similar for heart surgery—1,400 open-heart operations were performed in Israel in 1982, compared with 750 in 1976. An increase of 15 percent was planned for 1983. New wards were opened, and expensive equipment was purchased to accommodate this increase. The capacity for heart catheterization was also enlarged: our catheterization units now perform more than 5,000 heart catheterizations a year, compared with 3,000 in 1976.

The number of visits to government hospital outpatient clinics alone increased from 920,000 visits in 1976 to 1,600,000 in 1982. Referrals to emergency rooms in government hospitals increased from 698,000 in 1981 to 818,000 in 1982. These are just some examples of the trend of increasing demands on secondary and tertiary care. Our dilemma becomes more acute in direct association with improvement in diagnostic potential and therapeutic ability.

Increasing costs affect the resources available too. The estimated average cost of open-heart surgery in 1982 rose to \$4,500, of which \$1,900 represented medications and disposables. The additional burden imposed on our restricted resources to make the present scope of services possible can be calculated easily.

Time and again we evaluate health care needs and attempt to persuade the National Budget Office, only to come back to the starting point—the fundamental issues of priorities within the system and of health within the national set of priorities.

Contrary to the trend in many countries, the percentage of Israel's Gross National Product (GNP) used for the national expenditure on health declined in recent years (table 1). The national expenditure on health peaked in 1978 and 1979 at 7.6 percent of the GNP and declined in 1980 to 7.2 percent. This contrasts with the continual

escalation in the United States: 7.6 percent of the GNP in 1970, 8.9 percent in 1978, and 9.4 percent in 1980.

Per capita spending also declined in Israel when measured in U.S. dollars and when standardized for inflation by the Health Prices Index (table 2). In the 1979–80 fiscal year, an average of \$453 was spent per person; 2 years later that figure had dropped to about \$372.

### Special Factors Affecting Expenditure

The health system's decisionmakers must confront simultaneously several factors that affect spending for health care. We discuss them in detail in this section.

- Although inflation in the health sector is higher than the average rise in prices, the allocation of resources is based on the lower rate of the General Price Index.

- Accelerated development of sophisticated medical technology adds a heavy economic burden to the system. For example, the oncological field of treatment is expanding continuously because of earlier detection of tumors as well as longer life expectancy among treated patients. New, very expensive procedures and medications undoubtedly contribute to these achievements. A longer life expectancy, by itself, means a growing community of treated patients and more demands for a greater share of resources. For example, the number of patients in oncology wards increased 103 percent between 1976 and 1982, and the number of patients in day care units grew 441 percent.

- The process of strengthening medical services through new procedures and modern technology in medical treatment is occurring in many areas of medical specialization. We now operate 49 intensive care units in

Table 1. National expenditure on health as a percentage of GNP for selected countries, 1950–80

Country	1950	1955	1960	1965	1970	1975	1977	1978	1979	1980
Sweden .....	3.4	4.1	4.7	5.6	7.4	8.5	9.8	...	...	...
West Germany .....	...	...	...	...	6.4	9.4	9.2	9.2	...	...
United States .....	4.5	4.4	5.3	6.2	7.6	8.6	8.9	8.9	9.0	9.4
France .....	3.4	4.5	4.7	5.8	6.4	7.9	7.9	8.2	8.4	...
Holland .....	...	4.0	4.5	5.3	6.3	8.1	8.2	...	...	...
Australia .....	...	...	5.0	5.2	5.5	7.0	7.9	8.0	...	...
Israel .....	...	...	5.5	5.9	5.4	6.0	6.9	7.6	7.6	7.2
Canada .....	4.0	4.3	5.6	6.1	7.1	7.1	7.1	...	...	...
Switzerland .....	...	...	...	3.8	...	6.9	6.9	...	...	...
Italy .....	...	...	...	5.0	6.1	7.1	6.4	...	...	...
United Kingdom .....	3.9	3.4	3.8	3.9	4.3	5.5	5.2	5.2	5.2	5.6

<sup>1</sup> Estimate for 1981, 7.2 percent; 1982, 7.3 percent.

SOURCES: Money and Management in the N. H. S. in the 1980's, by Robert Maxwell. Hospital and Health Sources Review, March 1983, p. 54.

National Expenditure on Health 1981–82. Central Bureau of Statistics, Israel. Reprint from Supplement to Monthly Bulletin of Statistics, No. 2, 1984, p. 78, table 1, publication No. 48, Jerusalem.

Table 2. National expenditure on health per capita, Israel, fiscal years 1969–70 to 1981–82 (October prices)

Fiscal year	U. S. dollars	Index value	Israeli shekels	Index value	Standardized by Health Prices Index	
					Israeli shekels	Index value
1969–70 .....	\$212.2	100	2,691	100	2,860	106.3
1970–71 .....	234.5	110.6	2,847	105.8	3,026	112.5
1971–72 .....	222.8	105.0	3,051	113.4	3,324	123.5
1972–73 .....	284.8	134.3	3,598	133.7	3,972	147.6
1973–74 .....	349.1	164.6	3,850	143.1	4,419	164.2
1974–75 .....	321.8	151.7	4,057	150.8	4,908	182.4
1975–76 .....	339.8	160.2	3,804	141.4	4,794	178.2
1976–77 .....	374.8	176.7	3,990	148.3	4,864	180.8
1977–78 .....	442.7	208.7	4,590	170.6	5,369	199.5
1978–79 .....	413.5	195.0	5,333	148.2	5,540	205.9
1979–80 .....	453.0	213.6	5,238	194.6	5,654	210.1
1980–81 .....	436.9	205.0	4,906	182.3	5,166	192.0
1981–82 .....	371.9	175.3	5,110	189.9	5,110	189.9

NOTE: Prepared by G. Ginsberg, Division of Planning and Budgeting, Ministry of Health, Jerusalem, based on calculations using the following sources:  
National Health Expenditure 1980–81, Central Bureau of Statistics, Israel;  
Reprint from the Supplement to the Monthly Bulletin of Statistics, No. 2, 1983,

publication No. 40, Jerusalem; and  
Price Statistics Monthly, Central Bureau of Statistics, vol. 34, 3, March 1983, Jerusalem.

*'Our dilemma becomes more acute in direct association with improvement in diagnostic potential and therapeutic ability.'*

general hospitals, compared with 28 units in 1976. These highly staffed, well-equipped units are heavy users of resources and affect the balance of resources.

- The health sector is rich in persons with professional skills and medical lore, and this fact is reflected in the wage bill. The relative weight of wages in health spending shows a continuous trend upward, having reached about 70 percent of the nation's total expenditure on health. If the other resources available do not grow in proportion to wages, the paradoxical result is a shift of resources in the system from providing treatment and cure to wage expenditure.

Are the above factors taken into consideration and properly reflected within the overall priorities? Are they expressed in the national budget, alongside the welfare areas of activity?

As a percentage of social services, health expenditures have fluctuated: in 1975 and 1976, they amounted to 13.7 percent; in 1977, 15.3 percent; 1978, 16.0 percent; 1979, 19.5 percent; 1980, 17.2 percent; 1981, 12.5 percent; 1982 (final budget), 14.5 percent; and 1983 (proposed budget), 15.8 percent.

Per capita spending is a useful measure when analyzing economic trends over the years, although not all trends are clear cut (table 3). For example, the per capita increase proposed for the health expenditure in 1983 followed 4 straight years of decreases. However, defense

spending, which had declined since 1976, was again lower in the 1983 budget. The 1983 proposed interest payments on the national debt were almost 2½ times those of 1975.

### Conflicting Demands

The health system operates in an environment of conflicting demands, over and above any argument regarding its share of the national resources. Several trends must be taken into account:

- The population is growing and aging at an accelerating rate, creating new and unquestioned needs for additional services.
- The population expects the health system to deliver a quick and adequate answer to every medical problem, real or imagined.
- Continuous expansion in use of health services is encouraged by the "Bill of Rights" of patients, defined by law or *de facto*, and by public and political pressure.
- Rapid expansion of technology enables the health system to enter new areas of diagnosis and treatment and to tackle unsolved health problems.
- The national budget is limited, requiring restraints and repeated cutbacks in expenditure.

The shortage of resources appears likely to continue, rather than be a one-time accident. The economic outlook seems to indicate a relatively long period of reductions of social services. Within this forecast the health system will find it more and more difficult to maintain the present level of public health solely by redeploying resources.

The health system simply cannot absorb economic reduction and at the same time enlarge the range of services and eligibility, shorten waiting lists, and im-

Table 3. Selected sectors of Israel's annual budget, 1975-83, in per capita expenditures (base year, 1975 = 100)

Year	Total budget	Defense	Interest payments	Education, including higher education	Labor and welfare	Health
1975.....	100	100	100	100	100	100
1976.....	104.3	101	128	93	104	101
1977.....	115.3	96	194	124	136	141
1978.....	104.8	80	148	132	126	145
1979.....	106.2	92	115	141	113	175
1980.....	104.1	85	143	126	88	139
1981.....	118.6	83	198	137	93	136
1982 <sup>1</sup> .....	110.4	75	189	132	121	132
1983 <sup>2</sup> .....	113.2	68	243	130	121	143

<sup>1</sup> Final budget.

<sup>2</sup> Proposed budget.

NOTE: Prepared by G. Ginsberg, Division of Planning and Budgeting, Ministry of Health, Jerusalem, based on calculations using the following sources:

Proposed National Annual Budgets for the Years 1975-83, the Treasury, Jerusalem; and Price Statistics Monthly, Central Bureau of Statistics, vol. 34, 3, March 1983, Jerusalem.

prove the quality of care. Constraints and reduced resources explicitly mean cutbacks in public eligibility, longer waiting times, and fewer services.

It is impossible for any system—even those more economically sound than our own—to supply health services of every kind, to everybody, at any time, and at any place. Certainly, that cannot be done as long as the actual orientation and decisionmaking process, based on hospitalizing patients rather than on preventing illness and preserving and promoting health, continues to characterize the system.

### Who Pays the Bill?

The total amount of resources is not determined by the government alone, neither by services supplied directly nor through grants to nonprofit health agencies. Employers, employees, and private consumers also participate in financing health expenditures. When we review the proportionate participation, it is apparent that, while health insurance premiums in Israel are lower than in other Western countries, the rate of using services, in most fields of service, is one of the highest.

A brief study of the literature concerning “excess demand” shows a considerable drop in demand when the public is required to pay for services, even when the payment is only partial. The issue of copayment warrants serious examination, as do all its implications.

At present, the figures indicate that the direct participation of the insured population in paying for the public health system is disproportionate to their demands

of the system as far as scope and quality of services are concerned.

### Health Policy and Expenditure

Crucial in the consideration of limited resources is the issue of “health policy,” the strategy that guides the system and allocates resources in line with the publicly declared goals of the system. Further, the policy implies the formation of a global outlook with which we sort, screen, weigh, define, and then allocate.

The fact that the national health expenditure consumes more than 7 percent of the GNP only indicates the size of the health expenditure. Of greater importance is the analysis of the objectives and, accordingly, the attempt to identify the guiding policy of the system.

In previous years the leaders of the Israeli health system adopted an approach that emphasized prevention, primary care, and community medicine as the focus of the organization and delivery of health services. Are we right in asserting that the meaning of such an approach should have been an increased priority?

In the last decade there was an increase in the relative expenditure on hospitalization—from 39 percent to 48 percent of the national total for health. That was concomitant with a parallel decrease in spending for prevention and primary care—from 39 percent to 32 percent (table 4).

The figures in the table are self-explanatory. What remains to be elucidated is the reason for the change in resource allocation. Is it the disappointment of the pub-

Table 4. Percentage of Israel's national expenditure on health, by type of expenditure and service<sup>1</sup>

Expenditure	1980-81	1979-80	1978-79	1977-78	1976-77	1975-76	1974-75	1973-74	1972-73	1971-72	1970-71	1965-66	1962-63
Total	100	100	100	100	100	100	100	100	100	100	100	100	100
Current expenditure	94	92	89	90	88	83	83	84	88	90	89	91	93
Fixed capital formation	6	8	11	10	12	17	17	16	12	10	11	9	7
Current expenditure	100	100	100	100	100	100	100	100	100	100	100	100	100
Government administration	1	1	1	1	1	1	2	1	1	1	2	1	1
Public clinics and preventive medicine	32	32	33	32	33	35	35	36	40	38	39	41	40
Hospitals and research	48	47	44	44	43	41	41	41	39	40	39	39	39
Dental clinics <sup>2</sup>	13	13	15	14	14	14	13	12	12	12	11	15	15
Private physicians <sup>2</sup>	2	3	3	3	3	4	4	4	4	4	4		
Medicine and medical equipment bought by households <sup>2</sup>	4	4	4	6	6	5	5	6	4	5	5	4	5
Fixed capital formation	100	100	100	100	100	100	100	100	100	100	100	100	100
Hospitals	74	86	86	83	83	87	86	89	88	84	84	46	44
Clinics	26	14	14	17	17	13	14	11	12	16	16	54	56

<sup>1</sup> At current prices.

<sup>2</sup> Estimates have low reliability.

NOTE: Percentages were calculated from unrounded figures.

lic, the insufficiency of primary health care, or both that motivated the public to seek help in hospital emergency rooms and outpatient clinics as alternatives to community primary care centers? Did these factors cause the shift away from community primary care centers or were disappointed consumers and insufficient care the result of changing the patterns of spending for health care? Table 4 sheds some light on changes in the national health expenditure by type of service.

### Perspective for Tomorrow

Newly emerging needs, repeated economic restrictions, and skyrocketing costs call for critical re-evaluation of both existing programs and how services are delivered. An alternative strategy for making health decisions should be problem- and population-oriented. It should identify needs, define goals clearly, set priorities, allocate resources differentially in a "cold economic

climate," delineate responsibilities clearly, and coordinate multidisciplinary and multi-institutional efforts.

The strategy that consists of these components should relate health hazards to their determinants. By analyzing cause and effect, we may weigh the relative contribution of each variable and set priorities accordingly.

Formulators of health policy must make better use of quantitative tools in order to balance alternative uses of resources and to measure the economic benefit for decisionmaking.

Furthermore, the health care system of tomorrow will deal less with overall costs of intervention and treatment and more with costs per case. We will have to analyze the performance of health services and link costs to defined "products," with much more involvement of quantitative tools.

These proposed changes will require a corporate effort and vigorous perseverance to prevent setbacks and crises and to open new horizons for the coming years.

## Problems in Medical Genetic Services as Viewed from Israel

RICHARD M. GOODMAN, MD

This paper is based on the author's presentation at the Second Binational Symposium: United States-Israel, held at Bethesda, Md., October 17-19, 1983. Data on Tay-Sachs disease and certain aspects of prenatal diagnosis were supplied by Prof. B. Padeh, Dr. R. Navon, and Ms. E. Akstein.

The author's work is supported in part by grants from the National Foundation for Jewish Genetic Diseases and the Lake Chemical Company, U.S.A.

Tearsheet requests to Richard M. Goodman, MD, Professor of Human Genetics, Chaim Sheba Medical Center, Tel-Hashomer, Israel 52621.

### Synopsis .....

*Problems in genetic services in Israel are discussed from four vantage points: genetic screening, prenatal diagnosis, genetics and the mentally retarded child, and genetic counseling. Emphasis is given to issues unique to Israel, and recommendations for the improvement of genetic services are presented. A central, recurring theme is the continuous and concerted effort that must be made by those working in genetics to keep both the medical community and the lay community adequately informed.*

**T**HE PURPOSE OF THIS REPORT is threefold: (a) to give a capsule view of some of the major problems that we in Israel face regarding genetic aspects of health services, (b) to suggest possible solutions to these problems, and (c) to raise the issue of cost benefits of certain of these services. Although some of our problems are universal, others are unique and reflect the multifaceted medical, cultural, religious, and political milieu of Israel.

The four major areas that I wish to discuss include genetic screening for Tay-Sachs disease, prenatal diagnosis, genetics and the mentally retarded child, and genetic counseling. Most of what I relate will be based on experience gleaned over a 15-year period at the largest medical center in Israel (Chaim Sheba Medical Center), which also has the largest medical genetic unit in the country.