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**MEDICAL EDUCATION IN ISRAEL:  
HISTORY, STRUCTURE AND CURRENT CHALLENGES**

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HISTORY, STRUCTURE AND CURRENT CHALLENGES**

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## EXECUTIVE SUMMARY

Israel has four medical schools, each located in a different region of the country -- in Jerusalem as a joint venture between Hebrew University and Hadassah (the Zionist Women's Organization of America), in Tel Aviv as a faculty of Tel Aviv University, in Haifa as a component of the Technion - Israel Institute of Technology, and in Beer Sheva as a unit of Ben Gurion University of the Negev. Members of the basic and preclinical science faculty are supported by the university, whereas clinical faculty are employees of the teaching hospitals that are affiliated with the university. Salaries for basic science staff are derived almost exclusively from government sources, whereas those for clinical faculty are largely provided from hospital operating budgets with limited supplementation from university funds.

Students enter medical school after completing high school and, usually, following army service. The undergraduate curriculum requires six years of study and is followed by a one-year, mandatory rotating internship. Curricula in the schools of Tel Aviv University and Hebrew University are based upon classical biomedical science programs. The program of Ben Gurion University is internationally recognized as a pioneer in teaching primary care and humanistic medicine. That at the Technion emphasizes biotechnology. All the medical schools are relatively small, admitting only 65 to 95 students per year; admission is highly competitive, with a ratio of applicants to enrollees of approximately 3.8 to 1. Almost half of the entering students are women.

Significant challenges from internal and external forces face the Israeli medical education enterprise. First, there is a growing oversupply of physicians, resulting

from the continued arrival of large number of immigrant physicians that has led to underemployment of medical personnel, difficulty in obtaining high quality hospital-based positions, and the recurring suggestion that one or more schools be closed to undergraduates. Second, there is a continuing need to train more skilled primary care practitioners because of the existence of large numbers of neighborhood primary care clinics that are primarily staffed by physicians from various waves of immigration, who have limited training and variable competence. This need is further compounded by the preference of graduates of Israeli medical schools to pursue the more prestigious hospital-based specialty positions, and by the separation of inpatient and outpatient care systems that results in very limited educational programs in outpatient settings and the need to staff each component of the health care delivery system independently of the other. Additional concerns will result from the proposed government reform of the national health care delivery and financing systems; particular problems may result from tightened hospital budgets, expanded competition between hospitals, and enhanced private practice opportunities for hospital-based medical staffs.

Thus, the medical education process of Israel represents a well-developed system for providing high quality education in the context of a complex national health care system. It currently faces significant challenges from the evolving needs of medical education per se as well as from national concerns about health care manpower levels and health care delivery systems.

## ACKNOWLEDGMENTS

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## I. INTRODUCTION

The professional education of physicians is one of the most challenging and most important educational tasks a nation can undertake. The educational institutions are highly elaborate and sophisticated, the faculties are highly specialized, and the volume of material to be taught is prodigious. The medical education enterprise is further complicated by limited information as to what type of training makes a "good doctor".

In this report, we will examine key aspects of the medical education in Israel. It is important for health care planners and policy makers to understand the medical education process for several reasons. First, the quality of medical education in a nation is, in the final analysis, one of the most important determinants of the quality of the health care that is delivered to its citizens. What students learn in medical school forms the basis for what they will practice later in life.

Second, students learn medicine in the "real world" and learn to practice from how medicine *is* practiced, not from the way it *should* be practiced. Changes in the health care system thus affect both what is learned and what will be practiced.

Third, the professional socialization of physicians occurs to a significant extent while they are in medical school. Changes in the medical school curriculum can thus alter the attitudes of future physicians in ways that may support or negate various public policy agendas.

Fourth, medical education is one method to identify needed changes in health care systems. Hence, medical schools may become important sources of information as well as instruments of change.

Specific areas that we will focus on in this paper include 1] key aspects of medical school governance and funding, admission procedures, and undergraduate and postgraduate curricula in Israel, 2] differences between these features in Israel and those of medical schools in the United States, and 3] several important hurdles facing the Israeli medical educational establishment.<sup>1</sup>

## II. HISTORY OF MEDICAL SCHOOL DEVELOPMENT

Israel currently has four medical schools [Table I]. The oldest school was founded in Jerusalem in 1949, only one year after the establishment of the independent state, as a joint venture between the Hebrew University and Hadassah Medical Organization, (of the American Women's Zionist Organization). This initial school was viewed as accomplishing part of the national mission of developing a self-sustaining Jewish society which traditionally values health care and respects medicine as a career, as well as an effort to meet the new nation's need for doctors. Prior to the opening of this first school, physicians for the state were trained primarily in Europe. From the outset, its curriculum was similar to that of most American medical schools and

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<sup>1</sup> Information in this study was derived from published reports and from extensive semi-structured interviews with current and former deans of the four Israeli medical schools, senior faculty members, Directors-General of medical centers, and health policy analysts, as well as senior leaders of medical and allied health schools in the United States. Interviews were conducted during the period of May through September, 1992.

placed emphasis on research and scientific approaches to medical care. It established a very high standard of academic achievement for the nation.

Other schools were later established in Tel Aviv as a unit of Tel Aviv University [the Sackler Faculty of Medicine, founded in 1964], in Haifa as a faculty of the Technion - Israel Institute of Technology [the Bruce Rappaport Faculty of Medicine, founded in 1971], and in Beer Sheva as part of Ben Gurion University of the Negev founded in 1974.<sup>2</sup> These schools were established, after considerable debate (Shuval, 1980), to help meet various national, regional or local needs. It was already apparent by the early 1960s that additional medical schools were not needed to meet the health care manpower needs of the nation; by 1962, Israel had one of the highest ratios of physicians to population [1:405] of all countries, a trend which has continued to this date (Shuval, 1990).

The opening of the second school in Tel Aviv was justified as advancing the regional health care needs of the coastal area, as providing an additional training facility for Israelis not admitted to the Hebrew University-Hadassah School of Medicine who had been required to travel abroad for medical education and for students from the Tel Aviv area who wished to remain at home during school, and as presenting a significant competitor for the Hebrew University-Hadassah Medical School (Shuval, 1980). Enhancing the prestige of the university by having a medical school and of local hospitals was also a significant factor. This school followed the lead of Hebrew

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<sup>2</sup> In addition to these four universities, two other universities with comprehensive undergraduate and graduate programs but without medical schools are present in the Israel. These are Bar Ilan University located in Ramat Gan near Tel Aviv and Haifa University in Haifa. In addition, the Weizmann Insititute in Rehovot has internationally respected graduate programs in natural and physical sciences but does not grant undergraduate or medical degrees.

University-Hadassah in implementing a traditional curriculum emphasizing the biomedical sciences.

Specific programmatic missions were proposed for the third and fourth schools in Haifa and in Beer Sheva, respectively. The school in Haifa is a faculty of the Technion, an internationally respected technical and scientific institute. This university sponsors undergraduate and graduate programs in mathematics, computer science, biological and physical sciences and engineering, but not in the humanities, social sciences, business or law. It was proposed that this medical school would emphasize related disciplines of bioengineering, biotechnology, etc., although enhancing the prestige of the Technion and local hospitals was also important.

A different and unique function was planned for the Ben Gurion University program. This school is located in the Negev, the largely desert area of southern Israel that has a major need for primary medical care for a widely dispersed, rural population. Because of the climate, geography and rural nature of the region, it has proved difficult to recruit highly-skilled medical professionals. The medical school was founded, in large part, to help meet this manpower need. It undertook, as an intrinsic part of its mission, intensive curricular development and training in primary care medicine as well as the coordination of all health care services in the region (Rotem et al. 1985; Prywes, 1987). For example, the dean of the medical school serves as the regional director of all health care services in the Negev.

This newest school has implemented many innovative approaches to medical education. These include 1] integrating clinical and basic science portions of the curriculum with each other and with relevant aspects of the social sciences, 2]

promoting education in outpatient settings, and integrating inpatient and ambulatory care medicine in both education and in practice, 3] fostering the credibility of primary care and community medicine practitioners in the academic arena, and 4] demonstrating the close relationship between medical education and health care delivery. These innovations, widely referred to as the "Beer Sheva experiment", have been emulated as major elements of medical education reforms in many countries around the world.

### III. ORGANIZATIONAL STRUCTURE OF MEDICAL EDUCATION

Important organizational aspects of Israeli medical schools include the structure of governance and faculty, and the methods of financing medical education.

**MEDICAL SCHOOL GOVERNANCE.** Deans of three schools are elected by the faculty for two to five year terms. At the fourth, the dean is selected by a committee representing the university, the major teaching hospital and the General Sick Fund [*Kupat Holim Clalit*], the health care sick fund<sup>3</sup> which owns the major teaching hospital; that choice must then be ratified by the faculty. The deanship may be a part-time position and the dean may simultaneously be the chief of a service in an affiliated hospital. This system clearly differs from that in the United States in which deans are selected for full time duties by university leadership, with faculty input, usually for an undefined period.

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<sup>3</sup> Sick funds operate in a manner analogous to health maintenance organizations [HMOs]. For a prepaid fee, the four national sick funds directly provide or fund a wide range of outpatient and inpatient services to over 95% of the public.

Deans of Israeli schools may hold Ph.D. or dental degrees rather than medical degrees. At Hebrew University-Hadassah School of Medicine, for example, it is an established practice that the deanship alternates between members of the clinical and the basic science faculty. Of 126 medical schools in the United States, five permanent deans do not have M.D. degrees (American Medical Association, 1992).

**THE FACULTY.** Faculty positions in medical schools are allocated from the total number of positions approved for the university as a whole. Additional faculty can be added from outside funds derived from extensive international fund raising efforts.

**Basic Science Faculty.** Preclinical courses are taught mostly by the faculty of the medical schools, although some introductory science classes [see below] are taught by staff from the natural or physical science divisions of the university. Faculty salaries are provided by the university from government funds received through the University Grants Committee of the Council on Higher Education of the Ministry of Education or from private sources.<sup>4</sup> They are not dependent upon grant sources, and basic science departments do not receive funds derived from the clinical practices of other departments. This is in contrast to funding mechanisms in the United States, in which basic science departments are heavily supported by research grants and may receive funds derived from the activities of clinical departments. Chairs of basic science departments rotate among the faculty at predetermined intervals.

**Clinical Faculty.** The status of the clinical faculty is considerably more complex. Clinical training of medical students occurs in teaching hospitals affiliated

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<sup>4</sup> Faculty salaries are based upon a national scale. Hence, professors of equal rank, etc., have the same base salary at all schools.

with the medical schools. These hospitals are owned either by the government Ministry of Health, by Kupat Holim Clalit, or by non-profit organizations such as Hadassah Medical Center.<sup>5</sup> None of the teaching hospitals are directly owned by the medical school.<sup>6</sup>

The four medical schools conduct undergraduate clinical teaching in virtually all the hospitals in Israel. Of these, only the Hebrew University-Hadassah Medical School has a formal, comprehensive relationship to a teaching hospital, Hadassah Medical Center, in which all hospital services are intrinsic components of the medical school and vice versa. Other hospitals have affiliations with medical schools that are department specific, i.e., certain departments in a hospital may be affiliated whereas others are not. For example, Hebrew University-Hadassah Medical School has affiliations with the departments of internal medicine, surgery, pediatrics, obstetrics and gynecology, pathology, ophthalmology and otolaryngology at Kaplan Hospital in Rehovot, but only with the departments of internal medicine and pediatrics at Shaare Zedek Hospital in Jerusalem. In addition, larger hospitals commonly contain several departments in the same specialty; each of these may be individually affiliated with a medical school.

The clinical faculty in the affiliated services have university appointments but are the salaried employees of the hospital, not of the medical school. This status of teaching faculty as employees is not unique; over 90% of all physicians in Israel are employed

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<sup>5</sup> For-profit hospitals do exist in Israel but, at the present time, but are not affiliated with medical schools.

<sup>6</sup> A partial exception to this is the special relation between Hebrew University and Hadassah Medical Center. The medical school of Hebrew University was formed as a joint venture between the two organizations so that the medical school is partly controlled by the hospital.

by the government, one of the sick funds, or by non-profit organizations such as Hadassah Medical Center. In return for their teaching efforts, the faculty receive benefits including paid sabbatical leaves and funds for various professional activities. The nature and extent of these perquisites are individually negotiated and may be totally absent at one hospital but extensive at another hospital affiliated with the same medical school. These benefits are usually provided by the medical school; in some cases, it is the hospital or the owner of the hospital, e.g., Kupat Holim Clalit or Hadassah Medical Center, that pays teaching benefits. Teaching faculty do not receive salaries per se from medical schools.

Thus, medical faculties in Israel do not have clinical departments as intrinsic components of the schools as do most colleges of medicine in the United States.<sup>7</sup> Rather, clinical training in Israel is highly decentralized, located in any number of different hospitals, and provided by employees of the affiliated hospitals.

Furthermore, a single department chair may not exist; each affiliated service is lead by a service chief who enjoys considerable programmatic autonomy. In Ben Gurion University, a single divisional chair<sup>8</sup> provides overall coordination; in the other schools, loosely-formed councils representing all departments of a given specialty seek to coordinate education functions, but a single chair with line authority does not exist.

This too differs significantly from the usual practice in the United States. Chairs of most clinical departments in the United States are primarily employed by the

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<sup>7</sup> Notable exceptions exist in the United States, such as at Harvard Medical School, in which clinical faculty are hospital-based as in Israel.

<sup>8</sup> The term "division" is commonly used in Israel to denote the group of hospital "departments" of a given subspecialty.

university and have secondary rather than primary relationships to the management of the affiliated hospitals. Deans have line authority over department heads, although department chairs retain considerable autonomy and power.

Hospital services without medical school affiliations do not participate in training medical students. Affiliations are formed based upon the need for teaching functions and the qualities of the hospital staff and facilities. Because affiliations and university appointments are valued and serve to attract patients, interhospital and professional competition also affects granting of university appointments and service affiliations. For example, one hospital may lobby against the affiliation of a medical school with a department in a competing hospital.

The number of faculty members in a hospital department varies widely, at the discretion of the medical school and hospital leadership. For example, at Hadassah Medical Center almost all hospital staff have appointments at Hebrew University whereas at another school only the department head may be granted a faculty appointment. Those without appointments may, however, be expected to participate in medical student teaching.

Clinical faculty may or may not have the same status as basic science faculty within the university. In some schools, clinical staff are given titles as "clinical" faculty and are not eligible for academic tenure [although they do receive employment tenure from the affiliated hospital]. Other schools do not distinguish between clinical and nonclinical faculty by title. In one school, clinical faculty ranking stops at the associate professor level; a clinical faculty member cannot become a full professor. These distinctions have real as well as symbolic value. Faculty members with "clinical" appointments generally receive reduced sabbatical rights and professional

expense reimbursement, and may not have voting privileges in university faculty councils. Hence, the expense of the clinical faculty is reduced and the influence of this large group of faculty on overall university affairs is constrained.

Faculty appointments are an important source of prestige. The Israeli public gives great respect to academic functions, as a correlate or predictor of quality medical care and as a manifestation of societal appreciation for knowledge. This deference is then translated into significant prestige for the affiliated service and for the hospital with affiliated services, as well as for the individual clinician holding a faculty appointment. Senior faculty appointees are referred to as "professor" rather than as "doctor".

In addition to providing prestige, faculty appointments are important factors in attracting private patients. Private practice by hospital staff physicians is allowed by some employers after normal working hours. This is an important source of supplemental income to bolster low salaries but is widely considered to have a negative impact on medical education. The effects of time commitment to private practice is compounded by the prohibition against private practice within government or Kupat Holim Clalit facilities; staff must leave the hospital to see patients in private clinics or hospitals. Clinical faculty are thus often not available for supervision or consultation during afternoon hours when much of private practice is conducted. Practice income is collected by the individual practitioners; systems such as faculty practice plans to coordinate private practice funds do not exist. Because of the impact of faculty appointments on prestige and income, the practice of limiting the number of appointments is a major source of tension between hospital staff and universities.

**INTERNATIONAL AFFILIATIONS.** Two schools have comprehensive teaching affiliations with universities in the United States. The Tel Aviv University Medical School has, in addition to its Israeli-model school, a four year program designed exclusively for American college graduates. This program is accredited by the State of New York, although its graduates must take the Foreign Medical Graduate Examination in Medical Sciences [FMGEMS] to obtain a license to practice medicine in the United States.

The Technion school has an affiliation with Touro College [New York, NY]. Students from Touro complete basic science courses and receive all their clinical training in Haifa. They then receive an M.D. degree from the Technion. Other schools such as those of Ben Gurion University and Hebrew University-Hadassah have more limited affiliations with foreign schools, mainly involving periodic exchanges of small numbers of students for short periods of time. For example, Hebrew University-Hadassah and the University of Tennessee, Memphis have an affiliation which is limited to rotations of small numbers of medical students for selected, elective clinical clerkships.

**ACCREDITATION.** There is no process for accreditation of Israeli medical schools. One school, that of Tel Aviv University, is accredited by the state of New York. In the United States, periodic accreditation of each medical school by the Liaison Committee on Medical Education [LCME] is a basic operational requirement.

**MEDICAL SCHOOL FINANCES.** Medical school budgets are allocated from government funds by the University Grants Committee of the Council on Higher Education of the Ministry of the Education. Funds are disbursed based upon a capitation system. Currently, a school is granted 80,000 NIS per student in the

clinical years and a lesser amount for preclinical years.<sup>9</sup> These funds, granted directly to the medical schools, pay the salaries of basic science faculties and may be used in various ways to support clinical teaching programs. These include hiring additional hospital staff and subsidizing the professional expenses and sabbatical leaves of faculty at affiliated hospitals.

Tuition, currently approximately 4,200 NIS [approximately \$1,710] per year, provides only a small portion of school finances. This tuition is very low by American standards.<sup>10</sup> It is, however, considered to be quite expensive by most Israelis, especially when considering the prolonged duration of study and the relatively low salaries that new graduates will earn as physicians. Tuitions for students in the American programs at the Technion and Tel Aviv University are substantially higher tuitions and are comparable to those of American medical schools; this provides a significant source of added income for these schools. Additional funds may be derived from direct donations or from grants.

No clinical funds are directly available to the medical school, although hospital budgets do pay the salaries of the clinical faculty. This is in marked contrast to the major role that practice income plays in financing medical education in the United States; 44.8% of medical school income is derived from the clinical practices of the faculty and from hospital sources (Jolin et al, 1992). These clinical funds may be used to support basic science and postgraduate activities as well as undergraduate clinical programs.

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<sup>9</sup> NIS=new Israeli Shekel, equal to approximately \$0.41 in August, 1992.

<sup>10</sup> Medical school tuitions in the United States range from \$2,952 to \$12,178 for public [for state residents] and from \$11,219 to \$26,605 for private schools (American Medical Association, 1992). One school - the Uniformed Services University of the Health Sciences - is supported fully by the government and has no tuition; students are obligated for military service after graduation.

These distinctions reflect differences in the health care delivery systems of the two countries. The United States system remains predominantly based upon fee-for-service medicine; faculty physicians bill - usually as part of faculty practice plans - for clinical services they provide. In Israel, over 90% of physicians are employees either of the government, one of the national sick funds, or another private agency. In this system, physician costs are bundled with hospital services so that no clinical fees are paid directly to the faculty for clinical services they provide. As noted above, funds from the small number of private patients managed by the Israeli faculty are usually paid directly to the individual faculty member and are thus also not available to meet the collective needs of the medical school.

#### IV. MEDICAL STUDENT ADMISSIONS

Medical schools admit students directly after graduation from secondary schools. Most students who later enter medical schools emphasize advanced mathematics and science in secondary schools; only a minority concentrate in the humanities. Applicants must take matriculation examinations in science and general studies [*bagrut* examinations] as well as a national university entrance examinations [the *psychometric* examinations].

Students wishing to attend universities apply to specific undergraduate programs, each of which has different admission standards. For example, they may apply to study medicine or psychology at a particular university. Once admitted, they take most of their courses in single major and minor specialty areas. This highly focused interest in a major subject exists for all areas of study including medicine. Thus,

Israeli students have a more focused educational program than do students in the United States who complete a more broad based undergraduate program prior to entering medical school.<sup>11</sup> Entering medical school after secondary school is also the norm in European countries.

Most Israeli students have completed compulsory military duty [approximately three years for men and two years for women] before entering medical school and hence are older than the usual American student entering college. Many had been officers. This military duty represents an important educational opportunity; students entering Israeli medical schools have extensive real-life experiences in leadership and responsibility that are uncommon in other countries. A select minority of high school students are chosen to complete medical school before beginning active duty; after graduation they are obligated for military service as a medical officer.

The total number of medical students is determined on a national level by the Council on Higher Education. A total of 317 students were enrolled in the first year programs of the four schools for the 1990/91 academic year [Table I]. These enrollment quotas may be adjusted to meet national goals. For example, the number of students in clinical years of study was recently increased to accommodate the influx of Soviet immigrants who had only partially completed medical school training before moving to Israel.

Class size varies from 65 to 95 students. The small size of the medical school classes facilitates closer student-teacher interaction than does the larger class sizes

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<sup>11</sup> Thirty medical school programs in the United States permit entry directly from high school. Of these, 16 are accelerated programs, granting M.D. degrees in 6 or 7 years rather than the full 8 year period (Association of American Medical Colleges, 1992a).

common in many other countries. In 1989, 46% of entering medical students were women (Notzer, 1991); in the United States, 39.8% of students entering medical school in 1991 were women (Jonas et al, 1992).

Admission requirements and priorities vary from school to school. Hebrew University-Hadassah, Technion, and Tel Aviv University emphasize academic performance. Criteria include scores on matriculation and entrance examinations, as well as secondary school performance. Other requirements include English language proficiency. Schools in Jerusalem, Haifa and Beer Sheva also require personal interviews.

Ben Gurion University introduced a novel approach that emphasizes personal qualities as determined by an extensive multi-stage interview process (Antonovsky, 1987). Examination scores and academic performance are used as minimal thresholds for entry into the interview process and not as competitive criteria for admission. At the interviews, candidates are graded on characteristics such as personal integrity, empathy, self identity, decisiveness, tolerance of ambiguity and sense of social responsibility. This process selects students with personal qualities that match the goal of the school to develop socially conscious physicians with interests in primary care medicine. Because of reduced emphasis on quantitative measurements, students with less outstanding academic performance that could be rejected from the other schools may be admitted to Ben Gurion University.

For the academic year 1990/1991, a total of 1151 students applied for admission, corresponding to a candidate to position ratio of 3.8 to 1 (Central Bureau of Statistics, 1992). This ratio is higher for medicine than for almost any other subject area; only law school has as high a ratio. Ratios for engineering and architecture, mathematics,

and physical and biological sciences range from 1.1 to 1.6 (Central Bureau of Statistics, 1992).

Difficulty in being accepted to study medicine and intense competition is also demonstrated by examination score requirements. For example, Tel Aviv University medical faculty requires an average matriculation score of 85 and a psychometric examination score of 666 [maximum of 800]. In contrast, admission to the faculties of electrical engineering, physics and law require psychometric examination scores of 630, 540 and 634, respectively.

Thus, as in the United States, entry into medical school is highly competitive. In Israel demand for admission has remained relatively stable over the past several years. The ratio of applicants to positions, for example, equalled 3.9 in 1989/90, 3.8 in 1986/87 and 3.9 in 1984/85 (Central Bureau of Statistics, 1992). In contrast, the number of applicants in the United States has fallen from over 42,000 in 1974/75 to under 27,000 in 1988/89, with a corresponding drop in the applicant to position ratio from 3.4 to 1.6 to 1 (Jolly and Hudley, 1992). The United States ratio has subsequently increased to 1.9 to 1 with a rise in applicants to 33,301. The Israeli ratio has remained high despite the low salaries, poor working conditions and increasing difficulty in finding prestigious hospital-based jobs, i.e., factors similar to those implicated in the fall in popularity of medicine as a career in the United States (Reames et al, 1989). The Israeli experience is thought to reflect the prominent status of the medical profession in society that is unrelated to income, as well as the existence of similar problems in other academic professions in Israel.

The mean number of schools to which each student applied in 1990 was 2.6 (Central Bureau of Statistics, 1992). Although no quantitative data exist, it is the general

sense that a student's decision to enroll in one or another school to which he or she has been accepted is largely determined by geographical considerations and the school's general academic reputation. Few appear to select a school based upon its particular academic orientation, although some students may avoid entering the Technion program because of the emphasis on mathematics and physics in its curriculum (see below).

Significant numbers of Israeli students not accepted into Israeli schools leave the country to attend medical schools in other countries including Italy, Spain, and various Eastern European nations. Many return to Israel after graduation; an average of 150 Israelis studying abroad apply for Israeli licences annually (Shuval, 1990). Those trained in Italy and Spain are widely considered to have clinical training equivalent to that of Israeli graduates but less intensive basic science instruction. Graduates of Eastern European schools are felt to be less adequately trained in clinical as well as in basic science subjects than are Israeli students.

## **V. UNDERGRADUATE CURRICULUM**

The medical curriculum spans a six year program, plus a mandatory seventh, internship year. Upon completion of the full program, students receive an M.D. degree. Students may receive a bachelors or "first" degree [B.Med.Sc.] at the end of the preclinical years.

**BASIC SCIENCE CURRICULUM.** The first three to three and one-half years of the curriculum are largely devoted to basic and biomedical sciences. Courses include those taught in the United States as part of an undergraduate curriculum [e.g.,

physics, mathematics, inorganic and organic chemistry, and computer science] as well as those included in the first two years of medical school [e.g., anatomy, histology, biochemistry, pharmacology, etc]. Students may, in addition, take elective courses taught in other faculties of the parent university. The Technion program includes additional courses in mathematics and the physical sciences.

Here too, the Ben Gurion University Medical School introduced new approaches. The preclinical curriculum has a heavy emphasis on organ systems and a continuous concentration on social sciences as related to medical practice. A "spiral curriculum" was introduced that "is based on the premise that learning and its retention occur more effectively when reinforced concurrently across diverse components of the curriculum and longitudinally over its successive phases" (Segall et al, 1987). It includes a horizontally integrated program of basic science, clinical sciences and community health during each year, beginning with the first year and continuing through the sixth year. Subjects are repeated in sequential years, with increasing depth and complexity.

**CLINICAL CURRICULUM.** The remaining years are dedicated to rotating clinical clerkships at one or more of the affiliated hospitals. The clinical program at Hebrew University-Hadassah School of Medicine, for example, includes a twelve week rotation in general internal medicine, twelve weeks in medical subspecialties, seven weeks in general surgery, twenty-one weeks in surgical specialties, thirteen weeks in pediatrics, eight weeks in obstetrics and gynecology, and five weeks in psychiatry. Shorter rotations are in neurology, family practice and geriatrics.

An "Early Clinical Program" at Ben Gurion University introduces students to clinical medicine beginning with the first week of medical school. This program is intended

to sensitize students to the humanistic as well as the clinical needs of their patients from the start. The program consists of one day sessions each week as well as short [one-week] mini-clerkships in selected clinical areas (Benor, 1987).

Clinical training relies heavily upon direct patient contact as in the United States. This is in contrast to some European programs; in Belgium, for example, much of the clinical training is accomplished by patient demonstrations (Brearley, 1992). Thus; curricular goals are very similar to those of American medical schools, with major emphasis on basic science [except, as noted, at Ben Gurion University] and supervised clinical experience.

**THESIS.** Students are required to complete a thesis project under the supervision of a faculty mentor. It may present a literature review or results of individual research. The quality of the product is thought to be highly variable, ranging from significant original research to rather pedestrian collections of case material.

**STANDARDIZED EXAMINATIONS.** Beginning in 1992, students in all four schools began to take standardized examinations. The first examination was in internal medicine, with additional examinations in clinical subjects to be introduced in subsequent years. This will assure a minimal level of cognitive knowledge. However, emphasis on scores in standardized examinations may stifle curricular creativity and lead to undue comparisons between schools based upon test scores.

Israeli students also commonly take the Foreign Medical Graduate Examination in the Medical Sciences [FMGEMS] for licensure in the United States. Between 1984 and 1991, over 50% of graduates took the examination (unpublished data), representing one of the largest percentages of any country (Mick and Mou, 1991). Of graduates

of Israeli medical schools taking the examination for the first time, 51.6% passed the basic science sections but 90.9% passed the clinical portions (unpublished data).<sup>12</sup> These scores rank Israel among the countries with the highest passing rates on the FMGEMS (Mick and Mou, 1991). Success varied from school to school, particularly on the basic science examination; the highest percent passing were from Hebrew University (68% on basic science and 96.8% on clinical portions) and lowest were from the Technion (39.8% passing the basic and 82.8% passing the clinical examinations).

**INTERNSHIP.** All internships are rotating programs. A typical program includes three months of internal medicine, two months of general surgery, two months of pediatrics, one month of trauma/emergency medicine and three months of elective rotations. A final month is for vacation. This pattern is in contrast to the general preference for specialty-oriented PGY-1 [first post-graduate year] programs in the United States; in 1991, only 7.4% of all PGY-1 positions were "transitional" (Jolly and Hudley, 1992).

Internships are viewed as part of medical school education and are programmatically supervised by a committee composed of the deans of the four medical schools. Hospitals wishing to train interns must receive the approval of the Ministry of Health and from the committee of deans. Most positions are supported by the Ministry of Health.

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<sup>12</sup> These results differ from those of Mick and Mou (1991). Data from these authors included test scores of all Israeli citizens, whether they trained in Israel or in other countries. Data presented here are limited to those graduating from medical schools in Israel. The differences support the contention that training in Israeli schools is superior to that in the other nations to which Israeli students may travel.

Students applying for internships are assigned positions by a national lottery program. Students request positions in specific hospitals; hospitals, in contrast to the matching plan of the United States, do not rank candidates. Assignment to rural hospitals is encouraged within the system; students agreeing to serve in an outlying facility are offered elective rotations in the hospital of their choice. Interestingly, student appraisals of specific internship programs have been published in the national medical literature (Friedman and Prywes, 1988).

**LICENSING.** Graduates of Israeli medical schools are automatically licensed to practice as physicians upon completion of internship without passing a specific licensing examination. The introduction of such an examination has been a high priority of the Ministry of Health for several years but has been blocked by national political forces. There is also currently no periodic registration or certification process for physicians, and no minimum amount of continuing education is required.

Since 1987, graduates of foreign medical schools, whether immigrants or Israelis who trained abroad, must take a licensing examination. Prior to that time, no examination was required. This examination tests only clinical information. Those who have not completed an internship similar to that offered in Israel and who have practiced medicine less than two years in their native country are also required to take an internship (Nirel et al, 1992). In addition, non-Israelis must demonstrate competence in the Hebrew language. Once these examinations are passed, the candidate is granted a one-year provisional licence; upon completion of this year and submission of a letter of recommendation from a licensed colleague, he or she is granted a full and permanent licence.

Foreign graduates may receive exemptions from these requirements (Nirel et al, 1992). Exemptions are granted, for example, to immigrants with outstanding personal credentials, to those who have practiced more than twenty years who will work for at least six months in a supervised setting, and to those graduating from medical schools in countries recognized by the Scientific Council of the Israel Medical Association, i.e., from the United States, United Kingdom, Canada and South Africa. Additional exemptions have been added to help cope with the major influx of immigrant physicians from the former Soviet Union [discussed below].

**RESEARCH.** Research is an intrinsic component of the medical education system in Israel as it is in the United States. Expenditures for biomedical research in the four Israeli universities with medical schools equalled 31.9 million NIS in 1986/87, down from 39.1 million NIS in 1984/85 but significantly greater than the value of 20.6 million NIS expended in 1970/71 [all in 1986/87 dollars] (Central Bureau of Statistics, 1991). In 1986/87, biomedical research accounted for approximately 13% of all university research and development expenditures.<sup>13</sup>

Research funding is derived from government, internal university and business sources. The majority of funding [58.9% in 1984/85] is provided, however, by foreign agencies (Herskovic and Lunenfeld, 1988). The latter is mostly from foundations in the United States, including grants and contracts from the National Institutes of Health, and Germany. Currently, 1.0% of the health care tax levied on all employees and self-employed persons is allocated to health care research.<sup>14</sup> Government

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<sup>13</sup> In 1983, Israel spent \$1.20 per capita on biomedical research. This compares favorably with, for example, Japan [\$1.40] but unfavorably with Canada [\$4.00], United Kingdom [\$5.00], France [\$6.00], Belgium [\$9.00] and Sweden [\$11.00] (Herskovic and Lunenfeld, 1988).

<sup>14</sup> Although policy calls for a 1% allocation, the amount actually used for research is closer to 0.5% (State of Israel, 1990). The remainder is used for health care needs.

funds include those from the offices of Chief Scientists of the Ministry of Health, Ministry of Labor and Social Affairs, and the Ministry of Industry and Trade. Considerable but unquantifiable additional funds for clinical research are derived from the operating budgets of teaching hospitals.

## **VI. POSTGRADUATE MEDICAL EDUCATION**

Residency programs are based in individual hospital departments, with no direct connection to a medical school. Specialty residency programs must be approved by the Scientific Council of the Israel Medical Association based upon staff qualifications, workload levels and availability of appropriate clinical and educational facilities. The accreditation is granted for a specified number of trainees and number of years of training. Approval, once granted, is subject to review every five years, when a new department chief is appointed, or when complaints about the quality of the training are received. Review upon appointment of a new department head reflects the central role this individual plays in directing training programs and setting the standards of practice.

The duration of several programs is listed in Table II. As indicated, many are longer than in the United States. This has been attributed to the long, annual periods of mandatory military leave<sup>15</sup> during training that reduces actual experience, as well as to the difficulty in finding employment in many specialties once training is completed. It is also considered by some to be an attempt to deal with the national shortage of

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<sup>15</sup> Most men serve one month or more of reserve military duty per year after completion of active duty.

high quality primary care physicians [considered below] by deterring some from pursuing specialities with prolonged training periods (Anderson and Antebi, 1991).

Speciality choices of graduates from 1980 through 1984 indicated a strong preference for internal medicine [20%], pediatrics [18.1%], surgical specialties [13.1%] and obstetrics and gynecology [12%] (Prywes and Biton, 1986). Only 7% of students planned training in family practice, 5% in psychiatry and only 1.5% in radiology. Although more recent data are not available, trends suggest greater interest in the surgical subspecialties and gynecology as well as in primary care fields; the former probably reflect the greater earning capacity in these specialties while the latter may represent concerns about being able to find positions in hospital-based subspecialty areas.

Men and women chose in internal medicine and pediatrics with equal frequency, whereas women more often selected psychiatry [17% vs 9%; 46% of all psychiatry residents were women in 1989] and family practice [15% vs 8%] than did men, whereas men chose surgery [19% vs 7%] and gynecology [13% vs 7%] more often than did women (Notzer, 1991). In the United States, women disproportionately choose training in pediatrics and obstetrics/gynecology as well as psychiatry (Jolly and Hudley, 1992). Shortages of specialists in family practice, radiology, psychiatry, anesthesiology and geriatrics are currently felt to exist within the country (State of Israel, 1990). Students from the four schools generally choose the same specialties; Ben Gurion University graduates do, however, select family medicine residencies more often than do graduates of other schools (Prywes and Friedman, 1987).

The Scientific Council also approves certification of physicians as specialists once residency training is complete. This is dependent upon passing both a written and

an oral examination. The written examination may be taken during the residency training period; the oral one is given after completion. Failure rates for all specialties are estimated to be approximately 30%, and candidates are given three opportunities to pass.

## **VII. ISSUES FACING ISRAELI UNDERGRADUATE MEDICAL EDUCATION**

Several issues currently face Israeli undergraduate medical education. These include national concerns over health care delivery systems and manpower as well as key curricular and organizational issues.

**NEEDS FOR CURRICULAR REFORM.** Preclinical training in Israel generally parallels that in the United States. Hence, the preclinical years are heavily loaded with lectures and little attention is given to independent learning and to subjects such as decision theory, preventive medicine, and health care policy and economics. Changes that are needed in the curriculum of Israeli medical schools thus also parallel those proposed for in the United States (Ben Bassat, 1991). These include, in particular, reduced numbers of lecture hours, expanded time for self learning, and increased instruction in disciplines of decision making, health care policy, public health, etc (Association of American Medical Colleges, 1984).

Two other curricular issues have been identified by Ben Bassat (Ben Bassat, 1988). First, the medical curriculum is very long, commonly requiring 12 years to complete [six years of medical school, one year of internship, and five years of residency]. Physicians may be 33 years of age or older when training is completed. A similar suggestion to reduce the duration of medical education and training in the United

States has been put forward from Ebert and Ginzberg (Ebert and Ginzberg, 1988). Currently, 16 United States programs grant M.D. degrees six or seven years after high school graduation (Association of American Medical Colleges, 1992).

Second, some clinical rotations for undergraduate students appear to be specialty or subspecialty based rather than oriented to providing a broad general clinical education. For example, the clinical curriculum at Hebrew University-Hadassah Medical School includes rotations in pediatric, vascular and plastic surgery; more time is devoted to surgical subspecialties than to general surgery. While this may reflect the interests and expertise of the faculty and the organizational structures of the of the hospitals, students may be better served by more extensive exposure to basic fields of practice.

**LIMITED PRIMARY CARE TRAINING.** A second concern is the ongoing inability to train adequate numbers of high quality primary care physicians. Only 7.1% of Israeli graduates from 1980 through 1984 were training or practicing family practice (Prywes and Biton, 1986). The percent is now considered to be higher, due at least in part to the increasing problem of finding specialty positions in hospitals after completing training as well as to increasing educational emphasis on primary care careers.

This need is similar to that troubling the medical education and health care delivery systems of the United States (Council on Graduate Medical Education, 1992) and Great Britain (Fraser, 1991).<sup>16</sup> In the United States, the percent of medical school

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<sup>16</sup> Definitions of "primary care" providers vary from country to country. For example, in the United States general internists are considered as primary care practitioners, whereas in Israel internists are generally hospital-based and not part of the primary care system.

graduates pursuing training in primary care specialties has fallen from 36.0% in 1982 to 22.5% in 1989, a 37.5% decrease (Colwell, 1992).

In Israel, this issue is compounded by the nature of the Israeli health care system. Over 94% of the nation's citizens are members of one of four sick funds. Over 1,600 neighborhood primary care clinics staffed by primary care physicians and allied health personnel form the backbone of this system. These physicians are older than hospital-based staffs, and hence closer to retirement age; approximately 18% of physicians are over 65 years old in comparison to only 8.6% of the general population (State of Israel, 1990). Thus, a large and continuing supply of skilled primary care physicians is needed to maintain the integrity of the health delivery system.

Furthermore, inpatient medicine is separate from outpatient primary care practice in most regions of the country.<sup>17</sup> Patients are referred by clinic physicians to the hospitals for admission where only hospital-based medical staff provide care. Thus, clinic staffing must be addressed independently from the needs of hospitals.

Hospital-trained residents also tend to view clinic-based primary care practice as being of lower quality with less prestige. Thus, most Israeli graduates prefer hospital-based specialty practice. A disproportionate percent of clinic slots are then filled by immigrants; under 20% of all physicians working in outpatient clinics are Israeli graduates (Shye, 1991; Rosen et al, 1992). Because the qualifications of some of these immigrant physicians can be questioned, the prestige of the clinic practice

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<sup>17</sup> The notable exception is Beer Sheva in which hospital service chiefs are responsible for regional health care in their specialty and in which hospital staff work in clinics several days per week (Prywes, 1987).

continues to fall and even fewer well-trained Israeli students seek positions. Finally, few clinic physicians have training in a primary care specialty; for example, in the Rishon Lezion district, fewer than 12% have had residencies in either family or internal medicine (Rosen et al, 1992). Hence, an ongoing major need for skilled primary care staff exists.

Efforts to address this problem include curricular changes and expansion of primary care or family practice programs. As noted above, a major rationale for establishing the Ben Gurion University Medical School was to specifically promote primary care and community medicine. Over 21% of graduates of Ben Gurion University Medical School from 1980 through 1984 were training or engaging in family practice; percentages from the three other schools ranged from 2.5% for Hebrew University to 7.6% for Technion (Prywes and Biton, 1986).

Family practice training programs are also expanding, with a small but increasing interest by Israeli graduates. This effort is helped by funding from Kupat Holim Clalit, which requires a significant payback period of employment after completion of training.

Implementing these expanded primary care curricula will be difficult. As a result of the factors listed above, very few primary care clinics are affiliated with universities and very few clinic staff have faculty appointments. Thus, developing ambulatory training programs will require not only development of new curricula, but also recruitment of new faculties and identification of new teaching facilities. Teaching hospitals do have outpatient clinics that can be used for teaching. However, these are oriented toward specialty rather than primary care medicine, and they are not

consistently incorporated into the undergraduate teaching programs of hospital departments.

Still other implementation problems will come from the attitudes of faculty.

Ambulatory care teaching will require added manpower not likely to follow the traditional academic track of research productivity. It will thus be necessary to develop methods to grant these clinician-teachers appropriate academic rank and promotion based upon the contributions they make to the overall goals of the medical schools. Models for this have been developed within the context of highly academic institutions such as Johns Hopkins University (Ross and Johns, 1989) and Stanford University (Jacobs and Tower, 1992).

The goal of increasing the number of primary care practitioners will, however, require changes in many activities other than curriculum and faculty relationships. Evidence from the United States (Lewis et al, 1991) and Israel (Glick, 1988) indicates that general professional and societal issues as well as training environment concerns interact to dissuade students from pursuing generalist careers. These include lifestyle, patient demands, income and working conditions, among others. In addition, schools should recruit faculty mentors and promote generalists to key administrative positions, as well as gear admission procedures to favor those leaning toward primary care careers (Association of American Medical Colleges, 1992a). Without perceived improvements in these areas, curricular changes alone are not likely to be successful. It will also be necessary for the public to recognize primary care specialists, especially those with academic positions, as legitimate care-givers and not just as conduits to hospital-based specialists.

**LIMITED OUTPATIENT TRAINING.** Virtually all undergraduate clinical training is provided in hospital-based programs. Neighborhood clinics are mostly geared toward primary care delivery and are not integrated into medical education systems. Hospital-based clinics are largely in specialty areas and are only sporadically included in undergraduate education programs.

This approach is based upon the common but highly suspect assumption that management of the most complex cases occurs in the hospital setting and that the knowledge gained in that arena can be easily transferred to the outpatient setting. Expanded outpatient training is now required to reflect the emerging nature of the health care system and for students to appreciate the true spectrum of health care problems present in the population which they will encounter in practice. Diseases encountered in ambulatory care practices differ considerably from those seen in the hospital and are not just less severe examples of the same abnormalities. Also, as outpatient practice becomes more sophisticated, additional diagnostic procedures and treatments will be completed solely in outpatient clinics so that inpatient experience will become even more limited.

This is a problem not only for primary care training but also for specialty practice in which outpatient evaluations and treatments are becoming the preferred mode of operation. Hospital-based clinics could serve this need but, in at least some cases, the sick funds do not permit patients to remain in the hospital-based clinics. They require patients to return to neighborhood primary care or local sick fund-operated primary or secondary clinics in which financial control is tighter than in the hospital clinics where they have little control over costs for which they are responsible. Sick funds are developing their own outpatient specialty facilities to control costs that will also deflect patients from these hospital-based facilities.

**INTERNAL MEDICAL SCHOOL STRUCTURES.** The relationships between the clinical faculty and the medical school discussed above may present significant organizational problems. From the perspective of the medical education, it is better for medical schools to control both clinical and preclinical education to avoid the fragmentation of undergraduate clinical education that may result when individual hospital-based specialties play primary roles. For example, individual hospital services may determine significant portions of undergraduate clinical curricula so that a student's experience is highly dependent upon the specific service on which he or she rotates. Dispersion of clinical faculty and programs among several hospitals and many departments may also inhibit formation of critical masses of staff and clinical material for educational as well as research purposes and may likewise hamper multidisciplinary collaborative research between clinicians and basic scientists (Shuval, 1980).

Absence of strong central leadership that has some measure of line-authority over clinical faculty may also diminish the ability of the school to implement coordinated changes in teaching and other functions. Although clinical chairs in the United States wield significant intraorganizational power because of their ability to raise clinical funds, a stronger allegiance to the medical school is more likely than in Israel where faculty are direct hospital employees. This issue may become more prominent as medical schools face challenges from changing national health care goals that, as discussed below, may place new and different stresses on educational and practice systems.

An additional problem results from the short service period of deans, particularly in contrast to the lifetime tenure of department heads and the unlimited tenure of

hospital directors. Because deans have limited terms, these other groups may have more real power and can simply "outwait" the decisions of the dean. The short term of deans and the rotation of basic science chairs or clinical council heads also reduces the commitment of incumbents to make hard, long-term decisions. Hence, for all these reasons, the organizational power of medical schools to act as a unified body to face external or internal challenges and conflicts is constrained.

**LIMITED INVOLVEMENT IN HEALTH CARE DELIVERY.** Medical schools, per se, have little involvement in or influence over the health care delivery system and in formulating health care policy within Israel.<sup>18</sup> Medical schools are viewed as "ivory tower" institutions, separate from the health care delivery system. This perception reduces the influence that schools have in shaping health care policy. In particular, they have limited ability to promote the values of teaching and research in public hospitals, and they are less able to promote their own interests in the face of national health care reforms such as will be considered later. Hence, major decisions affecting the health care system may be made without academic involvement or input.

One possible reason for this limited involvement in Israel is the organizational structure of the clinical faculty. As described above, the clinical staff are employees of the affiliated hospitals. Medical school management thus has less direct contact with health care delivery than in the United States, most American universities own hospitals and the full time clinical faculty generates over one-third of the schools' budgets by direct patient care. Because of these financial and organization linkages between medical schools and health care delivery, university leaders are beginning to

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<sup>18</sup> The notable exception to this is the direct involvement of the Beer Sheva school in the health care delivery process in the Negev.

play significant roles in the debate over health care reform in the United States, although repeated calls for greater involvement have been presented (Barondess, 1991; Thier, 1991).

Medical school curricula also contain little or no instruction in health policy, health economics, etc. This need has been recognized, for example, by a recently completed critical review of the national health care system (State of Israel, 1990). Implementation of new curricula in these areas will face several challenges. First, medical school leadership may oppose the introduction of these subjects into the curriculum because they do not represent true "science". Second, heavily burdened medical students may resist increasing the course work. Third, department chairs responsible for the design and length of the courses may resist the substitution of these subjects for other material already included in the curriculum. Fourth, appropriate faculty to develop the new curricula and to teach the new courses may not be readily available.

**NATIONAL PHYSICIAN SURPLUS.** The ratio of physicians to population is higher in Israel than in any other country. In 1986, the ratio for the entire nation was 330 physicians per 100,000 citizens; the number of physicians per 100,000 population was 230 in the United States (Anderson and Antebi, 1991).<sup>19</sup> In the Tel Aviv area, the ratio of physicians to population reached 1 to 222 (Anderson and Antebi, 1991). Although more recent, accurate data on the number of practising physicians in Israel

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<sup>19</sup> Comparison of physician population ratios between countries is subject to many limitations. These include the distribution of specialists vs generalists and geographical distributions. In addition, physicians in one country may not be licensable in another.

is not available,<sup>20</sup> the ratio of physicians to population is probably still higher because of the recent influx of foreign physicians discussed below.

This physician surplus has resulted from the extensive immigration of physicians to Israel from other countries. Over 9,800 physicians immigrated to Israel between September, 1989 and December, 1991, and, currently, approximately 2.5% of all immigrants are physicians (Nirel et al, 1992). Most of these immigrants arrived from the republics of the former Soviet Union. This influx of immigration results from Israel's goal of being the Jewish homeland and a policy which actively encourages immigration of all Jews regardless of national economic or labor issues. As a result of immigration and a number of complex international geopolitical issues, the medical workforce has grown in disproportionate measure to the health care system (Shuval, 1990).

This problem of physician supply is further complicated by the organizational structure of the Israeli health care system. Over 90% of Israel physicians are direct employees of either the government Ministry of Health or of one of the nation's sick funds. Hence, new graduates or immigrant physicians have little opportunity to establish independent private practices; they must be hired by agencies with fixed and limited budgets.

This surplus has led to several significant problems. Attempts to reduce overall physician unemployment, by employing doctors on a part-time basis or for only limited sessions, has resulted in many Israeli physicians being underemployed.

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<sup>20</sup> Periodic registration is not required so that data on the number of practising physicians is not available. Furthermore, many physicians practise on only a part-time basis so that the number of physicians does not equal the number of full-time-equivalents.

Prestigious, hospital-based positions are difficult to secure, and talented Israeli staff often feel forced to emigrate to secure positions with appropriate academic and professional stature. The surplus has also served to hold physician salaries at a low level and to impede the development of paramedical careers.

In addition, proposals to close one or more of the nation's medical schools to undergraduate education are periodically put forward as a solution to this problem (State of Israel, 1990). The number of schools and graduates in Israel may be compared to other nations (World Health Organization, 1988). Of 24 OECD [Organization for Economic Common Development] countries, Israel has the sixth highest ratio of population to number of medical schools with 1,056,325 citizens per school (Table III). However, Israel ranks 14 of 15 OECD nations with under 20 medical schools in the ratio of population to number of medical students, with one student per 15,199 population. Thus, Israel appears to have a surplus of schools but not of students. This difference reflects the small size of the Israeli schools, as considered above.

**IMPACTS OF HEALTH CARE REFORM.** The medical educational process also faces challenges from the proposed extensive reform plan of the nation's health care delivery system. The government of the State of Israel established in June 1988, a State Commission of Inquiry to examine deficiencies in the national health care system. The five-member commission - referred to as the Netanyahu Commission after its chairperson, Supreme Court Justice Shoshana Netanyahu - was charged with diagnosing the root causes of the public's rising dissatisfaction with the nation's health care system and with recommending corrective actions (State of Israel, 1990). Areas of concern included inadequacies in the services provided to the public, limited budgeting and finance procedures, and low levels of employee satisfaction and

motivation (Rosen, 1991; Chernichovsky, 1991). Thus, the charge and areas of study were broad, encompassing virtually all areas of the nation's health care program.

This commission issued its report in August, 1990. Recommendations were comprehensive (State of Israel, 1990), and included establishment of national health insurance, changing the functioning of the nation's Ministry of Health, institution of procedures to introduce competition between hospitals, proposals to make hospitals financially independent entities with fixed budgets, plans to expand private practice opportunities within the hospital system and, as mentioned above, consideration of closing one or more medical schools to undergraduates. In addition, the commission recommended specific changes in medical school curricula, including expanded instruction in health care policy and economics, medical ethics and ambulatory and preventive medicine.

The proposed health care reform plan presents several major and potentially serious challenges to the medical education process in Israel (Mirvis, 1992). Other than the consideration of direct closure of one undergraduate program and specific curricular reforms, proposals that may affect medical education center on 1) financial constraints emanating from fixed budgets and hospital competition, and 2) competition between clinical practice needs and opportunities for faculty and their academic activities. Tight budget controls and emphasis on competition may result in serious questions about the high costs of health care in teaching hospitals (Relman, 1984), constraints on clinical research, and controls over patient testing for educational or research purposes. Expanded private practice opportunities may further reduce faculty commitment to education and research, and may alter the relationship between attending staff and trainees to patients.

An additional issue that may impact medical education is the financial viability of Kupat Holim Clalit, the sick fund which owns and operates several major teaching hospitals. A major restructure of this largest single provider may result in unknown but possibly important changes in hospital missions, including constrained teaching roles.

### **VIII. SUMMARY AND CONCLUSIONS**

This summary demonstrates that Israeli medical education represents a highly sophisticated and well differentiated national effort which has achieved considerable successes but which is faced with significant challenges. Its accomplishments include development of four highly effective medical schools with productive education and research programs within the relatively short lifetime of the state and during periods of significant financial instability with a necessary emphasis on national security. In particular, the Ben Gurion University program has become an acknowledged model for international reform in medical education. Challenges will be presented from national concerns over immigration and health care reform as well as from the evolving needs of the medical educational establishment itself.

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## TABLES

**TABLE I: BASIC DATA DESCRIBING ISRAELI MEDICAL SCHOOLS**

	HEBREW UNIVER	TEL AVIV UNIVER	TECHNION	BEN GURION UNIVERSITY
Year Founded	1949	1964	1971	1974
No. Entering Students <sup>*</sup>	90	95	65	67
No. Faculty <sup>**</sup>	500/--	80/560	112/40	187/124
No. Teaching Beds <sup>**</sup>	2283	5000	1500	1200

Sources: <sup>\*</sup> Central Bureau of Statistics, Monthly Bulletin of Statistics, Supplement, July, 1992; <sup>\*\*</sup> World Health Organization, World Directory of Medical Schools, 1988; values are full time/ part time faculty.

**TABLE II: DURATION OF MINIMAL RESIDENCY TRAINING PERIODS IN ISRAEL AND IN THE UNITED STATES**

<b>SPECIALTY</b>	<b>ISRAEL *</b>	<b>UNITED STATES</b>
GENERAL SURGERY	6.0 YEARS	5.0 YEARS
FAMILY MEDICINE	4.5	3.0
INTERNAL MEDICINE	4.0	3.0
PATHOLOGY	5.0	4.0
PEDIATRICS	4.5	3.0
PSYCHIATRY	4.5	4.0
RADIOLOGY	4.5	4.0

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\* From Anderson and Antebi, 1991.

**TABLE III: COMPARISON OF ISRAELI MEDICAL EDUCATION PROGRAMS WITH THOSE OF OTHER NATIONS**

COUNTRY	POPULATION PER SCHOOL	POPULATION PER STUDENT	PHYSICIANS PER STUDENT
Australia	1,554,000 (11)	11,231 (9)	2,990 (8)
Austria	2,517,000 (25)	3,497 (2)	6,797 (15)
Belgium	895,000 (3)		
Canada	1,579,000 (12)	13,395(13)	3,120 (9)
Denmark	1,704,000 (16)	8,152(4)	4,269 (13)
Finland	979,000 (4)	9,253(7)	2,011 (4)
France	1,485,000 (9)		
Germany (FRG)	2,107,000 (23)		
Germany (GDR)	1,886,000 (19)		
Greece	1,640,000 (13)	11,271(10)	4,121 (12)
Iceland	237,000 (1)	1,717(1)	488 (1)
Ireland	707,000 (2)	10,810(8)	889 (2)
Israel	1,056,000 (6)	15,198(14)	2,875 (7)
Italy	1,839,000 (18)		
Japan	1,500,000 (10)		
Netherlands	1,805,000 (17)		
New Zealand	1,650,000 (14)	17,368(15)	2,605 (6)
Norway	1,035,000 (5)	12,584(11)	2,158 (5)
Portugal	2,033,000 (22)	13,149(12)	4,671 (14)
Spain	1,662,000 (15)		
Sweden	1,391,000 (8)	8,006(3)	3,433 (10)
Switzerland	1,291,000 (7)	8,667(5)	3,755 (11)
Turkey	2,194,000 (24)	9,178(6)	1,378 (3)
United Kingdom	1,948,000 (21)		
United States	1,864,000 (20)		

Number in parentheses are the ranks of each nation for that column. The second and third columns include only nations with under 20 medical schools for which data was available.

Source: "World Directory of Medical Schools", World Health Organization, Geneva, Switzerland, 1988.





## מהו ג'וינט-מכון ברוקדייל?

מרכז ארצי לחקר הזקנה, מדיניות בריאות והתפתחות אדם וחברה בישראל. מוסד עצמאי ללא כוונת רווח, הפועל בחסות ממשלת ישראל והג'וינט העולמי. צוות מומחים המתמקד בזיהוי סוגיות נבחרות ונוקט גישה רבת-חומית לפתרון בעיות במערכות שירותי רווחה ובריאות. נקודת מפגש לחוקרים, מעצבי מדיניות ואנשי מקצוע, המסייעים לקשור את ממצאי המחקר לביצועם של שינויים בשטח. מרכז לשיתוף פעולה בין ישראל לקהילה הבינלאומית.

## התכנית לחקר מדיניות בריאות בישראל

בתגובה למשבר המעמיק בשירותי הבריאות ולבקשת ממשלת ישראל, פיתח ג'וינט-מכון ברוקדייל בשיתוף ג'וינט ישראל תכנית לחקר מדיניות בריאות בישראל. מטרת התכנית היא לתרום למאמצים לשיפור מימון שירותי הבריאות והספקתם דרך ניתוחן של סוגיות מדיניות נבחרות. לתכנית שלושה יעדים עיקריים:

- לסייע לממשלת ישראל בתהליך התכנון, הביצוע וההערכה של רפורמות מרכזיות לשיפור ניהול מערכות בריאות.
- לסייע לספקי שירותי בריאות ולמבטחים בישראל במאמציהם לשפר את יעילותם ואת מועילותם.
- לפתח פרויקטים מחקריים אשר נועדו לתרום תרומה לטווח ארוך למערכת שירותי הבריאות בישראל.

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## תקציר

בישראל ארבעה בתי-ספר לרפואה, הפזורים ברחבי הארץ – בירושלים, כמפעל משותף של האוניברסיטה העברית וההסתדרות המדיצינית הדסה; בתל-אביב, כפקולטה באוניברסיטת תל-אביב; בחיפה, במסגרת הטכניון; ובבאר-שבע, במסגרת אוניברסיטת בן-גוריון בנגב. סגל המרצים במדעי היסוד הינם עובדי האוניברסיטה, ואילו סגל הרופאים הקלינאים הם עובדי בתי-החולים האוניברסיטאיים. משכורותיהם של סגל המרצים במדעי היסוד הם בעיקר ממקורות ממשלתיים, ואילו משכורותיהם של סגל הרופאים הקלינאים מקורם בדרך כלל מתקציבי התפעול של בתי-החולים, בתוספת סיוע מוגבל מקרנות אוניברסיטאיות.

סטודנטים מגיעים לבתי-ספר לרפואה לאחר השלמת לימודיהם בבית-ספר תיכון, ורובם גם לאחר שירות צבאי סדיר. תכניות הלימודים לתואר ראשון דורשת שש שנות לימודים ואחריה תקופת סטאז' חובה. תכניות הלימודים באוניברסיטאות של תל-אביב וירושלים מתבססות על תכניות ביר-רפואיות קלאסיות. לעומת זאת, התכנית של אוניברסיטת בן-גוריון נחשבת בעולם כחלוצה בהוראת רפואה הומניסטית ורפואה ראשונית, ובית הספר לרפואה בחיפה מדגיש תכניות ביר-טכנולוגיות. כל בתי-הספר לרפואה הם קטנים למדי, ומקבלים כ- 65-95 תלמידים בשנה; תנאי הקבלה הם תחרותיים ביותר, כאשר יחס המועמדים למתקבלים הוא כ-3.8 ל-1. כמחצית מן המתקבלים הם נשים.

גורמים חיצוניים ופנימיים מביאים ליצירת אתגרים חשובים. ראשית, עודף גדל והולך של רופאים, הנובע מעלייה מתמדת של רופאים מחו"ל ואשר הביא לאבטלה סמויה של כוח-אדם רפואי, קשיים בהשגת משרות טובות בבתי-חולים והחצעה העולה מעת לעת להפסיק לימודי תואר ראשון בבית-ספר לרפואה אחד או יותר. שנית, קיים צורך מתמשך ברופאים ראשוניים מיומנים יותר. דבר זה נובע מריבוי מרפאות שכונתיות המאוישות היום לרוב בידי רופאים שהוכשרו בחו"ל ושהכשרתם וכישוריהם אינם אחידים, והעדפה של מסיימי בתי ספר לרפואה בארץ למשרות מומחים היוקרתיות יותר בבתי חולים. הבעיה מחריפה בשל העובדה שהצוות הרפואי בקהילה אינו מעורב בדרך כלל במתן טיפול בבתי-חולים, וכן שסטודנטים לרפואה ומתמחים אינם מעורבים דיים במסגרות קהילתיות ובמרפאות חוץ של בתי-חולים. אתגרים נוספים יכולים לנבוע מתוך הרפורמה הממשלתית המוצעת לגבי מימון שירותי הבריאות ומערכת הספקת השירותים. בעיות מיוחדות עלולות להתעורר כתוצאה מלחצים תקציביים על בתי-החולים, הרחבת התחרות בין בתי-החולים וכן האפשרויות שאולי ייפתחו בפני סגל הרופאים בבתי-החולים לעבוד בפרקטיקות פרטיות.

החינוך הרפואי בישראל הוא, אם כן, מערכת מפותחת היטב וברמה גבוהה בתוך מסגרת שירותי בריאות מורכבת. סביר להניח כי נוצרים אתגרים נוספים בעקבות הצרכים המתפתחים של החינוך הרפואי עצמו, וכן כתוצאה מהתמודדות עם הצרכים הלאומיים לגבי היקף כוח האדם הרפואי ולגבי תפקוד מערכת הספקת שירותי הבריאות.

## דברי תודה

ברצוני להודות מקרב לב לאנשים הרבים שתרמו לעבודה זו, ובהם הדיקנים ואנשי הסגל הבכירים של בתי-הספר לרפואה, מנהלי מרכזים רפואיים שונים וראשי גופים נוספים במערכת הבריאות. במיוחד אני מודה על הערותיהם המועילות של משה פריבס, יוחנן בן בסט, גיון בק וברכה רמות, אשר הואילו להקדיש מזמנם וממאמצייהם לקריאת נוסחים קודמים של העבודה. אחרון, תודתי לגיק חביב, נטע בנטור, מיכאל רוזנבלוט ולכל צוות היחידה לחקר מדיניות בריאות של ג'וינט-מכון ברוקדייל על התמיכה שהעניקו לי. כמו כן, תודה מיוחדת לברוך רוזן אשר קרא את טיוטת העבודה ותמך בפרויקט זה לכל אורך הדרך.

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