

Reorganization of a Department of Medicine in Israel: The Hadassah Experience

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Key words: medicine, department, reorganization

IMAJ 2003;5:281–285

Departments of internal medicine in many countries have been exposed to pressures that have resulted in major changes in the specialty – both in structure and organization. The factors that generated these changes include the exponential growth in medical knowledge, the development of sophisticated diagnostic and therapeutic tools, the establishment of ambulatory services, economic pressures, and the growing effect of the health insurers. These changes have been most profound in the United States and are well documented. Since the end of World War II, departments of internal medicine in the U.S. have had to contend with forces that have led to the fragmentation of the specialty, which in turn raised questions about the organization and structure of internal medicine departments. The primary issue is how departments of internal medicine can best meet the needs of patient care, education and research [1–3].

Pressures such as those listed above have been less dominant in Israel. This is mainly due to the way in which healthcare is funded and delivered, and the fact that every citizen is covered by national medical insurance. Nevertheless, healthcare services in Israel, like those in many developed countries, have had to respond to the economic, technological and scientific changes, which have compelled hospitals to adapt to the new requirements in a way that will benefit hospitalized patients, research and education.

The organization of medical departments in acute care hospitals has been strongly influenced by two models: the classical European model with its fully autonomous medical wards, and the U.S. model characterized by a broad department in which all medical subspecialties are represented and to which all patients are admitted. In Israeli acute care hospitals, the European model of fully autonomous medical wards has generally been adopted. In some cases these medical wards have incorporated some of the medical subspecialties [Figure 1]. Yet it is not uncommon to find some medical subspecialties functioning independently of the acute care inpatient medical wards because of special therapeutic tools or even local personal constellations.

The Department of Medicine in Hadassah University Hospital recently implemented a new departmental structure in which inpatient beds for most medical subspecialties have been retained within its framework. The model differs from the USA in that the inpatient beds are divided into independent medical wards (the term ward will be used as a synonym for the traditional internal

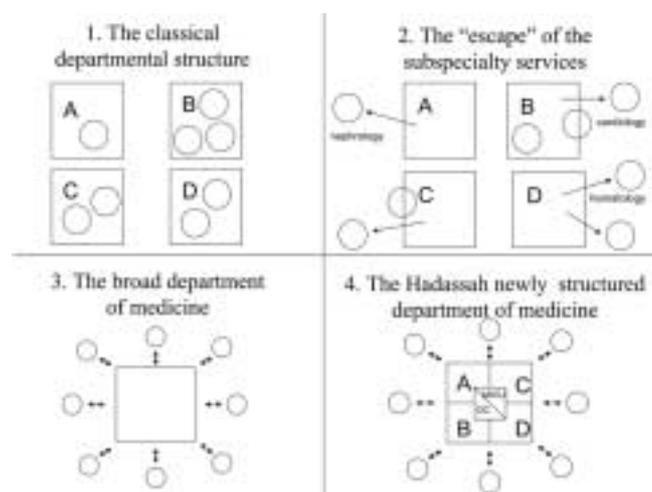


Figure 1. Models of departments of medicine. □ inpatient ward, O = subspecialty service, MICU = medical intensive care unit, DC = day care unit.

1. The classical structure with multiple inpatient wards, each characterized by one or more subspecialties.
2. The “escape” model in which some subspecialties became autonomous.
3. The “broad” department of medicine with a large inpatient service, served by the subspecialty services.
4. The new Hadassah Department of Medicine in which the inpatient services are divided into wards directed by a ward chief with senior physicians from the subspecialty services.

medicine department). Each medical ward has its own medical director who is fully responsible for the clinical and administrative activities, as well as teaching of residents and medical students on their wards.

This paper reviews the rationale for implementing this organizational model, and recommends it as an optimal tool for the department of medicine to meet the service, educational and research needs of the 21st century.

Reciprocity between internal medicine departments and related subspecialties

The structure of the specialty of internal medicine has reached a crossroads in recent years as the intermediate relations between internal medicine and its subspecialties have become more and more complex. The classic “vertical” approach that sought to keep

the medical subspecialties within the internal medicine department has been challenged, and there are now strong centrifugal forces attempting to push them out of the internal medicine department and promote their independent horizontal development [1,3].

This change has proven to be beneficial for some medical subspecialties such as hematology, mainly due to changing patterns of diagnosis and treatment. In the past, hematology functioned as a subspecialty related to internal medicine; today it is characterized by a more oncology-oriented approach. Both hematology and oncology treat cancer patients and tend to share diagnostic and therapeutic approaches, utilizing central radiotherapy and chemotherapy services to manage their patients. The treatment and complications of the disease regardless of where patients are managed tend to be similar, often requiring frequent admissions to day care units and/or the inpatient medical services. Inpatient admissions for an individual patient tend to be frequent and for extended periods. In contrast, for other medical subspecialties, the manner in which patients are treated, the modes of thinking, and clinical and analytical approaches are common to all branches of internal medicine. An internal medicine resident should be able to treat patients with pulmonary or rheumatologic problems, in consultation with a subspecialist from these fields.

Moreover, since most patients admitted to acute care internal medicine wards tend to have multisystem involvement, they are more likely to receive treatment that is "comprehensive" in a multispecialty setting than "fragmented" care which tends to be characterized by a subspecialty ward setting. Allotting bed-space for patients in the framework of an internal medicine department is the more logical way to provide treatment. This multispecialty organizational structure not only benefits the patient by providing continuity of care but also increases the spectrum of diseases treated and seen by the residents and medical students. From a purely administrative point of view, this organizational structure provides the hospital administration with greater flexibility with regard to hospital admissions, a flexibility that would not exist if hospital beds were allocated among autonomous subspecialty wards.

There are additional benefits for the hospital administration; for example, the availability of a large supply of hospital beds facilitates the implementation of a "graded-flexible admissions" system, one that is based on the hospitalization requirements of the patient. This organizational structure efficiently provides for admissions from outpatient settings, elective admissions, and the admission of patients from either the emergency department and/or the intensive care unit. This graded system allows the hospital to adjust nursing staff and medical teams according to their skills and the doctor-patient ratio for the various hospitalization requirements. These actions are made possible by an organizational structure that is characterized by a shared system for allocating hospital beds.

Further support for the vertical approach of concentrating internal medicine activities under a single roof and in one department stems from the structure of subspecialty training in Israel. Training in the medical subspecialties follows 4 years of residency in the internal medicine wards. Thus, most fellows in the

subspecialties have acquired their basic knowledge and skills in a department of medicine as former internal medicine residents. These residents are also the primary junior medical staff members involved in the treatment of all inpatients.

While there appear to be strong reasons for adopting the vertical organizational format for a department of medicine, this model has limitations that are not to be found in the horizontal approach; for example, the horizontal model offers the possibility of achieving maximum excellence and "professionalism" in a narrow field. This professionalism is the basis for developing advanced medical services, offering ambulatory services and referring patients to outpatient clinics. All of these are essentially based on the development of the subspecialties, and a foundation in general internal medicine is less important.

Another key advantage of the horizontal model has to do with medical research. Medical research is, for the most part, carried out within the medical subspecialties. This is where the advanced research laboratories are located, and it is here that both residents and research fellows can participate in research growth and influence new developments. No less important is the opportunity to obtain financial resources, both from grant agencies and private supporters. In recent years the distribution of research funding has tended to be based on the horizontal subspecialty model, rather than the broader discipline of internal medicine. At the U.S. National Institutes of Health, for example, research institutes are subspecialty oriented – i.e., special institutes for rheumatologic, cardiopulmonary and diabetic research rather than broad-based internal medicine research institutes. Calls for research grant applications for NIH extramural programs and peer review committees are also usually based on the subspecialties and not on the broad field of internal medicine.

It is important to note that the remarkable development of the subspecialties has led, paradoxically, to an increased need to return them to the internal medicine organizational framework. There are very few hospital-based physicians today who do not have subspecialty training, and in some cases even two subspecialties. This trend will most likely continue, resulting in a situation in which hospital-based (as opposed to primary care) senior internists whose primary role is that of a general internist will be an uncommon phenomenon in hospitals.

In light of these developments it would be inappropriate to maintain a narrow departmental structure in an internal medicine department. Senior internists who are required to staff the departments are drawn from the pool of internists practicing in subspecialty units. A similar model can be found in the "Department of Medicine" structure in the United States, which includes all the subspecialty units [Figure 1].

Can we somehow combine the benefits of the different approaches without jeopardizing their development? The recently introduced changes in the structure of the Department of Medicine at Hadassah have, we believe, achieved this very important goal.

NIH = National Institutes of Health

The impact of hospital admissions trends on the structure of the internal medicine department

During the past decade there has been a general trend in western countries to reduce both the number of hospital admissions and the length of stay for acute care inpatients. This tendency stems from a number of factors:

- The more active role of medical insurers in controlling hospital admissions
- The transition from treatment in hospitals to outpatient and day care departments
- The establishment of alternative "hospitalization" networks, such as subacute care wards, and hospices
- The development of technologies that enable treatment in a home care setting.

The decrease in admission has had a strong impact on the departments of both pediatrics and surgery, but this trend undoubtedly has had and continues to have, a greater impact on departments of internal medicine. In Israel, for example, the mean length of stay for inpatients in departments of medicine decreased by about 55% in the last decade. Despite this decrease in the number of admissions, some factors may cause an increase in the number of patients admitted to internal medicine wards. For example:

- The aging of the population, particularly in urban regions. Currently it is this segment of the population that accounts for the majority of admissions in the internal medicine departments – a trend that will no doubt continue.
- The increase in recipients of allogeneic organ transplants treated with heavy immunosuppressing drugs. Patients with transplant complications comprise about 10% of the admitted patients in our department of medicine.
- The development of pharmacology and biotechnology has reduced the number of patients requiring surgical intervention; e.g., for cardiovascular disease and surgical removal of malignant tumors. These patients, if they require hospitalization, are more likely to be admitted to the internal medicine department for treatment. This includes the treatment of peptic ulcers, thyrotoxicosis and esophageal varices, all of which formerly required surgical intervention. During the past two decades these diseases have been treated almost exclusively by the internal medicine subspecialties.
- The development of genetic research is likely to develop new fronts in diagnosis and treatment of many diseases. "Genetic medicine" might increase the demand for admissions in internal medicine wards in acute care hospitals that meet the necessary criteria for this type of complex treatment.
- There is also the "unknown factor," the possibility that a new and unexpected agent affecting the incidence of disease might change all admissions predictions in the hospitals. The most obvious example is the AIDS virus, which has significantly changed the case-mix of patients hospitalized in the internal medicine wards in many countries around the world.

Hospitalized patients in the department of medicine can be divided into four categories:

- Patients admitted from the emergency rooms diagnosed with acute illnesses.
- Elderly patients suffering from chronic illnesses who have become unstable. A significant number of them requires not only medical care but also complex nursing care and they have social needs that must be met. In the future it is possible that these patients will not be admitted to the hospital because solutions will be found for them outside of the acute care hospitals.
- Complex patients requiring intensive care. The percentage of such patients will rise because of the increase in the number of patients with suppressed immune systems suffering from sepsis and multiorgan failure.
- A "new" group of patients is emerging that will require genetic or biological treatments.

The trend to switch from hospital-based treatment to ambulatory treatment has resulted in a reduction in the activities of ambulatory subspecialties in acute care hospitals. The need for such treatment, which does not require bed space, results in the managed care agencies in Israel setting up their own parallel networks to serve their clients. These networks, which are established outside of the acute care academic hospitals, function at lower costs and it is very difficult to compete with them. In light of this we believe the main strength of the internal medicine wards in Israel will be concentrated around hospital bed space. In addition, the medical subspecialties, which must be located in tertiary care hospitals for training and consultations, will have to rely heavily on these inpatient services.

The importance of the internal medicine ward directors in the department of internal medicine

In the U.S., departments of medicine that have large numbers of hospital beds and attending physicians from all the subspecialties are not run by ward directors. Rather, each senior physician appointed as team head on the service is responsible for the total care of a certain number of hospitalized patients for a limited period.

This system is far from ideal, benefiting neither the patient nor the residents who are responsible for providing patient care; it also limits the efficient operation of the system. A factor contributing to the limitations of this model is that senior attending physicians are usually drawn from the medical subspecialties. Subspecialty practice is for the most part characterized by a "fragmentary" in contrast to a "comprehensive" approach in a general internal medicine ward. In order for the medical ward to provide high quality comprehensive care to inpatients, there is a need for a senior physician (ward director) with a broad background in internal medicine who is able to provide support to the subspecialty attending physician and residents on the service in dealing with all of the patients' problems. For some patients this role has been partially fulfilled by the patient's primary care physician. However, this is far from satisfactory, as evidenced by the growing "hospitalist" movement [6]. In places like Israel, where primary care physicians are not involved in the inpatient treatment, the

need for a senior "hospitalist" to provide comprehensive care to the inpatient is even more essential.

An additional limiting factor is that most attending physicians function on the ward for relatively short periods, generally 1 to 2 months. This short time limits the degree to which the attending physician is able to assume responsibility for the ward's ongoing activities, such as clinical protocols and teaching residents. In this system residents are denied the benefits of having a senior physician who is able to supervise and direct their progress over an extended period. Another limiting factor is that the senior attending physician cannot be responsible for non-clinical tasks, such as administrative roles and liaison with nursing staff. The attending physician does not deal with the difficult task of regulating the pressures between patient admissions from the emergency room and the discharge of patients from the ward in order to accommodate emergency room admissions.

Other important attributes of the small departmental structure that were lost in the broad department of medicine is the *esprit de corps*, the competition between departments in its positive aspects and the feeling of belonging to a unit. Thus, we believe that in order to provide patients with high quality care, establish appropriate work procedures, and teach residents and medical students, it is crucial that hospital ward directors be appointed who can control and direct the daily clinical activities in an internal medicine ward with 35–40 beds.

The newly structured Hadassah Department of Medicine

Our newly structured Department of Medicine has a total of 130 inpatient beds and incorporates almost all of the medical subspecialties. For both structural and administrative reasons the subspecialties of hematology and cardiology will continue to function independently from the general internal medicine wards. The inpatient beds are divided among three medical wards with 35 beds each, and each ward is served by a central medical intensive care unit and a central medical day care unit. The responsibilities of the chairman of the department, the ward director and the subspecialty heads are summarized in Table 1. Responsibility for the ward is assumed by a ward director, who is a senior physician with an academic rank of associate or full professor of medicine, with the following functions: overall responsibility for clinical decisions regarding admission, treatment and discharge of patients in his or her ward; implementing clinical guidelines and work standards formulated in the department; training residents who will "belong" to the ward during their residency; and teaching medical students. The director is also responsible for liaison with the nursing staff, social workers and other related health professional staff.

The subspecialty units continue to develop their unique clinical ambulatory services, as well as their research. Senior physicians from the subspecialties are assigned to the three wards, ensuring the representation of at least one specialist from each of the

Table 1. Responsibilities of the department's medical staff

Field	Chairperson of medicine	Ward* Director	Head of subspecialty service	Senior physician
Clinical	Developing and monitoring implementation of the clinical guidelines. Strategic planning, new directions. Quality assurance. Liaison with health insurance agencies.	Clinical responsibilities for inpatients. Implementing the departmental clinical guidelines.	Clinical responsibility for outpatients. Developing departmental clinical guidelines in his/her area of specialization.	Full medical responsibility for patients assigned to his/her team while in service on the ward. Participating in academic rounds of the medical ward. Responsibility for ambulatory services and inpatient consultations in the framework of his/her subspecialty.
Training	Selection of residents and fellows. Allocation of residents.	Training and evaluation of residents and medical students.	Training of fellows and medical students.	Training of students and residents when attending in the medical ward. Training of students and fellows in the framework of his/her subspecialty activities.
Research	Establishing new research directions. Allocation of research resources for junior staff.	No direct responsibility for research.	Overall responsibility for research in subspecialty.	Full responsibility for his/her research.
Fund Raising	Recruiting funds for departmental projects.	No overall responsibility.	Recruiting funds for special projects.	No direct responsibility.
Administration	Overall responsibility for the management and administrative tasks of the department (assisted by a senior administrative manager). Promotion of faculty members	Minimal administrative responsibilities. Relations with nursing staff, social workers and paramedical staff.	Overall responsibility for the management and administrative tasks of the service.	No administrative responsibilities.

* Traditional department of medicine

subspecialties in each of the wards. These senior physicians serve as attending physicians in the wards for specified periods. Determination of the amount of time that they will serve in this capacity is made after consideration of their clinical responsibilities in their subspecialties as well as their research activities. All senior physicians assigned to a specific ward are required to attend the weekly clinical rounds of their respective wards throughout the year. It should be pointed out that in this organizational structure residents do not rotate between the medicine wards, but they are exposed to a spectrum of senior subspecialists who will rotate through the wards.

Ultimate authority and responsibility for the wards and units in the department of medicine rests with the chairman of medicine. The major responsibilities of the chairman include strategic planning, recruitment of senior physicians, and fundraising for the department. The chairman is responsible for reciprocal relations between the units and the wards, and advances and develops projects that involve more than one unit or ward. The chairman is the authority with regard to personnel and space in the department, and also represents the department of medicine on major hospital committees. S/he is responsible for maintaining the integral link between the department and the various healthcare insuring agencies, which are a source of patient referrals. For his/her administrative functions the chairman is assisted by a senior administrative manager. The various departmental committees, such as the Teaching Committee, Residents and Fellows Committee, and the Clinical Guidelines Committee, are required to consult with the departmental chairman on an ongoing basis. The positions of the chairman and the ward directors are on a rotational basis for periods of up to 10 years. A mid-term performance review is a requirement for re-appointment.

Conclusion

The "escape" of the subspecialties from the central body of internal

medicine on one hand, and the disappearance of the role of directors of medical wards in some systems on the other, have had a deleterious effect on two of the main functions of the department of medicine – namely, inpatients' treatment and residents' training.

While it is too early to offer conclusive evidence of the success or failure of this change, preliminary analysis suggests that the newly structured department of medicine in the Hadassah Medical Organization – a combination of the broad approach adopted in the United States and the classical European model of small departments directed by heads of departments – has been beneficial for both the patients and the residents. This organizational model has not been detrimental to the subspecialties, which are able to effectively develop their patient care activities, research and teaching in a supportive environment.

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A hen's egg is, quite simply, a work of art, a masterpiece of design and construction with, it has to be said, brilliant packaging!

Delia Smith (1941-), British cookery writer and broadcaster

Capsule

The genetics of overeating

While it is generally accepted that genetics plays a role in obesity, the culprit genes have been difficult to identify because this disorder typically arises from the combined effects of multiple genes and environmental factors. The *MC4R* gene, which encodes the melanocortin 4 receptor, is one of the few genes causally linked to rare, monogenic forms of obesity. New work reinforces the idea that *MC4R* mutations are strong contributors to the development of morbid obesity induced by hyperphagia (overeating) and suggests that these mutations may be more common

than previously thought. In a study of 500 patients with severe childhood obesity, Farooqi et al. found that nearly 6% had mutations in *MC4R* and that the severity of their clinical phenotype correlated with impairment of receptor function. Independently, Branson et al. found that sequence changes in *MC4R* were especially prevalent in obese subjects who engaged in binge eating, although the functional effects of the sequence changes were not tested.

N Engl J Med 2003;348:1085, 1096

