



### Understanding Hospital Utilization: Medical Inpatient Care in Israel

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In their article published in this issue, Haklai et al. [1] present data reported to the Ministry of Health on discharge from internal medicine wards in Israel in 1995. Based on these data the authors discuss some pertinent issues: the utilization of beds in internal medicine wards, the extent to which admissions could have been avoided by practicing "better" medicine, and the extent to which the case mix of patients in the wards allows for effective teaching of the internal medicine disciplines within the hospital. They conclude that better planning of discharges and improved follow-up within the community could have reduced the number of re-admissions by between 1 and 17%. They also contend that teaching internal medicine disciplines must involve both primary and ambulatory internal medicine.

Admission to an internal medicine ward ensures patients of more intensive treatment than can be obtained in the community. The treatment provided in hospital utilizes knowledge, medications and technologies that exist in an internal medicine department. It follows that the appropriateness of admission to an internal medicine ward is defined in terms of a series of considerations and assessments that begin before the admission and continue through the admission, up to and including the patient's return to the community. Hence, to help us better understand the utilization of beds in internal medicine departments as well as the potential obviation of some admissions, we need to examine the following questions:

- From which population pool in the community do the patients come? Can one define a population at increased risk of admission? And, which diseases can be primarily or secondarily prevented within the community?

In Israel, these questions remain largely unanswered, since community research does not yet provide sufficient data. Answers to these questions cannot be based solely on inpatient data. For example, to learn about a population at risk for an acute coronary event, it is insufficient to study those admitted with acute coronary syndrome since one would be overlooking the group of patients in the community who suffered sudden death prior to admission.

Though one of the predictive factors for admission to an internal medical ward is a previous admission, that in itself is not a sufficient predictor. In order to identify a group at risk of admission to a medical ward, we would need to utilize systems of community classifications, health status, and functional levels, in addition to demographic and socio-economic data. Only then could we develop specifically aimed intervention programs to obviate hospital admissions. Perhaps one of the most promising techniques is to identify patients at high risk for cardiovascular disease, and then target primary prevention. As Haklai's team has pointed out, other diseases also lend themselves to prevention. These include cardiac failure, asthma, obstructive lung disease, diabetes, and hypertension. Even here we need to identify subpopulations at risk of admission, since approximately one-third of the adult population suffers from hypertension and about half have at least one of the diagnoses listed above. It would therefore be unrealistic to take into account the mere presence of a disease.

- What is the case mix of patients admitted to the wards?

"Case mix" refers to the age and gender of the patients, the spectrum of the major diagnoses and their severity, the associated diseases and their severity, and the patients' level of function. The mean age of patients in internal medicine wards is about 67 years. It is therefore not surprising that Haklai et al. found a high rate of co-morbidity among those patients. Indeed, some 75% of patients in internal medicine wards have multiple diseases and functional impairment, as measured by a case mix tool such as the Index of Coexistent Disease [2].

- What criteria are used in the emergency department to decide on admission? Were the patients justifiably admitted to internal medicine or should they have been admitted to an intensive care unit?

Appropriateness of Admission is a tool developed in the United States to answer that very question [3]. Although its validity has not been tested by its proponents, this method is

in widespread use [4]. An attempt to use this tool in Israel brought to light serious deficiencies [5].

Admission of critically ill patients to general internal medicine wards is a widespread practice in Israel. During this last winter, of the 500 patients on artificial respirators approximately 350 were in general wards. This could lead to an increase in mortality [6]. Organizational changes, such as opening "intermediate care units," which admit critically ill medical patients directly from the emergency department if there is no room in the ICU, have been shown to be an effective and economically sound solution [7].

- What is the appropriateness of the duration of the admission? Were the admission days utilized appropriately, and if not, why not?

The appropriateness of the days of care can be assessed by means of tools that have been evaluated in the United States, in Europe, and in this country [3,4,8,9]. In general, these tools show that for a large percentage of admission days no criteria for continuing admission are fulfilled. In recent studies carried out in Israel, unjustified admission days range from 10 to 20% [10,11]. The inappropriateness was highest in the last third of the admission period, the reasons being either hospital related (such as an incomplete workup) or, in one-third of cases, community related (e.g., difficulty in discharging the nursing-dependent patient).

- What is the appropriateness of the discharge? Are patients discharged in a stable medical condition? Are they discharged too early and is there an association between early discharge and repeated admissions?

Though standard management techniques assess bed utilization in terms of the mean length of hospital stay and occupancy, such techniques are too simplistic for evaluating the function of internal medicine departments. The assumption that shortening the hospital stay will improve efficiency and reduce admission costs is only partly valid. Shortening the number of days of treatment significantly increases the cost per day of the admission, due to a switch to utilization of more intensive and expensive forms of treatments and technologies. In addition, shortening the hospital stay does not allow adequate communication between the staff and the patients, and the patients are discharged before they have fully recuperated. Haklai's group [1] do not distinguish between first and subsequent admissions. One of the risks of shortening the hospital stay is that if a patient who is not fully stabilized is discharged too early, he or she will "bounce back" as an unplanned re-admission. It follows, therefore, that the true cost of the admission includes both the initial and the repeat admission. Whereas in most western countries the rate of repeat admissions (within one month of the original admission) is in the order of 12% [12], in Israel it is more than double! [13]. Furthermore, while approximately half of the re-admissions are unplanned in western countries, the figure for emergency admissions in Israel is approximately 90%. The factors that influence

unplanned re-admission include co-morbidity and the duration of the original admission; the shorter the mean hospital stay, the greater the risk of an unplanned re-admission for patients who were in hospital for longer than the mean duration. As a result, the higher the re-admission rate, the more the case mix of patients in the wards comprises complex and serious cases, and the more the treatment costs rise. In 1998 the Israel Society of Internal Medicine instigated a multicenter survey of repeat admissions to internal medicine wards [14]. Some 400 patients re-admitted to hospital within a month of discharge were interviewed. They were older than the average inpatient (73 vs. 67 years), and typically suffered chronic diseases — particularly ischemic heart disease and cardiac failure. In half of them the disease was moderately severe, in a further third the disease was severe or life threatening, and 40% had at least one serious functional disability. The internists' opinion was that in 69% of cases the re-admission was unavoidable. Only half of the patients had seen their primary care physician between the two admissions. It follows, therefore, that repeat admissions to internal medicine departments in Israel are a key factor in understanding the utilization of those departments.

- What are the alternatives to admission?

Alternatives to admission have to be sought within the community by strengthening primary care medicine, improving the link between community and hospital physicians, encouraging home care, and/or utilizing long-term admission facilities for chronically ill patients. It is difficult to evaluate to what extent primary care medicine in Israel has succeeded in its aim to obviate preventable admissions and reduce the number of re-admissions to internal medicine departments. On the one hand, in a country that has national health insurance, a surfeit of doctors throughout all areas of the country, specialty medicine flourishing in the community, and extreme accessibility to primary and consultant medicine, one would hope to achieve a maximal reduction in admissions. In Israel, however, there is almost total separation of ambulatory and inpatient medicine. The information that a primary physician receives regarding a patient admitted to hospital is still dependent on the patient's returning to the physician following discharge. Many patients are admitted without the primary physician's knowledge, and in most cases there is no direct contact between the physicians during the course of the admission. The NIVEL survey that was conducted among primary care physicians in Israel showed that only 17% of physicians received any information regarding their patient's treatment other than that contained in the discharge letter, which created a problem in continuity of the patient's management [15].

- In view of the overcrowding in the internal medicine departments, the question is what is the number of hospital beds needed for internal medicine in Israel?

In Israel the number of inpatient beds per 1,000 population was 2.28 in 1997, of which only 0.61 per 1,000 beds were in

ICU = intensive care unit

internal medicine departments [16]. That figure has steadily decreased during the past decade, and is approximately half the number of beds per head of population available in western countries. In spite of the fact that it is effective in reducing the number of repeat admissions of the elderly and patients requiring nursing care [17], home care is underdeveloped in Israel. Finally, since there are few long-term inpatient facilities in Israel for the elderly and nursing-dependent patients, a certain percentage of these patients remain in internal medicine wards waiting for institutional placement.

Haklai et al. noted that the range of diseases to which students and residents are exposed covers most of the diseases needed for teaching, but that the brevity of the exposure and the predominance of serious stages of those conditions render the exposure inadequate. That is an important observation. Consequently, the authors suggest, as do many others, that we should rely not only on inpatient exposure for teaching purposes, but that residents should be involved in ambulatory and community internal medicine [18]. The inevitable operative conclusion is that we must develop a purpose-designed training program for primary internal medicine, similar to the situation that exists for pediatric training in Israel. A curriculum for such a program has been published and is in use [19,20].

In summary, in view of the sharp rise in the admission rate to internal medicine departments, the reduction in the mean hospital stay and the increase in the first and repeat admissions of seriously ill and complex patients, to what extent does a survey of admissions to the internal medicine wards reflect true needs and unnecessary admissions? It is important to know how many admissions there were and what the discharge diagnoses were, as well as who the patients were and how complex and severe their illnesses were at admission and at discharge. Appropriate utilization of admissions to internal medicine wards has many aspects, some of which have been discussed. The problem of the pressure of internal medicine admissions will continue to be with us in the future. That problem can be solved by means of organizational changes within the community and the hospitals. These issues require further research, to which the study by Haklai's team has made an important contribution.

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*In Italy, for thirty years under the Borgias, they had warfare, terror, murder and bloodshed, but they produced Michelangelo, Leonardo da Vinci and the Renaissance. In Switzerland, they had brotherly love; they had five hundred years of democracy and peace — and what did that produce? The cuckoo clock.*

*Orson Welles, American film director, writer and actor, 1915-85.*