Home Visits to the Housebound Patient in Family Practice: A Multicenter Study

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Abstract

Background: Most countries today are experiencing an accelerated pace of population aging. The management of the elderly housebound patient presents a special challenge to the family physician.

Objectives: To investigate a series of home visits to housebound patients, the therapeutic procedures used, the equipment needed, and the diagnostic conclusions reached.

Methods: The details of 379 consecutive home visits to housebound patients were recorded by 91 family doctors serving 125,000 patients in Israel.

Results: The average age of the patients was 76.1 years. The vast majority of the visits were during office hours (94%). In 24.1% it was the doctor who decided to make the home visit on his/her own initiative. The most common initial reason for a home visit was undefined general symptoms, but the doctor was usually able to arrive at a more specific diagnosis after the visit. Medications were prescribed in 59.1% of the visits, and in 23.5% the medication was administered directly by the physician. The commonest drugs used were analgesics and antibiotics. In 19.3% of visits no action at all, other than examination and counseling, was undertaken. The equipment needed included prescription pads (73%), a stethoscope (81%), sphygmomanometer (74.9%), and otoscope/torch (30.6%). Only 15% of visits resulted in referral to hospital.

Conclusions: Home visits to housebound patients serve as a support to caregivers, provide diagnostic information, and help the family with the decision as to when hospitalization is appropriate. The specific medical cause for the patient being housebound had little effect on the process of home visiting.

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In most countries the aging population is growing. Morbidity increases with advancing age and functional capabilities decline, resulting in a growing need for home-care services [1]. Home visits, also known as house calls, are an important part of care for elderly housebound patients and their caregivers.

Home visits are more common in some countries than in others, varying from 15 per practitioner per year in the USA to 15 per day in Belgium and Russia [2,3]. Even in North America, where there is relatively little of this activity, family physicians, as opposed to other types of primary care physicians, regard home visiting as important [4,5]. Yet, there is a worldwide trend towards a decline in the number of home visits made by primary care physicians [6]. Lately, home visits are predominantly provided to those who are very sick and near the end of their lives [5].

The aim of this study was to investigate the process of home visiting to the housebound patient — who initiated them, what is the diagnostic process involved, and what types of outcomes occur. This information is necessary for doctors to plan rationally and to organize their practices appropriately in the face of the growing geriatric burden, both regarding the organization of time and the equipment needed.

Method

Family physicians in Israel are encouraged to initiate regular home visits to housebound patients. Renumeration is at a rate that makes it worth their while, although not high enough to warrant seeking more work of this kind. The majority of family physicians in Israel do not provide 24 hour care, and out-of-hours care is provided by a different organization. The direct cost to patients for a home visit is low (average US$7), relative to the cost of regular transport to the clinic, which encourages them to use this service.

Data collection

Ninety-one family physicians, members of the Israel General Practice Research Network, volunteered to complete a questionnaire before and after 10 consecutive home visits to their patients (homebound as well as non-homebound for whatever reason, and of all ages). The characteristics of the participating physicians and their practices are described in detail in our previous report [7]. The study also included the visits to elderly housebound patients in the

community who were not resident in institutions. The status of "homebound patient" was determined by standard nursing criteria defined by the Health Services Organization.

Participants provided their personal and professional details, as well as demographic characteristics of their whole patient population including: number of registered patients, percentage of elderly patients, and frequency of home visits.

Before each home visit to chronically housebound patients, the following information was recorded by the family physician: day of the week, time of day, age and gender of the patient, known diagnoses (the physician was asked to include only the three most significant chronic illnesses for each patient), who initiated the visit (doctor, patient, relative or other), and the reason given for the requested visit.

After the visit the following details were added: diagnosis, justification for home visit (in the subjective opinion of the visiting physician), procedures performed, diagnostic and therapeutic equipment needed, and medication required (excluding repeat prescriptions for chronic medication that are automatically generated at the clinic).

Diagnoses, diagnostic groups, and reasons for the requested visit were coded according to the International Classification of Primary Care.

Definitions

Elderly patients were defined as those aged 65 years and older. Chronically housebound patients are those who, due to illness, disability, or for psychosocial reasons, were confined to their homes and were unable to consult with the family physician in the clinic.

Statistical analysis

Descriptive statistics were used to characterize the physician and participant patient population and to assess the process of home visits. Chi-square tests were used to compare proportions, and the Student *t*-test was used to test differences between means. One-way ANOVA was used to test the analysis of variance when needed. Due to incomplete data on some questionnaire forms, there is some loss of data in the sub-analyses.

Results

The study participants were 91 family physicians serving about 125,000 patients and reporting on 379 visits to housebound patients, which comprised 47% of all home visits during the observation period.

The average age of the housebound patients was 76.1 years, and 64.2% were females. The age distribution was 28% aged 65–74 years, 22% aged 75–79, 21% aged 80–84, and 29% aged 85 and above. There were almost 800 chronic diagnoses with a vast diversity. The most prevalent chronic diseases with impact on patients' health and mobility are summarized in Table 1. The visits were made on all days of the week, the vast majority of them during office hours (94%). The patients requested the visit themselves in only 18.7% of the cases, but in most cases (57.2%) the request was made by partner, spouse, or others (nurse, social worker or neighbor). In 24.1% of the cases it was the doctor who decided to make the home visit on his or her own initiative.

The most common reasons for requesting a home visit fell into the ICPC "General" category (31.4%), which included fever, general weakness, and indoor accidents or falls. Other frequent complaints were respiratory (19.3%), cardiovascular (11.1%) and musculoskeletal (11.9%). Less frequent complaints were dermatological (6.6%), digestive (5.8%) and neurological (2.4%) or psychosocial (2.5%).

The most common diagnoses made by the physicians after the home visit were classified as respiratory (24.0%), mainly respiratory infections and exacerbation of chronic obstructive pulmonary disease. This was followed by circulatory problems (15.3%), mainly heart failure and stable ischemic heart disease, and less commonly angina pectoris, and musculoskeletal problems (11.1%). Another 5.5% of the diagnoses were of psychological origin, mainly anxiety and depressive disorders. The proportion that remained undiagnosed as "General Complaints" fell to 17.2%.

Medications were prescribed in 59.1% of the visits, and were administered directly by the physician in 23.5% [Table 2]. Other outcomes of the visits are presented in Table 3. In 19.3% of visits no action at all, other than examination and

Table 1. The commonest major chronic diagnoses

	Percent of patients (n=341)
Hypertension	24.1%
Diabetes mellitus	19.9%
Malignancy	16.1%
Congestive heart failure	15.3%
Ischemic heart disease	15.3%
Cerebrovascular accident	14.4%
Chronic obstructive lung disease	12.0%
Dementia	10.3%
Severe osteoarthritis	7.6%
Parkinson's disease	5.9%
Fractures (hip, neck, and others)	5.6%
Asthma	3.5%
Depression	3%

There were 341 patients, and 379 visits.

Table 2. Medications considered necessary at the home visits

	Percent of visits (n=379)
Analgesics	5.5%
Antibiotics	5.5%
Diuretics (furosamide)	4.7%
Antipyretics	4.5%
Resuscitative drugs	2.6%
Oncology, supportive drugs	1.8%
Steroids	1.1%
Bronchodilators	0.8%
Anti-ischemic (sublingual isosorbide dinitrate)	0.8%
Others	8.7%

ICPC = International Classification of Primary Care

Table 3. Home visits to housebound patients: outcomes*

	Percent of visits (n=379)
Medication prescription	59.1%
Medication administered	23.5%
By mouth	15.8%
By injection	9.0%
Sent to emergency room	15.0%
By regular ambulance	3.4%
By intensive care ambulance	0.5%
Examination only	19.3%

* Actually performed during the visit

Table 4. Equipment deemed necessary* in 379 home visits

	Percent of visits (n=379)
Diagnostic	
Stethoscope	81.0%
Sphygmomanometer	74.9%
Otoscope/torch	30.6%
Urine analysis sticks	12.9%
Electrocardiogram	12.2%
Glucose meter	10.3%
Theapeutic	
Drugs	26.4%
Dressings	7.9%
Administrative	
Medical chart	81.0%
Prescription pad	68.6%
Referral letter form	46.4%
Laboratory form	32.5%

* Should be in the doctor's bag.

counseling, was undertaken. The physician deemed the visit justified in 65% of the cases, equivocal in 15.8%, and unjustified in 19.2%. Table 4 lists the equipment the doctors deemed necessary.

The nature of the visit varied depending on the visit initiator. Patients tended to be older when the caregiver ordered the visit compared to doctor-initiated or self-initiated visits (78.9±10.8 vs. 72.1±13.6 and 72.2±13.9 respectively, $P<0.001$). The visit resulted in emergency room referral in 19.6% of visits initiated by the caregiver (5.6% evacuated by an ambulance) compared to 11.4% when the patient initiated the visit (1.4% by ambulance), and only 6.7% when the visit was initiated by the family physician (no order of ambulance) ($P=0.01$ for referral and $P=0.03$ for evacuation by ambulance). No differences in equipment needed during the visit were noted.

The presence of chronic disease such as malignancy, congestive heart failure or pulmonary disease did not affect the nature of the visit. In the presence of dementia, the patients were older (82.1±7.1 vs. 75.9±12.6, $P=0.007$). In comparison to other patients the visit to patients with dementia was initiated by the caregiver (89 vs. 54%) or the family physician (11 vs. 21%) but not by the patient (0 vs. 25%) ($P=0.0003$). These visits resulted more often in referral to the emergency room (25 vs. 14%, not significant) and more often by an ambulance (44 vs. 19%, not significant), though the numbers were too small to reach statistical significance.

Discussion

Although a universal feature of family practice, home visits are sometimes performed only rarely. Almost half the home visits are to housebound elderly patients. This reflects the extra load that this population places on the medical services of the community. As hospital and other residential care become increasingly expensive, the pressure to provide high quality and easily accessible care at home may become progressively stronger, although the cost-effectiveness of home services is still under debate [8,9].

The focus of our study was the characteristics of homebound patients visited by family physicians. The non-random selection of the participant physicians might affect the findings, mainly at the level of different physicians' decisions as to when to visit their patients. The most common diagnostic groups — respiratory, circulatory, musculoskeletal and psychosocial — were similar to those of other studies [5,10].

The rarity of visits performed at night and over the weekend is related to the operation of separate out-of-hours services in the community. Moreover, emergency night visits may be significantly different in content from daytime visits. This may limit the interpretation of our findings in countries and regions where the family physician is on 24 hours call. The high frequency of doctor-initiated visits should be viewed in the context of the financial incentives provided in Israel for this service [11].

The range of procedures reported in our series reflects something of the nature of these visits — namely, injections in 9% and oral medication in 15.8% at the time of the visit, and referral to hospital in 15%. Equally revealing are the 19.3% of visits where no procedures at all were performed and no prescription or referral given. Rather, the whole content of the visit was the therapeutic consultation, and in this respect there was no difference whether the family physician, the patient or the caregiver initiated the visit.

Home visits are known to provide support to the caregiver as well as to the patient [12], and more than half the visits in our series were ordered by the partner or child of the patient. These purely supportive visits, so characteristic of general practice, were found in all patient subgroups.

Home visits, like any medical consultation, may redefine the problem from the patient's initial supposition to the doctor's final diagnosis. Thus, whereas 31.4% of complaints were classified as "general" at the time the visit was ordered, only 17% remained in this category after the visit. Another example of shift of diagnosis was 2.5% "psychological" before the visit to 5.5% after. The rarity of depression as a diagnosis is notable, and deserving of future study to distinguish between under-detection and low prevalence.

The physicians tended to complete treatment themselves rather than refer patients to hospital, especially when they initiated the visit themselves. When a visit was initiated by the caregiver, the patient tended to be older and with a more serious condition that frequently necessitated referral to the emergency room. This may represent a subpopulation of chronically ill elderly housebound patients who need more attention, and emphasizes the importance of caregiver-initiated house calls. The need for administrative, diagnostic and therapeutic equipment and supplies was the same irrespective of who initiated the visit, suggesting that use of equipment is partly a matter of style and does not necessarily reflect the severity of the cases. The range of equipment needs also reflects local habits; for example, Israeli doctors tend to rely on the family's report of the patient's body temperature rather than measuring it themselves. Home monitoring of peak flow rate is uncommon in Israel.

Family physicians share responsibility for the housebound patient with other community services, but in the Israeli medical system their role is dominant as the case manager and coordinator of other services. The situation is different in other countries, where a nurse may be the case coordinator or even where the whole treatment is not in the hands of the family physician but is managed by a hospital at-home team [13]. We believe that the ongoing relationship between family physicians and their patients is of the utmost importance and may contribute positively to the quality of care when the patient becomes housebound. These aspects are difficult to quantify, but are nonetheless central to the decision as to who should take care of the housebound patient.

This investigation follows our earlier study [14] that focused on the equipment the doctor needs for a home visit. Our observations were unequivocal: stethoscope, sphygmomanometer and otoscope were the only standard equipment used, together with the patient's medical chart and basic stationery. However, when specific problems are anticipated for a particular home visit, the relevant equipment should be easily accessible and portable, in addition to the basic set. A series of kits could be arranged for specific problems, such as respiratory, cardiac, resuscitation, and catheterization. Each of these kits would contain the appropriate equipment and the specific drugs that might be needed in these contexts.

In conclusion, despite the overall decline in home visiting rates, treating housebound patients is an increasing part of a family physician's workload. Recognition of the components of home visiting is important both for the comprehensive care of the patient and the caregiver, and for the appropriate organization of time and equipment.

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Appendix

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