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Characteristics and Acute Care Use Patterns of Patients in a Senior Living Community Medical Practice

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Abstract

Objectives—Primary care medical practices dedicated to the needs of older adults who dwell in independent and assisted living residences in senior living communities (SLCs) have been developed. To date, the demographic and acute medical care use patterns of patients in these practices have not been described.

Design—A descriptive study using a six-month retrospective record review of adults enrolled in a medical primary care practice that provides on-site primary medical care in SLCs.

Setting—Greater Rochester, New York.

Participants—681 patients residing in 19 SLCs.

Measurements—Demographic and clinical data were collected. Use of acute medical care by patients in the SLC program including phone consultation, provider emergent/urgent in-home visit, emergency department (ED) visit, and hospital admissions were recorded. ED visit and hospital admissions at the two primary referral hospitals for the practice were reviewed for chief complaint and discharge plan.

Results—635/681 (93%) of records were available. The median age was 85 years (interquartile range (IQR) 77, 89). Patients were predominantly female (447, 70%) and white (465, 73%). Selected chronic medical diseases included: dementia/cognitive impairment (367, 58%); cardiac disease (271, 43%); depression (246, 39%); diabetes (173, 27%); pulmonary disease (146, 23%); renal disease (118, 19%); cancer (115, 18%); stroke/TIA (93, 15%). The median MMSE score was 25 (IQR 19, 28; n=446). Patients took a median of 10 medications (IQR 7, 12). Important medication classes included: cardiovascular (512 (81%); hypoglycemics (117, 18%); benzodiazepines (71, 11%); dementia (194, 31%); and anticoagulants (51, 8%).

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Conflicts of Interest:

None.

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Patients received acute care 1,876 times (median frequency 3, IQR 2, 6) for 1,504 unique medical issues. Falls were the most common complaint (399, 20%). Of these 1,876 episodes, patients accessed acute care via telephone (1071, 57%), provider visit at the SLC (417, 22%), and ED visit (388, 21%). Of the cases conducted via telephone, 693 (67%) were resolved by phone, 253 (24%) required home visits, 15 (1%) required sub-specialist follow-up, and 81 (8%) required ED evaluation. Of the cases prompting a home visit by a medical provider, 399 (96%) were resolved during the visit, 13 (3%) required sub-specialist follow-up, and 4 (1%) required ED evaluation. Of the 389 cases conducted via ED visit, 164 (42%) were admitted to the hospital and 2 (0.5%) died.

Conclusion—SLC primary care medical practices serve population that is older, has significant medical comorbidity and frequently accesses acute medical care. While many acute care issues for this population are handled via phone, home visits and/or ED use is common. Understanding the acute care health utilization patterns of SLC dwellers is critical to designing systems to optimally address the acute care needs of aging older adults.

Keywords

senior living communities; assisted living; emergency care

BACKGROUND

In recent years, senior living communities (SLCs) have become a popular residential model for older adults. While there is heterogeneity in SLCs, services provided to residents can include room, board/meals, 24-hour supervision or protective oversight, personal care services to assist with some activities of daily living, and a system to respond to unscheduled needs for assistance.^{1,2,3,4}

The exact number of residents in SLCs, and the characteristics of those residents, is unknown. However, general epidemiological information on assisted living facilities, which comprise a large proportion of the SLCs, is available. In 2006, assisted living facilities housed approximately 1.4 million residents. It is expected that this number will increase by 40% by 2026.^{5,6,7,8} As compared to the community at large, assisted living residents are generally older, white, female, and commonly have dementia. They frequently have functional impairments, with 80% having one ADL deficiency and more than 25% having four or more deficiencies.⁹

Primary medical care is commonly provided to SLC residents through two models. Some residents retain their usual, community-based primary care providers. These residents are generally transported to and from the primary care physician's office (outside the SLC) for appointments. Alternatively, primary care medical practices have been developed to meet the special needs of older adults who dwell in SLCs. These practices have clinics housed within the SLC facility, where they offer medical care visits.¹⁰

Acute illness care can be provided to SLC residents in various ways. When patients identify a need, they can call their medical practice and obtain care via phone, arrange an emergent appointment at the physicians' office or arrange a home visit. Some patients will access the emergency department (ED) for care. Presumably this occurs because they are unable to arrange a primary care visit and decide that the ED is the best option for urgent care or they or their caregivers feel the concern warrants emergent evaluation in the ED. Studies have shown that older adults, in general, access EDs for care at a rate four times greater than younger populations.^{11,12} Specific data regarding ED use by SLC patients is limited, but studies shows that assisted living dwellers use acute care at rates greater than other older adults.^{13,14,15}

To our knowledge, no studies have described the characteristics of patients in a SLC primary care medical practice or the acute medical care use patterns of those patients. This study aims to be the first to accomplish both of those goals. As the SLC model of care expands, this information will be vital to understanding and meeting the care needs of the older adults it is designed to serve.

METHODS

Design

Strong Health Geriatrics Group, through its eleven physicians and 17 advanced practice providers, provides primary care to older adults residing in 19 SLC facilities in the Greater Rochester, New York area. At these facilities, residents receive care from either their usual community-based PCP or the Strong Health Geriatrics Group practice provider affiliated with their facility. Primary care clinics are held by a physician or advanced practice provider at each facility at regularly scheduled intervals. The frequency of clinics is determined by the size of the patient population at each facility, and usually occurs once per week per facility. Clinics are held in a dedicated patient care space or through home visits to the patient's residence depending on the individual needs of the patient. A central office for the practice exists at geographically separate location from the SLCs to provide clinical coordination and administrative support. Paper-based medical records for the practice are housed in this office.

Telephone contacts for urgent and emergent care needs are triaged by a nurse or advanced practice provider based in the central office on weekdays from 8am–4pm and by an on-call provider at all other times. Care needs can be met via telephone (e.g. medication changes) if appropriate. Other options for care include: an appointment for a regular visit with the PCP on his or her next scheduled visit to the facility; an urgent visit at their SLC with the first available provider; or referral of the patient to the ED for care. Alternatively, the patients or their caregivers can directly access 911 emergency services and request ambulance transport to the ED. This may be done with or without prior contact to the practice. Practice patients generally use one of two EDs affiliated with the University of Rochester Medical Center hospitals.

Protocol

We performed a structured, retrospective chart review of the medical records of patients who were active at any point between October 1, 2008 and March 31, 2009. Patients were considered inactive if they died, moved to a skilled nursing facility, or changed primary care physicians. Accurate dates for the onset of patient inactivity were not available.

Data forms were developed and revised in an iterative fashion to maximize usability and minimize ambiguity. Data collected included demographics (the patient's age, gender, race and facility) and medical history including chronic medical conditions and current medications regimen. When available, dependencies in activities of daily living and instrumental activities of daily living, and Mini-Mental State Exam scores were abstracted. Frequency and description of acute care uses were compiled including: mode of care provision (ED, in home or by phone), chief complaint(s), diagnosis, treatment plan, and patient disposition. The chief complaints were categorized by two physicians (MNS, DN) independently. Differences were then jointly reconciled.

In the event patients went to the ED and/or were admitted to the hospital for care, the medical records from the ED and hospital were reviewed to determine primary medical concern and final patient disposition.

Primary record review and abstraction was completed by the medical student study coordinator (RM). Two research assistants were trained by the study coordinator to assist with the data abstraction. During the training process, the abstracted charts were re-reviewed by the coordinator until the research assistants were felt to consistently and accurately abstract the records.

The University of Rochester's Research Subjects Review Board approved the study.

Data Analysis

The data were characterized using descriptive statistics including 95% confidence intervals. Data was analyzed using Stata 8.0 (Stata Corp., College Station, TX).

RESULTS

Baseline Demographic Data

A total of 681 patients were active recipients of primary medical care from the practice during the study period. Records of 635 (93%) were available for review and abstraction. As described in Table 1, patients were older and predominantly female and white. The most common medical conditions among these patients included hypertension (72%), cognitive impairment/dementia (58%), cardiac disease (43%), and depression (39%). The average patient was on 10 chronic medications (interquartile range (IQR), 7–12). The most common medication classes were cardiovascular, analgesic, dementia and hypoglycemics. Most of the patients in practice resided in an assisted living level of care residence in the SLC (85%).

Acute Medical Needs

For the 635 patients enrolled in this study, there were 1,876 documented episodes of acute medical care, a median of 3 episodes per patient (Table 2). These episodes of care referred to 1504 unique concerns/events, as some concerns and/or events resulted in multiple calls and contacts. The majority of acute care episodes (1071, 57%) were initiated by telephone. Health concerns were usually resolved over the phone, but also resulted in home visits (24%), ED visits (7.8%) or specialist appointments (1.4%).

For those concerns/events that resulted in a home visit, 96% of episodes were resolved with the home visit. For some episodes, home visits prompted a specialist evaluation (3.1%) or ED visit (1%). Among the 21% of acute care episodes that resulted in an ED visit, 53% resulted in the patient being treated in the ED and discharged home, while 42% required admission to the hospital.

DISCUSSION

The findings of this study of older adults in a SLC medical practice are consistent with previous studies of residents of assisted living facilities that describe a population that is older, has significant medical co-morbidity and functional impairment and takes a substantial number of chronic medications. Not surprisingly, this population seeks a considerable amount of acute care. In the medical practice described in this paper, older adults received care for a median of 3 acute care episodes-per-patient during the six-months reviewed. While many acute episodes can be handled by telephone, urgent home or ED visits were common.

Determining the appropriate site of care for assessment of urgent medical concerns in this population can be challenging. Given the significant comorbidity and the resultant complexity of care, urgent in-person evaluations are often warranted. Unfortunately, the

relative shortage of primary care physicians and geriatricians usually makes same-day evaluation by these types of providers unavailable.^{16, 17} When appointments with a primary care physician or geriatrician are available, transportation remains a major challenge for many older adults in SLC with off-site primary care providers, as many do not drive or have difficulties accessing public transportation. Ambulance service is not available for routine office visits.¹⁸ These factors, combined with the general perception among patients that EDs provide superior care, create considerable demand for emergency medical services.^{19, 20, 21}

The dependence on emergency medical systems to handle acute illness in elderly patients can result in sub-optimal care. ED physicians often work with incomplete patient histories potentially leading to discontinuity of care and complications that would have otherwise been preventable.^{22, 23, 24} These difficulties may include duplication of services, administration of contraindicated medications, conflicting care recommendations and distress for the patient. EDs are also crowded, noisy environments which were not usually built with the special care needs of older adults in mind. This is difficult for the older adult and may lead to development of delirium.²⁵ Even in the Strong Health Geriatrics Group, a practice which was developed to meet the special needs of the SLC population through on-site care, over one-fifth of acute care episodes included care in the ED.

The distribution of the reasons for acute care was telling. Behavioral changes, falls, skin problems, respiratory problems, and musculoskeletal issues were among the most common. Given that these few categories resulted in such a high proportion of acute care needs, programs to care for patients with these complaints may benefit this population by providing more rapid care, reducing travel, reducing cost, and improving satisfaction.

Understanding the needs of this group is vitally important because as this population of older and functionally impaired adults increases in the United States, health care delivery systems will need to identify novel ways to meet the acute care needs of this population. Telemedicine, which has been effectively used in pediatric populations, is one example of a program that may find a niche in SLCs.²⁶ Programs that enhance health care providers' understanding of and ability to honor advanced care wishes of assisted living residents, including wishes for no hospitalization, should also be considered.

Study Strengths and Limitations

This study is limited by its inclusion of one geriatric medical practice that provides care in one metropolitan community. Thus, the generalizability is limited. Although the group provides care to a large number of older adults in SLC settings, unmeasured clinical practice patterns, provider beliefs, patient beliefs, and facility characteristics may influence health care utilization and warrant additional study. Similarly, the retrospective study design provides only limited details about functional and cognitive status. Exact end dates for active patient care with the practice, for example from transfer of care or from death, were not available and limit study ability to calculate event rates according to patient months. However, this limitation means that we actually *underestimate* of the rate of acute care use by the older adults. Despite these limitations, the study provides a useful description of the medical care demands of SLC dwellers on primary and emergency care practices.

Conclusion

SLC primary care medical practices serve population that is older, has significant medical comorbidities, and frequently accesses acute medical care. While many acute care issues for this population are handled via phone, home visits and/or ED use is common. Understanding the acute care health utilization patterns of SLC dwellers is critical to designing systems to optimally address the acute care needs of aging older adults.

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Table 1

Characteristics of Practice Patients

Characteristic	Value (N=635)
	N (%)
Age, years (median, IQR)	85 (77, 89)
Gender, Female	447 (70%)
Residence Type	
Assisted Living	515 (81%)
Independent Living	115 (18%)
Unknown	5 (0.8%)
Race	
White	465 (73%)
Black	23 (3.6%)
Other	33 (5.2%)
Unknown	114 (18%)
Medical Conditions	
Hypertension	457 (72%)
Dementia/Cognitive Impairment	367 (58%)
Arthritis	305 (48%)
Cardiovascular (includes CAD, MI, CHF)	271 (43%)
Depression	246 (39%)
Diabetes	173 (27%)
Gastrointestinal diseases (non-liver diseases)	173 (27%)
Pulmonary Disease (includes asthma, COPD)	146 (23%)
Anxiety	128 (20%)
Hypothyroidism	124 (20%)
Renal Disease	118 (19%)
Cancer	115 (18%)
Stroke	93 (15%)
Seizures	27 (4%)
Liver diseases	7 (1%)
Medications Taken (median, IQR)	10 (7,13)
Major Medication Classes:	
Cardiac	512 (81%)
Analgesic	349 (55%)
Dementia	194 (31%)
Diabetes	117 (18%)
Benzodiazepine	71 (11%)
Anticoagulant	51 (8%)
Activities of Daily Living Deficiencies (N=237, 37.3%)	
0	162 (68%)
1	27 (11%)

Characteristic	Value (N=635)
	N (%)
2	19 (8%)
3	6 (3%)
4	5 (2%)
5	5 (2%)
6	6 (3%)
7	7 (3%)
Mini-Mental State Exam (N=446, 70.2%)	
Score, median (IQR)	25 (19, 28)

Table 2

Acute Care Use and Disposition

Characteristic	Value (N=1876)
	N (%)
Frequency of use per patient, median (IQR)	3 (2, 6)
Unique medical issues	1504
Chief Complaint:	
Fall	399 (20%)
Dermatological	252 (13%)
Respiratory	208 (11%)
Gastrointestinal	185 (9%)
Musculoskeletal (not fall related)	160 (8%)
Behavioral	154 (8%)
Head/Eyes/Ears/Nose/Throat	127 (6%)
Cardiovascular (includes presyncope/syncope)	117 (6%)
Genitourinary	77 (4%)
Other	77 (4%)
Behavioral-Infectious etiology	54 (3%)
Lower Extremity Swelling	45 (2%)
Neurological	21 (1%)
Telephone Contact for Care:	
Number	1071 (57%)
Resolved by phone	693 (67%)
Required home visit	253 (24%)
Required specialist visit	15 (1.4%)
Required ED evaluation	81 (7.8%)
Unknown	29 (3%)
Provider Home Visit for Care:	
Number	417 (22%)
Resolved at visit	399 (96%)
Required specialist visit	13 (3.1%)
Required ED evaluation	4 (1%)
Unknown	1 (0.2%)
Emergency Department Visit for Care:	
Number	388 (21%)
Treated and released	204 (53%)
Admitted to the hospitals	164 (42%)
Died	2 (0.5%)
Unknown	18 (4.6%)