This review of the literature describes models of physician practice in nursing homes including the barriers to increasing physician workforce in nursing homes and the impact of various physician practice models on quality of care in nursing homes. Traditional nursing home practice is first described followed by a review of the literature pertaining to nurse practitioners and physician assistants in nursing home practices, closed staffing models, managed care, and nursing home specialist models. Literature describing barriers to increasing the physician workforce in nursing homes is then presented including training, reimbursement, and malpractice insurance for physicians who work in nursing homes. Finally, the impact of physician practice models on quality of care is reviewed with a focus on frequency of visits, hospitalizations, cost-effectiveness, communication, and patient satisfaction. (J Am Med Dir Assoc 2007; 8: 558–567)

Keywords: Physician practices; practice models; nursing home; physician role

Understanding the role of physician oversight in the medical care of nursing home residents is of critical importance. Implementation of the inpatient prospective payment policy of Medicare and the growth in the assisted living industry have led to a nursing home population that is increasingly frail and medically complex. Over the past decades, an indicative trend has been the increase in functional dependence among nursing home residents. Residents requiring assistance with 4 or more ADLs increased by 9.9% between 1985 and 1995, and the mean number of ADLs per patient increased from 3.9 to 4.3 according to the National Center for Health Statistics. While the attending physician is responsible for supervising the medical care of these medically complex patients, very little is known about the practices of physicians in nursing homes.

Fewer than half of the references cited in the current review have direct relevance to physician practice patterns in nursing homes; the few studies available on physician practices in nursing homes suggest that physician presence in nursing homes is limited and that most nursing home visits are made by a small number of physicians. In a 1997 survey completed by the American Medical Association, most physicians reported spending no time in treating nursing home patients (77%), and among physicians who did practice in nursing homes, most reported spending 2 hours or less per week caring for their nursing home patients.

Against the backdrop of sicker patients needing more physician care by an already limited group of physicians, there appears to be a shrinking physician workforce with the interest, experience, and skill in nursing home care. In a survey of physicians who provide nursing home care, 50% indicated that they planned to decrease their involvement in the care of nursing home residents. Physicians planning to reduce their nursing home caseloads cited poor reimbursement, a high volume of telephone calls from the nursing homes, onerous paperwork, and a lack of physician authority in nursing homes as reasons for leaving the nursing home environment.

The purpose of this literature review is to summarize the current knowledge of physician practices in nursing homes. First, physician practice models applied in nursing homes are described and compared to several emerging practice models. Then the characteristics of physicians who practice in nursing homes are described along with the barriers to increasing interest in establishing nursing home practices. After describing the current state of nursing home practice, as found in the literature, the impact of physician practice models on selected aspects of quality in nursing home care is summarized.

METHODS

The literature review was distilled from published literature in the English language and supplemented with sources of
information from professional associations and government agencies. Topics and phrases for the literature search included the following terms in combination with the words physician, nursing home, and/or long-term care: cost, practice patterns, models of care, utilization, quality, outcomes, staffing, acute care, guidelines, visits, training, experience, and reimbursement. From the literature search, 304 articles met search criteria, and most did not contain information relevant and specific to physician practice patterns in nursing homes. Thus, only 56 articles were selected from the literature search for the purposes of this review. Other sources were scanned for relevant information such as the Robert Wood Johnson Foundation Project listings and the Web sites of the American Medical Directors Association (AMDA) and the Centers for Medicare and Medicaid Services (CMS). Pertinent citations from the selected literature were also reviewed and, finally, a list of authors who were encountered frequently in the physician practice pattern literature was compiled and a search by author name was performed, yielding an additional 21 articles. Literature with data before OBRA ‘87 was not reviewed because of the fundamental changes this act created in nursing facilities.

Three investigators completed the initial literature review. As new articles were obtained, the references were entered into a database to avoid duplication of effort. After approximately 50 articles were obtained, the investigators performed an initial overview of the available literature to develop a conceptual framework. As a mechanism for organizing the literature into the conceptual framework, subheadings were proposed with the expectation that some subheadings would be revised, deleted, or added as necessary. To ensure that the 3 investigators reviewing the selected articles were extracting similar information from the articles, each of the 3 investigators randomly selected 2 articles previously reviewed by the other 2 investigators for a second and third review. The results then were compared among reviewers. All 3 investigators were consistent in selection of material from the articles. A fourth investigator updated the literature search before publication.

Finally, the investigators developed the following themes: (1) models of physician practices in nursing homes, (2) barriers to increasing the physician workforce in nursing homes, and (3) the impact of physician practice patterns on quality of care in nursing homes.

MODELS OF PHYSICIAN PRACTICES IN NURSING HOMES

Traditional Nursing Home Practice Models

OBRA ‘87 and its amendments are the basis for federal regulations pertaining to physician care of nursing home residents. While most physician nursing home visits occur at the discretion of physicians and are determined by medical necessity, a set of minimum required visits for nursing home residents are mandated by CMS and verified by surveyors. Physicians must see each resident for routine evaluation every 30 days for the first 90 days and every 60 days thereafter. Physicians may delegate every other visit to a nurse practitioner (NP) or physician assistant (PA), as state law permits, except for services that explicitly require the services of a physician (ie, initial comprehensive visit for skilled nursing facility [SNF] patients). Physicians must be available or arrange for the provision of emergency services 24 hours a day. Federal regulations also establish minimum requirements regarding delivery of medical care. For example, laboratory and radiology services can be provided only to facility residents when ordered by a physician, and the physician is to be promptly notified of the results of such tests.

Traditionally, many physicians who care for nursing home residents are community physicians with both an office and hospital-based practice. Few studies are available regarding the numbers of physicians who provide care to nursing home patients in this model, but in one, a cross-sectional survey of 170 family physicians, 55% of the physicians followed at least 1 patient from the outpatient setting into the nursing home on a regular basis. Comparing physicians with and without active nursing home practices, the study indicated that physicians with nursing home practices were more likely to also have a hospital practice (60% versus 39.5%); see more outpatients each week (105 versus 78), and work more hours each week (57 versus 49). Physicians in rural communities also were more likely to have a nursing home practice. Another study conducted in 353 nursing homes in New York, with an average of 167 residents per facility, found that 60% of facilities had no daily physician presence; nonstaff physicians (physicians from the community who were not employed by the facility) cared for 70% of residents; there were an average of 8.6 attending physicians per facility; and on average, each physician followed 32 residents in each facility.

Utilization of Nurse Practitioners and Physician Assistants

Medicare regulations permit the use of NPs and PAs in lieu of physicians for some visits, such as visits for acute illnesses and every other required nursing home visit. Medicare will reimburse 85% of the physician fee schedule to NPs and PAs employed by physicians for services as described in the schedule of allowable substitution for physician nursing home visits. NPs and PAs may not perform the initial comprehensive visits, but they may perform other medically necessary visits. NPs traditionally work under an independent nursing license, billing their time separately from the physician. In some states, they can have an independent practice with prescribing authority. PAs customarily practice under a physician’s license, with close supervision from a physician.

Practice models augmenting the services of physicians in nursing homes with NPs and PAs are increasingly prevalent. The employment of NPs and PAs to aid physicians in nursing home care is in part driven by market forces. In one study, facilities in states with the highest quartile of Medicaid reimbursement were 10% more likely to employ NPs or PAs. These providers were more frequently employed in nursing homes located in markets with more physicians and higher per capita income. Employing an NP or PA requires a large volume of nursing home visits to be cost effective. It is estimated that to support an NP’s salary entirely through Medicare reimbursable services, an NP would need to perform
an average of 16 visits per day.\(^\text{11}\) The reviewed literature indicates that advanced practice nurses who aid physicians in nursing homes are primarily NPs or geriatric NPs (GNPs) and that NPs enhance the overall quality of care in nursing homes.\(^\text{10,13–18}\)

Limited numbers of PAs and NPs with adequate experience and training in geriatrics may limit the ability to implement models using their services. For example, the Evercare demonstration project, an innovative nursing home practice model, was unable to find enough GNPs and instead employed general NPs.\(^\text{14}\) A New York State demonstration project that required nursing homes to hire NPs found that the increased demand for NPs and PAs drove salaries of nonphysician providers to nearly double the national average in some areas of the state.\(^\text{19}\)

**Demonstration Project Combining Physicians With NPs: Evercare**

The Evercare project, employing community physicians and NPs in a demonstration program, is an innovative practice model providing for the health care needs of elderly nursing home residents. Evercare is a variant of the Medicare+Choice health maintenance organization (HMO),\(^\text{15,20}\) providing benefits under both Medicare Parts A and B.\(^\text{14}\) Under their Incentive Service Day (ISD) program, Evercare provides increased reimbursement to nursing homes for days when acutely ill Evercare residents are cared for in the nursing home rather than being hospitalized. A study comparing Evercare enrollees with 2 control groups on hospitalization and use of medical services showed that the use of active primary care provided by Evercare NPs may prevent events that lead to hospitalization. For instance, hospital or ISD admission for conditions treatable in the nursing home, defined as pneumonia, dehydration, hypertension, and urinary tract infection, was lower among Evercare residents (0.7 per month per 100) compared to one control group (0.9; \(P < .001\)) but not the other (0.8). However, its major effect appears to be in cost avoidance.\(^\text{20}\) Avoiding hospitalizations using the Evercare program was estimated to save $88,000 annually for each NP hired.

Nursing homes operating an Evercare program receive a fixed capitated payment for each long-stay nursing home resident. NPs are employed by Evercare and work with the residents’ primary care physicians. Evercare contracts with physicians to accept Evercare patients and to be paid by Evercare instead of by Medicare with fee-for-service (FFS) rates at least equivalent to Medicare Part B rates. The payment model also includes payment to physicians for emergency visits to the nursing home and for the time spent in care-planning conferences and family consultations.\(^\text{14}\)

Evercare NPs distribute their time between direct patient care and coordination activities, allowing for regular resident and family contact. In a study of Evercare primary care services, NPs spent more time in nursing homes, making 121.3 visits per month per 100 Evercare enrollees, compared with physicians who made 86.1.\(^\text{20}\) Smaller case loads and frequent visits also give NPs a presence in nursing facilities and allows the opportunity for in-service staff training.\(^\text{13}\)

**Closed Staffing**

Closed staffing models refer to the use of a limited number of physicians salaried by or employed by the nursing facility as opposed to open staffing models where multiple community physicians, who are not employed by the nursing facility, care for residents in the facility.

The current number of nursing homes in the United States with closed physician staffs is not known; however, a study conducted in 1994 found closed staffing models were used by 43% of the 636 facilities in New York State.\(^\text{19}\) In addition to employing physicians, these facilities typically employed more NPs and PAs and tended to have more beds than facilities with open staffing models. This study found that closed staff physicians were more likely than community physicians to be on site daily; to provide cross-coverage for acute and emergency cases; to provide emergency responses; to build greater accountability, responsibility, and allegiance; and to promote more efficient communication and supervision than community physicians not in a closed model.

Several British studies describe the effects of limiting the number of physicians practicing in a nursing home. In a retrospective cohort study done in Mansfield, Nottinghamshire, it was found that nursing home patients received twice as many physician contacts when 1 physician was caring for all of the nursing home patients as compared to a model where multiple physicians provided care to patients in a given facility.\(^\text{21}\) A prospective study of nursing home physician workload in Glasgow concluded that closed staff models could lead to delivery of more preventive medicine in the nursing home and increased efficiency for physicians.\(^\text{22}\)

Importantly, a quantitative analysis completed in Darlington, County Durham, found that large proportions of nursing home patients served by only a few general practitioners caused an increased workload, presenting problems in the organization of care. It was estimated that the workload associated with 1 nursing home patient was equivalent to 3 office-based practice patients younger than 65 years. The authors suggested that physicians involved in predominantly nursing home–based practices may need to maintain reduced patient loads because of the complexity of this patient population.\(^\text{23}\)

**Managed Care and Health Maintenance Organizations**

HMOs deliver physician care to nursing home residents through many organizational approaches. As an example, Kaiser Permanente employs physicians who devote 100% of their primary care practice to nursing home residents. In a study that reviewed the records for 24% of Medicare HMO enrollees in 21 HMOs with a primary care nursing home program, all but one program used a common model of physicians and NPs or PAs.\(^\text{17}\) Most physicians had dedicated nursing home practices with no competing clinical duties; only 3 of 21 programs reported that the physicians followed their residents into the hospital when they needed acute care. HMOs that had not developed a primary care nursing home program explained that there were too few enrollees in nurs-
ing homes to justify the cost.\textsuperscript{17} HMOs with primary care nursing home programs tended to have more enrollees than HMOs without primary care nursing home programs, and the primary care nursing programs averaged 71 residents per NP and 270 residents per physician.

Another study that looked at panel size found that a typical panel for an office-based HMO physician consisted of 1000 to 1250 older patients, while a panel of nursing home residents for a nursing home-based physician was as low as 300 to 400 residents.\textsuperscript{24}

**Nursing Home Specialists**

One article in the British literature suggested that a practice model with 1 doctor in sole charge of the nursing home may create better relationships with nursing home staff and facilitate policies that provide more consistent care compared with multiple physicians who manage nursing home residents only infrequently.\textsuperscript{23} In recent years, hospitalists have emerged specializing in the delivery of care in the hospital environment.\textsuperscript{25} In a similar manner, some physicians in nursing home care also are beginning to specialize. While physicians who followed just a few residents in a nursing home usually made visits only when asked to by nursing home staff, physicians who cared for all residents in a nursing home were more likely to provide routine visits.\textsuperscript{26}

The Netherlands currently has a unique specialization for nursing home physicians. At present, it is the only country in the world where nursing home patients receive care from physicians who have undergone dedicated residency training in nursing home medicine.\textsuperscript{27} This model of care originated in 1972 with the creation of the Dutch College of Nursing Home Physicians (NVVA). It was recognized that family physicians and other consulting physicians did not have enough time or experience to treat nursing home patients with the quality of care desired. The NVVA’s goals were to conduct research for evidence-based nursing home medicine and care, create a residency training program in nursing home medicine, initiate academic teaching of medical students in nursing home medicine, and construct continuing medical education in nursing home medicine. Fewer decubitus ulcers, fewer hospitalizations, and maintained satisfaction among Dutch nursing home residents have been reported as promising quality-of-care benchmarks over the past decade.\textsuperscript{27} Unfortunately the quality of care has not been definitively associated with Dutch physician specialization because rigorous research investigating the outcomes of this model have not been published.

**BARRIERS TO INCREASING THE PHYSICIAN WORKFORCE IN NURSING HOMES**

In 1970, the US Senate Subcommittee on Long-Term Care published findings on reasons physicians avoid nursing homes. In 1998, a study by a Los Angeles, California, physician interested in the reasons why physicians hesitate to see nursing home patients found reimbursement, nursing facility traits, patients’ family involvement, location of facility, practice model, and reputation of nursing home care as the top 6 barriers to providing nursing home care.\textsuperscript{28} The barriers identified were almost identical to those found by the 1970 Senate Subcommittee. Additional literature is available to describe the following barriers to establishing a nursing home practice: minimal exposure to nursing home care during medical training, low Medicare reimbursement, high volume of nonreimbursable activities, logistic burdens of maintaining a nursing home practice, and perceived risk of malpractice litigation.

**Training in Nursing Home Settings and Geriatrics**

In a study conducted in 1994, researchers estimated that in order to develop the capacity to train academic geriatric leaders, the number of geriatric fellowship graduates would need to increase from 100 per year to 250 per year to meet the goal of 2100 academic geriatricians by the year 2000.\textsuperscript{29} This goal still had not been met in 2005.\textsuperscript{30}

Training and preparedness influence the willingness of a physician to participate in nursing home care. Most of the physicians who provide nursing home care as part of their practices are family physicians or internists with no specialized training either in nursing home care or in the care of older patients (R. Stone, unpublished data, 2000). In 1992, while 86% of family practice residency programs required geriatric medicine training, only 25% of internal medicine residency programs required formal training in geriatric medicine and fewer still in nursing home care.\textsuperscript{31} Training specific to the medical care of nursing home residents is still largely confined to a few hours during geriatric rotations.

Family practice residents with nursing home experience during training tend to continue providing nursing home care after graduation, and internal medicine residents who provide primary care to nursing home residents have improved attitudes toward seniors and improved skills in the assessment of geriatric syndromes.\textsuperscript{15} Similarly, graduates of family practice residencies who rate their training in geriatrics favorably are significantly more likely to make nursing home visits after graduation. In a survey of recent medical residents, 42% of family practice and 62% of internal medicine graduates reported spending too little training time in nursing homes. Only 1% in each of these 2 specialties reported spending too much time in nursing homes.\textsuperscript{32}

In recent years, the Residency Review Committees of Family Practice and Internal Medicine have acknowledged the importance of specific training in the care older adults and recommended nursing home rotations during residency training.\textsuperscript{33,34} In addition, the Institute of Medicine recently recommended 9 months of geriatric experience for family practice and internal medicine residents undergoing geriatric fellowships\textsuperscript{29} while the American Geriatrics Society recommends 12 or 24.\textsuperscript{35}

The concept of physician specialization in nursing home care is not as clearly defined as specialization in geriatric care. Physicians who pass an examination in geriatric care given by the American Board of Medical Examiners are designated as specialists in geriatric medicine, and from 1988 through 2002, the number of Certificates of Added Qualifications (CAQ) in geriatrics awarded was 10,207.\textsuperscript{36} The American Board of Family Medicine recognizes geriatricians with a CAQ while the American Board of Internal Medicine, as of July 2006,
recognizes geriatrics as a Subspecialty of Internal Medicine. Several concepts potentially could be used to define specialization in nursing home care such as advanced training, board certification, serving as medical director, or caring predominantly for nursing home patients. However, the number of physicians that would meet these criteria is limited. The American Medical Directors Certification Program recognizes physicians with clinical and management education and experience in nursing home medical direction and has awarded nearly 2100 Certified Medical Director (CMD) certificates since the program began in 1991. Key competencies for physicians providing nursing home care are described well in two textbooks, but to date, there is not a specific examination recognized by the American Board of Medical Examiners to certify that physicians have mastered competencies in providing nursing home care.

While nursing home medical directors who also serve as attending physicians seem to play important roles in the nursing home physician workforce, qualifications of medical directors as specialists in the care of nursing home residents has not been explored beyond several surveys. One study indicates that approximately two thirds of medical directors serve as attending physician for some residents and, on average, care for 43% of patients in their facilities. In a more recent investigation involving a survey of medical directors, nearly 80% of medical directors served as attending physicians and, on average, were the attending physician to 44% of the patients in their facilities. In an Office of Inspector General report on medical directors, all medical directors reported having professional medical training, primarily in family practice (44%) or in internal medicine (47%). Twenty-two percent sought training in geriatrics during their medical training, 4% completed geriatric fellowships, and 30% possessed a certificate of added qualifications in geriatrics.

In another investigation, medical directors reported spending 29% of their time on average as medical directors on resident care activities (not related to their attending physician responsibilities), including emergency care, comprehensive care plan development, and communication with attending physicians on individual resident problems. The medical directors, directors of nursing, and nursing home administrators indicated in surveys that ideally, more time should be spent by the medical director on resident care activities. In this study, 49% of medical directors were geriatric specialists.

Reimbursement

Payment incentives in nursing homes affect physician practice choices. Nursing home residents with Medicare Part B coverage (approximately 95% of those enrolled in Part A coverage) will have physician visits paid by Medicare, regardless of the payer that covers the cost of the nursing home stay. Medicare determines physician payments through the Medicare Physician Fee Schedule, which designates 8 Current Procedural Terminology (CPT) codes to nursing home care. The codes apply to increasingly complex evaluation and assessment visits.

The relative payments for nursing home, office, and hospital visits for the same type of service may influence physicians to focus on office and hospital care rather than nursing home care. According to the 2004 Medicare payment schedule, the CPT code for a 30-minute new nursing home assessment would pay $64.76 in Philadelphia. In comparison, the same physician in Philadelphia would receive $70.38 for a new 30-minute hospital visit and $102.49 for a 30-minute new office visit with a Medicare patient. Physicians are reimbursed less per hour for nursing home care than care in other settings and, thus, may have no financial incentives to see patients in nursing homes.

Medicare Part B payments change each year in response to alterations in relative value units (RVUs), the Geographic Practice Cost Index, and the conversion factor. For example, the work component for nursing home visits was very low when the system was first implemented, but it was upgraded significantly between 1992 and 1996 to reduce the gap between nursing home visits and hospital visits. The nursing home component still is lower, however, and the 2004 RVU for the work component of a 30-minute service is 1.20, 1.28, and 1.34, for nursing home, hospital, and office, respectively. The proposed 2004 fee schedule contained significant cuts in the practice expense RVUs for nursing home care that would have dropped payment rates between 15% and 22%. The final fee schedule did not adopt these cuts in response to protests from organizations involved in long-term care, but the threat of future cuts may deter physicians from starting nursing home practices.

Some investigators argue that the current payment structure for physician services in nursing homes does not support the nursing home workforce and is insufficient to maintain numbers, skills, and stability of staff caring for an increasingly frail older population. Anecdotal evidence indicates that some physicians have eliminated nursing home visits from their practices because of low reimbursement.

Nonreimbursable Activities

Another barrier to establishing a nursing home practice is the time spent on nonreimbursable activities. A time and motion demonstration project in New York State determined that 64% of a physician’s time practicing in a nursing home was spent on nonreimbursable activities compared to 30% in an office setting.

While all physician specialties face a range of nonreimbursable activities, nursing home care requires more of these activities than other types of practice, according to physicians responding to a survey issued by the AMDA. More than half of all physicians reported spending time in the following largely nonreimbursable tasks for each billed nursing home visit: scheduling, reviewing, and obtaining clinical reports; coordinating home/outpatient care; coordinating therapy; making phone calls; coordinating ancillary services; responding to or monitoring change in condition; and responding to pharmacist or nutritionist questions.
Logistic Burdens of Maintaining a Nursing Home Practice

Many barriers discussed in the literature related to establishing and maintaining a nursing home practice focus on the logistical inconveniences inherent in nursing home practice. The inconvenience of seeing residents outside of the office is speculated to influence physician decisions to decline treating nursing home residents. Travel time to the nursing home may be cumbersome and is nonreimbursable; thus, it may only be cost effective for physicians to follow nursing home residents in nursing home facilities where the physicians already have patients. Further, when a physician is called concerning an individual resident who is experiencing acute decline, a single visit in the facility may not be cost effective and creates incentives for physicians to request that the resident be sent to the hospital or emergency room.

Nursing homes are required to immediately report any change in a resident’s physical, mental, or psychosocial status condition to the resident’s attending physician. Physicians are required to monitor changes in the medical status of their residents and to provide consultation or treatment when called by the facility. While such calls are designed to be in the best interest of the resident, this requirement frequently results in many unnecessary calls, and one activity that is likely to deter physicians from seeing nursing home residents is the expectation of a large number of phone calls from the nursing home. To manage the high volume of telephone calls, some physicians have set up automatic, even electronic, reporting systems dedicated specifically to nursing home-related calls while others have established customized guidelines and protocols for nursing home staff to handle nonurgent matters without telephoning the physician.

Because of the burden of high levels of unnecessary phone calls in nursing home practices, physician organizations, including the AMDA, have suggested the need for refinement of the federal definition of a significant change in condition. In November 2000, the Minnesota Department of Health issued a formal statement regarding unnecessary phone calls and urged facilities to develop notification policies that ensure adequate care of their residents while avoiding unnecessary contacts. The AMDA also published guidelines in response to the complaint from physicians that too many calls from nursing homes were unnecessary. Protocols for Physician Notification was created to guide nurses in avoiding unnecessary phone calls regarding nursing facility patients.

Malpractice

The fear of being sued and being included in lawsuits against nursing homes and the fear of being unable to obtain liability coverage for nursing home care deter physicians from providing care to nursing home residents. If a nursing home resident dies at the nursing home, the physician may fear being sued for failure to respond to a change in condition or not hospitalizing the patient. In 2005, Simonson reported the results of surveys of 245 medical directors on long-term care issues. Sixty-five percent indicated that poor management and quality of care in the nursing facility increased the risk of being named in a lawsuit. Further, in lawsuits directed against a nursing home for poor care, the physician is named directly in approximately 10% of cases.

Increasingly, both nursing homes and physicians who practice in nursing homes are finding it difficult to obtain insurance coverage or, at minimum, affordable insurance coverage. As nursing homes face increasing liability insurance premiums, many, where licensure laws permit, are choosing to go “bare,” or without coverage, making the physician’s personal malpractice insurance a more attractive target for litigation. In 2005 survey results, 2% of medical directors had discontinued malpractice insurance coverage in efforts to reduce liability. Among respondents in 3 AMDA surveys of physician and medical director members from 2002 to 2005, 31% had been refused medical liability coverage because they worked in nursing homes.

In another study, more than 20% of respondents who worked in nursing homes reported in 2002 that while they were able to ultimately obtain malpractice insurance, they had problems doing so because carriers stopped providing malpractice insurance in nursing home markets in their region or premium costs were too high. Physicians noted malpractice insurance policy renewal premium increases of up to 300 times previous premiums. Some experienced average premium increases of 154% in 1 year. In some markets, a surcharge may be added to malpractice premiums for all physicians who see nursing home residents, similar to the add-on for physicians who assist in surgeries. In Simonson’s survey results, high insurance premiums had reduced the financial viability of 58% of respondents’ practices, and 18% had been asked by insurance carriers to reduce or discontinue their services as medical director.

Physicians who feel they are accepting legal responsibility for the care delivered by the nursing home staff may be reluctant to see nursing home residents or may be more selective in accepting or declining residents from specific nursing homes. In 2002, 1 in 20 medical director respondents indicated they had stopped working in nursing homes because of lack of liability coverage. The AMDA surveys found that 39% of nursing home medical directors had reduced patient care hours, no longer provided certain services, or referred complex cases to other physicians as a result of malpractice concerns.

THE IMPACT OF PHYSICIAN PRACTICE PATTERNS ON QUALITY OF CARE IN NURSING HOMES

Although many factors such as director of nursing tenure, facility size, and management practices are believed to influence nursing home quality, there has been little investigation of the effect of physicians’ practice patterns on the overall quality of care provided. A need exists for better understanding of the consequences of physician practice models on nursing homes. The quality of care delivered by physicians in nursing homes has not been measured rigorously, but activities that are associated with medical care services in nursing homes may be observed in the literature such as frequency of physician and other medical care services,
hospitalization rates, effective communication, and patient satisfaction.

**Frequency of Visits by Physicians and NPs or PAs**

Various physician practice models have been compared for the rate of visits made by physician and NPs or PAs to nursing home residents. For example, the combined number of physician and NP visits in the Evercare model were more frequent for Evercare enrollees (207 visits per month per 100 enrollees) as compared to non-Evercare residents either living in the same facilities as Evercare enrollees (78 visits; $P < .001$) or facilities without Evercare enrollees (73 visits; $P < .001$).

Another study compared HMO to FFS plans and found that HMO patients in nursing homes received more combined visits (physician and NP) than FFS patients. In this investigation, there were no NP visits in FFS plans. The average number of combined visits per month was 1.63 in the HMOs versus 0.83 in FFS.

In a study of HMO nursing home care, the approaches of 3 HMOs were compared against each other and against non-HMO plans. Overall, the response to acute problems, such as falls and fever, was better documented and more prompt among HMO residents compared with residents not enrolled in an HMO. The most successful HMO provided the same number of physician visits as non-HMO but supplemented with NP or PA visits. One of the plans that partnered NPs and physicians had fewer emergency room visits (6% of HMO residents versus 16% non-HMO; $P < .05$) and lower hospitalization rates (5% HMO versus 18% non-HMO; $P < .05$), and satisfaction did not differ between HMO and non-HMO.

**Hospitalization and Cost-Effectiveness**

Beyond the disruption and discomfort of hospitalization, there is significant risk in hospitalization of older patients, including a greater risk of complications unrelated to the reason of hospitalization and other hazards such as functional deterioration from immobilization while hospitalized. In one pilot study, up to 76% of residents treated in a nursing home for acute problems may have been spared hospitalization under a program that gave nursing homes and physicians incentives for providing acute care. While specific aspects of physician practice patterns have not been associated with hospitalization rates, efforts to decrease hospitalization have been undertaken by implementing various organizational models.

Some practice models and demonstration projects have redesigned the payment structure to provide incentives for fewer hospitalizations. These structures tend to increase the payment for providing physician and medical services in the nursing home, sometimes resulting in a reduction in overall costs by avoiding expensive hospital days. For example, the Evercare Demonstration project involved issuing Medicare and Medicaid waivers to provide additional payments to providers who chose to diagnose and treat an acute illness in the nursing home rather than hospitalize the resident. The cost for the patients with acute episodes treated under the program was $83 per patient day. Treating the acute episodes in the nursing home resulted in an estimated Medicare cost savings of $3,000 per episode of illness, not including the savings to Medicaid of holding the beds open while patients would have been in the hospital.

The Evercare sample population had fewer hospitalizations (2.4 admissions per months per 100 enrollees) than 2 control groups (4.5 and 4.7, both $P < .001$).

Treating acute illnesses in the nursing home may be more time intensive for medical providers; however, research studies consistently demonstrate that the integration of NPs and PAs can reduce hospitalizations and overall costs. For example, in a 92-bed, private, for-profit teaching nursing home facility in central Georgia, a PA practice model was introduced. The PA made 3 to 4 weekly visits to the nursing home to complete the initial assessments, provided nearly all acute care visits, received calls during business hours, and consulted daily with attending physicians and residents. In the facility studied, the number of hospital days used per year declined by 68.6% after implementation of the model. In another study, pairing NPs and PAs with physicians reduced emergency room visits, and a smaller number of patients were hospitalized compared with enrollees in a model that used only physicians.

While some research has reported an overall decrease in Medicare’s aggregate costs as a result of using NPs and PAs, the use of and payment to NPs and PAs does increase the cost of providing medical visits to the nursing home. The Georgia study mentioned previously found the payments for combined physician and PA services to increase by $22,304 per patient each year in the nursing home. In the same study, however, the associated savings from the decline in hospital costs was more than quadruple the cost for additional combined provider visits.

The literature suggests that geriatricians are more efficient than practitioners without training in geriatrics at treating older patients. Specialized training in geriatrics may lower the number of medications prescribed in nursing homes and lower hospitalizations of nursing home patients. In a comparison of long-term care facilities, a facility served primarily by geriatricians had a nonsignificant trend toward lower hospitalization rates of nursing home patients during the period of study (5.2%) than a facility served primarily by general primary care physicians (9.2%; $P < .056$). Overall, monthly costs (including reimbursement for physician and therapy services; diagnostic tests; and hospitalizations) also were, on average, $162 per resident lower in the facility served primarily by geriatricians; however, no adjustment for case-mix was made. Studies at 3 geriatric teaching centers indicate that geriatrician faculty and GNPs with daily presence in the nursing home can focus on avoiding unnecessary hospitalizations by timely management of acute clinical decline. During the period of study at one site, the rate of hospitalizations decreased in the teaching nursing home ($-7\%$) while community nursing home hospitalization rates increased ($+5\%$; $P < .01$). The rate of urinary catheterization was lower in the teaching nursing home (8% versus 17%; $P < .01$) as was inappropriate prescribing of benzodiazepines (20% versus 30%; $P < .01$). In a German study of prescription patterns, yearly costs for medications among nursing home resi-
dents treated by nursing home–based physicians were significantly lower compared with those treated by physicians who treated nursing home patients as part of their office-based practice; however, the quality of proper or improper prescribing was not studied.

The impact of physician practice models may be enhanced by accessibility of radiologic, laboratory, and other ancillary test results. In a 6-year case study series (1992–1997) with pre- and post–experimental design, the availability of prompt laboratory, radiologic, and electrocardiographic services and the ability to administer intravenous medications allowed serious diseases to be evaluated and treated in study nursing homes in lieu of hospitalization to perform these functions. This study found that 78% of nursing home residents with pneumonia could be managed in the nursing home if the nursing home had daily physician presence, availability of mobile radiographic services, and the ability to administer intravenous antibiotics.

**Effective Communication**

Effective communication among nursing home physicians, other providers, and patients may be influenced by the structure of physician nursing home practices. For instance, the significant burden of nonurgent phone calls to physicians for nursing home matters may compete with other practice priorities. Office-based physicians with systems in place to receive and respond to such calls, such as fax machines or voicemail, have reported decreased burden of their nursing home practice. Models with NPs and PAs have found that communication between patients and their providers is more standardized and efficient.

Coordination of care between hospitals and nursing homes has not received the attention that coordination of care initiatives for patients transferring between hospitals and home has received. Physicians are not required to follow their office or hospital patients after transfer to a nursing home. Processes and mechanisms to exchange health information between nursing homes and other settings of care (eg, physician offices, emergency rooms, and hospitals) are often not available in long-term care environments. Fear of malpractice has led many physicians to pay meticulous attention to documentation of patient care, but communication may be compromised by physicians' unfamiliarity with processes of care in nursing homes and the unique needs of nursing home residents. In the Netherlands, specialization of nursing home physicians has resulted in more frequent contact and increased quality of communication between Dutch nursing home and community physicians, particularly in urban areas.

**Patient Satisfaction**

Patient satisfaction is affected by physician presence in the nursing home. Closed staffing may be associated with higher patient satisfaction than office-based physician practice models. Three experimental models of care in New York with closed staffing were compared to the traditional FFS model. In this investigation, resident satisfaction was significantly better in the closed models. Residents reported improved access to providers, more comprehensive examinations, and more compassionate care.

Other studies find no differences in patient satisfaction between practice models. The Evaluation of the Evercare Demonstration Program Final Report indicated that quality of care and patient satisfaction of Evercare enrollees were equivalent to the care received by control patients in nursing homes participating in the Evercare program and nonparticipating Evercare nursing homes. However, both Evercare residents and their families reported an appreciation for the close attention and care coordination from primary caregivers, and they were more confident that the hospitalization would occur when indicated.

In a study of HMO nursing home care, the approaches of 3 HMOs were compared to a traditional model of care. Satisfaction did not differ between HMO and non-HMO plans. No differences were found between HMO and FFS residents in another study that asked, “Does your doctor see you often enough?” and “Were you treated for sickness as well as you could have been?” The majority of residents and their families responded “yes” to the latter question under both types of plans.

A qualitative study by Shield et al explored perceptions of care in nursing homes at the end of life by interviewing people close to the decedents. Continuity (community physician following the patient in the nursing home) and effective communication were associated with the perception of good care. Some reservations about the use of NPs and PAs were expressed by one study subject who was concerned that urgent medical issues would take longer to address by NPs and PAs. Although the study involved a nonrandom sample of only 54 informants, the qualitative nature of the study highlights patient expectations and family perceptions of good care. In separate study of end-of-life care, better availability of physicians and timely information exchange were also associated with higher satisfaction rates. Greater overall satisfaction was measured among family members of persons residing in residential care or assisted living compared with those in nursing homes. Both of these studies suggested that patient and family expectations exceed actual care currently provided by nursing home physicians.

**UNANSWERED QUESTIONS**

The published literature on physician practice patterns in nursing homes is limited, and questions in several areas remain unanswered or only partially answered, including the following:

1. Current and optimal qualifications and responsibilities of physicians in nursing homes;
2. Amount, duration, and scope of physician (and nonphysician provider) visits to nursing homes;
3. Methods of maximizing the nursing home physician workforce;
4. Organization, financing methods, coverage requirements, and rates for medical services in nursing homes;
5. Policy and legal issues that arise from the physician practice models and financing arrangements; and
6. How physician presence in nursing homes affects the perceptions and outcomes of medical care in the nursing home population.

CONCLUSION

This literature review describes 3 areas regarding physician practice patterns in nursing homes: models of physician practices in nursing homes, barriers to increasing the physician workforce in nursing homes, and the impact of physician practice patterns on quality of care in nursing homes. Overall, practice patterns in which physicians provide medical oversight in the homes of the frailest and most medically complex patients are not described well in the literature. Recruiting and retaining physicians in nursing homes is difficult. Logistic and financial barriers discourage physicians from establishing nursing home practices or adding nursing home care to their practices. Similar obstacles are causing physicians who already practice in nursing homes to consider scaling back or dropping their nursing home practices altogether. The impact of physician practices on nursing homes has been seen in certain activities related to nursing home medical services such as physician visits, hospitalization, communication, and patient satisfaction. Robust investigations are still lacking in describing physician practice patterns in nursing homes and their association with outcomes. This literature review is intended to provide a framework for outlining the currently available literature as researchers begin to advance a research agenda related to improving the physician workforce and care provided in nursing homes.

REFERENCES


... (Continued with a list of references, which are not fully transcribed here, but include topics on residency education, medical care in nursing facilities, and the impact of physician presence.)


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