Increasing attention has been focused on the role of nurse practitioners (NPs) and physician assistants (PAs) to enhance the medical care provided to nursing home residents. This collaboration is a relevant and evolving influence on physician practice in the nursing home. The historical perspective, current research, and outcomes of NP and PA nursing home practice are discussed in this article in the context of physician partnership and in the establishment of future research initiatives. (Annals of Long-Term Care: Clinical Care and Aging 2006;14(3):17-24)

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**INTRODUCTION**

Nursing homes have a variety of organized medical services ranging from exclusive on-site physician groups to open models of community-based attending physicians. There also appears to be a small physician workforce engaged in the care of nursing home residents, and some have suggested that physician staffing patterns can be important influences on the quality of care delivered in nursing homes.¹ Concerns have also been raised regarding a lack of physician involvement in nursing home medical practice, especially in a pressured health care environment that places emphasis on time and performance. The Institute of Medicine highlighted similar concerns in 1986 with a critical report on the quality of care in nursing homes that also raised questions regarding the supervision of medical services.² This has resulted in an increasingly regulated environment for nursing homes. Along with the growing medical complexity and increasing numbers of older adults potentially requiring long-term care, there will likely be a further strain on the physician workforce available for nursing homes.

To meet some of the workforce needs, attention has focused on the increasing role of nurse practitioners (NPs) and physician assistants (PAs) to enhance the medical care in nursing homes. Historically, the physician medical community has attributed the term *physician extenders* to NPs and PAs. However, this term has not been fully embraced by the practitioners themselves, and it does not provide an adequate description of the NP or PA role in the health care system. Other terms such as *mid-level providers* or *mid-level practitioners* are also used, and have an implication of both a medical hierarchy and differences in licensing or certification requirements for the professions, as compared to physicians. A more widely accepted term for nurse practitioners is *advanced practice nurses*, which provides a more accurate acknowledgment of the additional training and certification requirements within an expanded scope of nursing practice. Advanced practice nurses (APNs) encompass a broad range of individuals including nurse prac-
titioners, clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists.  

A comprehensive review of physician extenders in the nursing home by Aaronson in 1991 has carefully documented the evolution of NPs and PAs in the context of nursing home medical organization. Since that time, there has been continued growth in the workforce of nurse practitioners and physician assistants, with increasing representation in nursing home medical practice. The American Academy of Nurse Practitioners survey in 2004 estimates there are over 100,000 NPs in the U.S., with 13% having privileges in long-term care; in practice, as little as 2% may actually be in nursing home settings.5,6 Findings from the U.S. Department of Health and Human Services National Sample Survey of Registered Nurses places the estimate at about 68,000 NPs in all practice settings.6 The American Academy of Physician Assistants census of 2005 reports more than 66,000 PAs eligible to practice in the U.S., with less than 10% working in nursing homes or other long-term care settings.7

A nursing home may employ a variety of other APNs, in addition to primary care NPs. The use of clinical nurse specialists (CNSs) with expertise in geropsychiatry or wound care has been an important and growing presence in geriatric care settings. (This group of practitioners will not be discussed here in an effort to focus specifically on primary medical care providers.) The physician staffing relative to the NP or PA workforce has not been adequately described, but it is clear that the collaboration with these providers is a relevant and an evolving influence on physician practice in the nursing home. The goal in utilizing these non-physician providers is ultimately to improve the quality of medical services available to nursing home residents. This may be manifested as increased access to medical care, improvement in clinical outcomes, or cost savings. However, only limited data on these outcomes are available. The current research and outcomes of NP and PA nursing home practice will be discussed in this article in the context of physician collaboration and establishing the direction for future research.

**HISTORICAL PERSPECTIVE**

The first NP program began at the University of Colorado in 1965 under the leadership of Drs. Loretta Ford and Henry Silver. It developed in the context of improving primary care pediatric practice and was viewed largely as a holistic expansion (or extension) of nursing practice. In 1976, the American Nurses Association was the first to define training requirements for gerontological nurse practitioners (GNPs), but it was not until the early 1980s that GNPs gained wide recognition as a distinctly trained workforce in geriatric practice that could be beneficial to nursing homes. There is currently a small proportion of NPs that are identified as being employed in geriatric settings, with estimates ranging from 4-8% of all trained practitioners.5,6 However, for those nurse practitioners with GNP certification, surveys suggest that at least 50% of these individuals will spend their time in long-term care facilities.8 This suggests that the gerontological training is an important determinant for NP practice in the nursing home setting.

The physician assistant training movement began at Duke University in 1966 under Dr. Eugene Stead and followed a parallel course of development to the NPs, although entirely separate in its evolution.4 The PA profession is historically rooted in the medical profession and is intimately linked within an organizational hierarchy involving a supervising physician. Training programs for PAs exist in both primary care and specialty training programs, and PA practice often follows a model of physician “substitution” or physician “extension” in different health care environments. While the PA training programs have included enhanced geriatric training over time, a formalized gerontological track has not emerged as with the programs for gerontological NPs. Much less research literature is available on PA practice in geriatric medicine; however, their utilization in geriatric medical practice appears to have grown, and surveys report that PAs are caring for a patient population predominantly age 65 or older.7,9 These historical roots largely describe the difference between NPs and PAs in practice environments, scope of independent practice, and state licens-
ing requirements. Some have suggested that PA services are more focused on acute services and NPs on chronic care.\textsuperscript{10} From the historical context, this may be true as a reflection of the substitutability of PAs for physicians versus the evolution of NPs from a primary nursing practice. Today, these practice distinctions are much less likely to be true. It would seem from national surveys that the current practice options available for NPs and PAs are as diverse as the number of practice venues available to physicians.\textsuperscript{5,7}

\textbf{ROLE DEFINITION AND MODELS OF CARE}

Two distinct models of practice for NPs and PAs have been described by the Foundation of the American College of Health Care Administrators in its report of 1989: the role as a “physician extender” versus the role as a “physician expander.”\textsuperscript{11,12} If one asserts that PAs and NPs are physician extenders, then this implies they are substitutive in the nursing home setting when there is insufficient physician workforce, time commitment, productivity, or quality. The physician expander may be an employee or independent consultant who will “expand medical services through more effective integration of medical, nursing, and rehabilitation professionals.”\textsuperscript{11} This “expander” role implies an integrated or collaborative relationship with a physician provider. If there are complementary skills between physicians and PAs or NPs, one could argue that the relationship has the potential to be synergistic and result in improved clinical outcomes.

This potential value-added feature to nursing home medical practice may be derived from the facts that physician expanders cross the traditional boundaries of professional disciplines and provide a unique perspective on care. This is especially true in light of consideration of the NP’s historical roots in nursing practice, with many NPs having valuable experience as registered nurses prior to receiving advanced training as independent practitioners. This interdisciplinary perspective may have an important role in the nursing home, which has a mandate for interdisciplinary care planning as outlined by the Nursing Home Reform Act, as part of the Omnibus Budget Reconciliation Act of 1987 (OBRA ’87).

The problem with the “expander” and “extender” models of care is that it reinforces the current regulatory structure based on physician-centered medical models of care. Recent efforts have been undertaken to describe a more integrated or “collaborative” model of practice between physicians and NPs or PAs.\textsuperscript{13} It may be difficult to define these complementary roles of NP, PA, or physician without determining the specific skills that each provider should (or could) bring to the practice environment and interdisciplinary team. Collaborative relationships between physicians and NPs have been described as addressing different needs in the management of acute illness, chronic disease management, and comprehensive care planning.\textsuperscript{14} This role definition will need to be a focus for continuing research initiatives examining this model of care.

\textbf{UTILIZATION AND REGULATION}

A NP or PA may be employed by the nursing home, work for an affiliated physician or group practice, or be contracted by a managed care organization. The practice of NPs may also extend beyond clinical care to include administration, nursing consultation, or education, including academic faculty practice within teaching nursing homes.\textsuperscript{15} Over 20\% of nursing facilities report having NPs or PAs providing medical care, and this has increased from estimates in the 1990s when the proportion was under 10\%.\textsuperscript{16} Nursing homes that utilize NPs tend to be larger in size (>100 beds), but no differences in utilizations have been described for profit, nonprofit, multifacility chain, or government-operated facilities.\textsuperscript{17} There does appear to be an association nationally between areas with higher Medicaid reimbursement and the likelihood of a facility directly employing NPs and PAs, which some have argued represents a strategic “investment in medical infrastructure” by a facility to enhance the quality of care.\textsuperscript{16}

Nurse practitioners perform a wide range of services according to surveys, including sick/urgent, preventive, end-of-life, and wound care.\textsuperscript{17} This clinical diversity has even resulted in a debate regarding nurse practitioners substituting or replacing attending physicians in long-term care medical practice.\textsuperscript{18}
Regulations regarding the scope of practice and prescriptive authority vary considerably across states for nurse practitioners, and the reader is directed to review any recent changes applicable to the individual state boards of nursing. In 2003, the John A. Hartford Foundation Institute for Geriatric Nursing convened an expert panel to examine ways to strengthen the use of APNs in nursing homes. The panel recommendations ranged from enhanced geriatric content in education to changes in reimbursement for traditionally nonbillable activities (e.g., communication and care planning), and recommended caseloads for individual NPs. The NP caseload can vary greatly depending on the acuity of nursing home residents receiving care. The Evercare managed care organization, which utilizes NPs as the cornerstone of their care delivery model, has reported total caseloads between 80-110 residents, on average. The Hartford Foundation expert panel addressed the daily workload of NPs with a recommendation of no more than 12-18 reimbursable visits to nursing home residents per workday, above which the quality of care provided is questioned.

The Centers for Medicare & Medicaid Services (CMS) has established regulations regarding the physician delegation of tasks to mid-level practitioners in both skilled nursing facilities (SNFs) and nursing facilities (NFs). The major distinction between allowed activities of mid-level practitioners depends both on the care setting (SNF or NF) and the employment relationship between the facility and the NP or PA. The employment of mid-level practitioners by a facility has raised the question of a potential conflict of interest during the certification process of residents to the facility under Medicare or Medicaid; this prompted CMS to formulate regulations governing clinical activities. These regulations have been the source of some confusion within the long-term care community, causing CMS to issue clarifications in late 2003. The essential points of the regulations are summarized below:

- All NPs and PAs are allowed to perform medically necessary services to residents regardless of the care setting and within the scope of practice defined by the State.
- In SNFs, only the physician can perform the full initial comprehensive visit in which a history, physical examination, assessment, and a care plan are formulated.
- Physician assistants are not authorized to sign the initial certification or recertifications in SNFs; however, a nurse practitioner who is not an employee of the SNF may sign the certification or recertifications subject to State requirements.
- A physician may delegate alternate follow-up visits required by regulations (usually 30- or 60-day resident evaluations subsequent to the admission) to a collaborating NP or PA in the SNF.
- For the care of nonskilled nursing facility residents, the employment by the facility is the important determinant of the scope of practice for mid-level practitioners as determined by CMS. Wide latitude is generally given to NPs and PAs to substitute for the physician in the NF and perform the initial comprehensive visit, subsequent required visits, certification, and recertification, as long as they are not an employee of the facility, are working in collaboration with a physician, and are subject to individual State regulations regarding scope of practice.

**Clinical Outcomes**

Most studies have traditionally examined the NP and PA role in providing community-based primary care. The primary care practice in nursing homes by these providers only recently has been described, and considerable gaps in knowledge still remain. Nurse practitioners remain the best described in the nursing home as compared to PAs, due in part to a greater presence in long-term care and a longer history of the profession. Additionally, traditional NP training has emphasized advancement through graduate-level education programs anchored in schools of nursing, potentially fostering an academic environment for research and incentives for publishing clinical outcomes.

Research has sought to demonstrate either better quality of care delivered by mid-level practitioners...
compared to physician providers alone, or equivalency with physician practice in the nursing home. Both of these objectives remain consistent with the previously described model of a “physician extender,” in which substitutability remains the primary goal. Much less is known about collaboration between a physician and NP or PA in current research. Some studies suggest that the process of care can be enhanced by this type of collaboration of physician and mid-level practitioner, beyond what might occur with substitution of the physician provider alone.\(^{22}\) A major obstacle in comparing research outcomes is that it remains unknown what should constitute “usual care” within the nursing home. Depending on physician staffing, models of medical staff organization, and standards used to measure quality, the benchmark for comparison may be an elusive target.

Physician medical directors of nursing homes report a high degree of satisfaction from NP utilization, as perceived by attending physicians, residents, nursing staff, and families.\(^{17,23}\) Other studies have shown no significant difference in reported satisfaction from residents or family when care is provided by NPs.\(^{24,25}\) A survey of directors of nursing in long-term care facilities has described NPs as fulfilling a complementary role to that of the nursing staff, and report less hospitalization, more prompt responses to identified problems, and more complete documentation as a result of NP presence.\(^{26}\) Some have argued that it is possible that on-site nursing home physicians and closed-staffing models of medical organization would obtain improved satisfaction and clinical results due to greater physician availability, commitment, and knowledge.\(^{27}\) Further research is needed in order to fully understand how the types of physician staff organization and integration of NPs and PAs with medical services influence clinical outcomes for nursing home residents.

There does appear to be increased medical attention (defined as number of visits and medical orders) to nursing home residents when primary care is provided by NPs and PAs.\(^{28-30}\) In addition, better scores have been reported on some quality indicators, as compared to physicians, for congestive heart failure, hypertension, and new urinary incontinence.\(^{30}\) Specific process of care measures indicate that NPs may perform better with skin care, decubitus ulcer prevention, incontinence, diabetic foot care, and congestive heart failure assessments, when compared to a physician-only model of care.\(^{22}\)

A variety of other interesting clinical outcomes have been described in the literature with the implementation of mid-level practitioners (Table). One study describes a reduction in medication prescribing and the utilization of laboratory services, as well as a greater proportion of residents being discharged to home when care is coordinated by a NP.\(^{29}\) There have been mixed results regarding the effect on resident functional status, with most studies showing only minimal influence by NPs on a resident’s potential functional decline.\(^{24,29,30}\) There may be significant impact on end-of-life care, as facilities with NPs or PAs on staff are less likely to use feeding tubes in residents with advanced cognitive impairment. In addition, completion rates

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**Table: Areas of Potential Benefit Derived from Mid-Level Providers in the Nursing Home**

<table>
<thead>
<tr>
<th>Decreased Health Care Utilization:</th>
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<tbody>
<tr>
<td>• Emergency Department</td>
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<tr>
<td>• Specialty Referrals</td>
</tr>
<tr>
<td>• Acute Hospitalization</td>
</tr>
<tr>
<td>• Medication Prescribing</td>
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<tr>
<td>• Laboratory Services</td>
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</tbody>
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<table>
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<tr>
<th>Improved Quality of Care:</th>
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</thead>
<tbody>
<tr>
<td>• Satisfaction (resident, families, physicians, nursing home staff)</td>
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<tr>
<td>• Medical Attention (frequency of visits, frequency/timing of medical orders)</td>
</tr>
<tr>
<td>• Disease-Specific Quality Indicators (congestive heart failure, hypertension, incontinence)</td>
</tr>
<tr>
<td>• Preventive Health Quality Indicators (decubitus ulcers, diabetic foot care)</td>
</tr>
<tr>
<td>• End-of-Life Care (do-not-resuscitate, feeding tubes, do-not-hospitalize)</td>
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for Do-Not-Resuscitate and Do-Not-Hospitalize orders may be higher with NP collaboration.\textsuperscript{31,32} This may be related to the provider’s greater availability or more frequent communication with residents and families regarding advance directives.

### COST-EFFECTIVENESS

The reduction in hospitalizations is a source of potential cost savings and serves as the primary focus in cost-effectiveness research for the utilization of NPs and PAs. Potential cost savings from NP and physician collaboration in the nursing home has been reported in the literature since the late 1970s.\textsuperscript{33} The margin of cost savings appears greatest in the medical care of newly admitted residents; NP utilization may also have some influence on nursing home revenue, presumably by attracting private-pay residents as quality of care improves.\textsuperscript{34} Some evidence suggests that Medicare health maintenance organizations under capitation payments, known as “risk contracts,” for enrolled beneficiaries are a cost-effective way of improving primary care delivery by physician–NP teams in nursing homes.\textsuperscript{35}

Geriatric nurse practitioners working in collaboration with physicians also appear to reduce the overall utilization of emergency department transfers, specialty referrals, and acute hospitalizations as compared to residents cared for by physicians alone.\textsuperscript{29,36,37} A national survey shows that facilities that use NPs or PAs are overall less likely to hospitalize residents, presumably by attracting private-pay residents as quality of care improves.\textsuperscript{34} Some evidence suggests that Medicare health maintenance organizations under capitation payments, known as “risk contracts,” for enrolled beneficiaries are a cost-effective way of improving primary care delivery by physician–NP teams in nursing homes.\textsuperscript{35}

An underlying premise of the program is that enhanced primary care will result in reduced hospitalization for enrollees. This reduction is achieved through a combination of intense management at the nursing home through the presence of the NP, as well as use of intensive service days (ISD), which reimburses a facility to care for acutely ill residents who may otherwise have been hospitalized. The studies of Evercare sites have confirmed this reduction in hospitalization by nearly 50\% when compared to control groups of non-Evercare nursing home residents.\textsuperscript{44,47} However, studies on other clinical outcomes have been mixed with Evercare-enrolled nursing home residents, including measures of functional status, falls, fractures, depression, behavior, incontinence, and preventive health.\textsuperscript{47} At the very least, it appears to demonstrate...
equivalency in these outcomes as compared to non-Evercare residents.

In addition to these clinical studies and program reports, it is important to consider that Evercare has played a valuable part in helping to define the role of the NP in the nursing home. Emphasis has been placed on the NP as a communicator and care coordinator, who also plays a role in the education of nursing home staff.\textsuperscript{45,46} This integration into care teams has been a key ingredient in Evercare’s success in maintaining enrollment and reducing hospitalizations. Reports of time distribution of Evercare NPs indicate that over one-third of their time is spent in direct patient care, and the majority of remaining time is spent on communication with physician, staff, and family.\textsuperscript{42}

Evercare also has extended benefits to the attending physician through this collaboration with NPs. It has provided innovative methods of reimbursement to physicians for traditionally nonbillable activities, such as meetings with families and attendance at care-planning conferences. The lesson provided by Evercare may be that successful collaboration can result in a health care system that maximizes providers’ skill sets and provides reimbursement incentives. While it remains to be demonstrated whether this approach to organizing medical services in nursing homes can be generalized nationally, the Evercare concept has now been established as a national benchmark to measure subsequent physician and NP collaborative practice.

CONCLUSION

It is clear that ongoing physician collaboration with NPs or PAs will continue in nursing home medical practice. It may become a matter of necessity, as the nursing home-eligible population grows and facilities seek to expand the accessibility and quality of medical services. If enhanced quality of care can continue to be demonstrated through outcomes research, the NP and PA collaboration with physicians may become a standard of care and a target for future government regulation. Priorities will need to be established for research, policy, and education directed towards refining this model of care. Particular attention will need to be paid to the role and activities of PAs, which have been the focus of far less research in long-term care as compared to the NP.

Building on collaborative NP and PA practice, it will be important to consider how this integration of specific duties and complementary skills with physicians can achieve enhanced medical care delivery and clinical outcomes. Unfortunately, no consensus has been achieved regarding the role definition of each profession. Future research will need to address the unique skills and training that each provider possesses, and how each profession can best be utilized in nursing home medical practice. Furthermore, investigation will need to focus on how collaboration affects the process of care, specifically including time and costs that will be of great interest to facilities and payers.

The outcomes measures chosen for future research will largely depend on how quality of care is defined and measured in nursing homes. The current measures of quality have mostly been driven by regulatory standards of care. While some in the field may advocate a theoretical substitution of physicians by mid-level providers, the fundamental solution to quality concerns most likely rests upon both an enhanced provider workforce as well as redefining the delivery of care by all providers. The current regulatory architecture is based on a physician-centered medical model of care that may not capitalize on the unique skill sets that physicians, NPs, and PAs possess in the delivery of care to nursing home residents.

Physicians practicing in nursing homes will need to understand their evolving role in medical staff organization, and how to best utilize the skills and talents of each member of the medical team. Fear of a loss of professional identity or relevance in nursing home practice has created a relative lack of engagement by physicians in these discussions regarding the expanding roles of PAs and NPs. This physician engagement in the future will necessitate continued research in the area of nursing home medical staff organization, best medical practices, and clinical outcomes. All disciplines share a common responsibility to understand and develop resident-centered collaborative care models in the nursing home. ✷
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