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The Roles of Primary Care PAs and NPs Caring for Older Adults with Diabetes

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Abstract

Electronic health record data linked with Medicare data from an academic physician group were utilized to propose a multidimensional characterization of PA/NP roles on panels of primary care patients with diabetes. Panels of older patients with diabetes (n=263) that received the majority of their care at the physician group were analyzed. Seven PA/NP roles were defined based on level of involvement (no role, usual, or supplemental provider), visits with complex patients (less complex patients or at least one high complexity patient), and delivery of chronic care (no chronic care or some chronic care). The percent of panels with PA/NPs in each role were calculated and PA/NP roles within clinics were described. All PA/NP roles were observed within the organization. PA/NPs performed between 2 and 6 roles within a clinic. Findings suggest primary care PA/NPs perform a variety of roles and frequently perform multiple roles within a clinic.

INTRODUCTION

In the United States, primary care practices are currently investing significant resources to transform into patient-centered medical homes (PCMH) to improve the quality of care for patients with chronic illnesses such as diabetes¹⁻⁵. Patients with diabetes have needs that

require preventive, acute, and chronic care services⁶⁻⁸. Consequently, successful treatment of patients with diabetes can be complex, longitudinal, resource intensive, and requires care from multiple providers with a range of clinical expertise.⁹⁻¹² One goal of the PCMH is to address the complex clinical needs of patients with chronic illness through team-based care^{1,2,13}. In the current era of primary care physician shortages, a frequently discussed approach to the PCMH involves increasing the presence of physician assistants and nurse practitioners (PA/NPs) on the primary care team¹⁴⁻¹⁷.

Effective incorporation of PA/NPs into primary care teams requires implementation of well-defined roles^{13,18-21}. Roles within an organization are defined in relation to other associated positions and according to the functions or tasks performed²². PA/NP roles are negotiated with collaborating physicians within the constraints of state regulation of medical practice²³ and have been defined in relation to their collaborating physician^{24,25}. Overlapping competencies with physicians paired with the context-specific negotiation of PA/NP tasks and functions provide the capacity for PA/NPs to function in a variety of primary care roles (i.e., perform different practice patterns). PA/NPs perform substitute roles when they provide a patient population with the same range of services and perform the same functions (i.e., act as a usual provider of care) as a physician. In contrast, PA/NPs that perform services intended to “complement or extend” the services provided by physicians, such as providing chronic disease care to patients within a practice, are classified as supplements²⁵. However, little is known about the frequency with which PA/NPs act in each role category.

Substitute and supplemental PA/NP roles are useful conceptual constructs but the classification does not provide sufficient specificity to assess role effectiveness or guide organizations in PA/NP role implementation^{24,31,32}. These constructs address patient care tasks only in relation to the function of the collaborating physician and do not specify which patient care services are performed. The substitute/supplement dichotomy also does not incorporate a domain that is key to negotiating PA/NP roles: patient complexity. Historically, the role of PA/NPs was to provide care to well and non-complex patients for preventive care, acute issues, or treatment of stable chronic conditions^{23,33}. The belief that patients with complex problems and multiple diagnoses are best served by physicians working with a team of health care professionals still predominates today^{34,35}. However, this practice may not be universally implemented, as some evidence suggests that PA/NPs see patients of that are just as complex^{31,36,37}. We propose that 3 factors combine to determine the practice patterns of primary care PA/NPs and ultimately define the PA/NP role in primary care: the level of PA/NP involvement, patient care services provided, and the complexity of the patients served. Characterizing PA/NP roles by combining these three domains can assist healthcare organizations with implementation of PA/NP roles on primary care teams. The objective of this analysis is to characterize the roles of PA/NPs on individual panels of primary care patients with diabetes by measuring the 3 domains specified above and to describe the frequency of each role in a large, multi-specialty physician group.

METHODS

Study Population

The providers and patients in this analysis are associated with one of the twelve largest multi-specialty physician groups in the US which provides approximately 1.7 million ambulatory patient visits per year in specialty and community based primary care clinics. We analyzed the characteristics and primary care visits of Medicare beneficiaries with diabetes on the patient panels of 210 attending physicians, 24 PAs, 28 NPs, and 51 resident physicians in one of 32 internal medicine, family practice, and geriatric primary care clinics. The Minimal Risk Institutional Review Board at the participating university approved this study with a waiver of HIPAA authorization.

Sample and Data Sources

The sample was limited to adult Medicare patients with diabetes identified as being managed by the provider group^{38,39}. A validated algorithm was utilized to identify patient with diabetes⁴², requiring at least 1 inpatient or skilled nursing facility claim or more than 1 carrier claim associated with an ICD-9-CM code of 250.xx, 357.2, 362.0x, or 366.41 (we also added 648.0x). Patients were identified as being managed by the provider group by the plurality provider algorithm³⁸.

Patients were required to have Medicare data from 2007 and 2008 for identification of baseline comorbidities in the year prior to the analysis year.

The Johns Hopkins ACG® Case-Mix System Version 10 (most recent version available is 10) was utilized as an overall measure of morbidity burden^{40,41}. Medicare data included demographic information on Medicare beneficiaries enrolled and/or entitled in a given year, as well as inpatient, skilled nursing facility, outpatient, professional services, home health agency, durable medical equipment, and hospice claims. Each claim contains ICD-9-CM diagnosis codes, CPT-4 procedure codes, clinician identifiers, and the date, place and type of service. Data from the electronic health record (EHR) and Medicare claims/enrollment data were linked using a crosswalk provided by the partner organization. Data for primary care visits in 2008, including date of service, provider performing the service, the clinic, and the ICD-9 diagnosis codes for patients in the sample were obtained from the EHR.

Definition of Panels, and PA/NP Roles A panel-level dataset was constructed from the data of 2,603 adult Medicare patients with diabetes. Each panel is defined by the usual provider and the patients for whom that provider delivered the plurality or majority of primary care visits in 2008. Patients were first assigned to the primary care clinic that provided the majority of their face-to-face visits within that 1-year period. Within each clinic, patients were assigned to the individual physician or PA/NP that provided the majority of visits within that clinic in 2008. In the event of a tie at either step, patients were assigned to the clinic/provider with the most recent visit (i.e., closest to the end of the year). Finally, patient panels were constructed by grouping patients assigned to the same usual provider of care within a clinic in 2008.

The dependent variable, PA/NP role on the panel, was defined by combining the three specified domains. A categorical variable representing the level of PA/NP involvement was divided into 3 categories: none, usual provider, and supplemental provider. Panels of patients that had physicians as the usual provider of care and had zero visits with a PA/NP were categorized as “No PA/NP Role.” Panels of patients with a PA/NP as a usual provider (i.e., PA/NPs provided the majority of their visits) were categorized as “Usual Provider.” Panels that had a physician as the usual provider of care and at least one patient receiving at least one visit from a PA/NP within the calendar year were categorized as “Supplemental Provider.” A binary variable representing the amount of chronic care delivered by supplemental PA/NPs to the panel was constructed. This domain was limited to supplemental PA/NPs because analyses demonstrated that PA/NPs acting as usual providers provide a broad range of service types (data not shown). Panels with supplemental PA/NPs who delivered no chronic care visits to patients on the panel in the calendar year were categorized as “No Chronic Care.” Panels with supplemental PA/NPs who delivered at least one chronic care visit to a patient on the panel in a calendar year were categorized as “At Least Some Chronic Care.” A binary variable indicating that PA/NPs saw complex patients on the panel was created. Panels with PA/NPs as usual providers or supplemental providers that provided at least one visit to a patient with an ACG risk score of 2.0 or greater were categorized as having a complex patient. Finally, a variable with 7 categories was created combining all 3 domains: “No PA/NP Role,” “Usual provider to less complex patients only,” “Usual provider to at least one high complexity patient,” “Supplemental provider to less complex patients providing no chronic care,” “Supplemental provider to less complex patients only providing at least some chronic care,” “Supplemental provider to at least one high complexity patient providing no chronic care,” and “Supplemental provider to at least one high complexity patient providing at least some chronic care.”

Analysis

Panel-level analyses used STATA 11.1⁴³. Descriptive statistics are provided for panel level characteristics as means and standard deviations across panels of panel size, within panel gender and Medicare buy-in percentages, and panel mean ACG and age. The percent of panels with PA/NP in each of the seven potential roles was calculated.

RESULTS

Two-hundred and sixty-three (263) panels were identified in the 32 primary care clinics. Family medicine physicians and PA/NPs were the usual providers for 52% and 6.8% of panels, respectively. Physicians and PA/NPs in internal medicine and geriatrics were the usual providers for 35% and 6.1% of the panels, respectively. The mean number of patients on a panel was 10. The average of panel mean ages was 70 years. The average of mean ACG was 1.4, indicating that, on average, panels were 40% more costly than the average elderly population (Table 1). On average, the panels were predominantly female (mean % female= 57%) and a mean of 23% of patients on the panels were Medicaid recipients.

All PA/NP roles were observed (Figure 1). PA/NPs performed no role in 45% of panels. Of the panels with no PA/NP involvement (n=119), 61% are in clinics with PA/NPs. The two

most frequently performed PA/NP roles involved the delivery of some chronic care as a supplemental provider (supplemental providers delivering at least some chronic care and providing at least one visit to at least one high complexity patient (17%) and supplemental providers delivering at least some chronic care to less complex patients only (13%)). PA/NPs acted as usual providers of care for 13% of panels, but rarely to panels with high complexity patients (2% of panels). In clinics with PA/NPs, PA/NPs performed a mean of 4 roles within a clinic (range 2-6). There were no clinics where PA/NPs performed supplemental roles exclusively. Two clinics implemented supplemental roles serving less complex patients only. One clinic utilized only supplemental PA/NP roles involving chronic disease management.

DISCUSSION

This study characterizes the roles of PA/NPs on individual panels of primary care patients with diabetes by using 3 domains (level of involvement, patient care services provided, and complexity of patients) and describes the frequency of each role in a large multi-specialty physician group. PA/NPs perform a mean of 4 roles within a clinic and no clinic restricted PA/NP roles to supplemental roles only. The majority of PA/NP involvement on panels was in supplemental roles, with PA/NPs acting as usual providers for 13% of panels. PA/NPs performed no role for a majority of the panels (45%). Findings suggest that primary care PA/NPs perform a variety of roles and frequently perform multiple roles within a clinic.

PA/NPs performed an average of 4 roles within a clinic, which likely reflects PA/NP role negotiation with each collaborating physician. While this finding highlights the beneficial flexibility of these professions within primary care settings, the simultaneous performance of multiple roles creates the potential for role ambiguity and confusion. This could result in negative organizational outcomes including PA/NP job stress and turnover⁴⁴⁻⁴⁶, as well as challenges in communication and coordination between providers that may affect patient care decisions. Additional study is needed to understand the impact of this finding on organizational and patient outcomes.

The predominance of supplemental roles for PA/NPs reflects one organizational interpretation of team delivery of primary care. The most frequent supplemental roles involve the delivery of chronic care. This suggests that primary care PA/NPs in this organization were intended to provide a range of primary care services and not simply a subset of services such as acute care. The high frequency of supplemental PA/NP roles could be a function of high ratios of physicians to PA/NPs. For example, if a PA/NP works with 3 physicians, then there is the potential to perform supplemental roles on 3 panels but only one opportunity to act as a usual provider. However, PA/NPs make up 17% of the primary care providers but acted as usual provider to only 13% of the panels. Therefore, not all PA/NPs in the sample acted in usual provider roles, suggesting that the supplemental nature of PA/NP roles is likely intentional. The relative infrequency of panels with PA/NPs in usual provider roles suggests that PA/NPs may not be practicing at the upper limit of their scope of practice in this study population. However, this finding could also be explained by part-time employment or years of PA/NP experience. Additional research evaluating predictors of PA/NP role and the effectiveness and efficiency of each role is warranted.

Finally, PA/NPs frequently perform no role on patient panels (45%), suggesting that creating primary care teams with PA/NPs would result in a significant system change for this organization.

There are several limitations to this study. First, the data source is a single physician group. While this study population is comprised of patients treated by a relatively large number of providers in over 30 academic and community-based clinics with unique structures and environments, only one healthcare organization is represented. While ideal for controlling for variation in regional and organizational characteristics, the setting may not easily generalize to patients with other chronic illnesses or with other sociodemographic characteristics. Second, PA/NP supplemental roles for each panel are a composite value of all PA/NPs serving on a panel. Infrequently there were panels where multiple PA/NPs provided supplemental care to a patient panel. In these situations, we were unable to determine their individual roles, which may vary. In an era focused on redesigning the structure of primary care to improve care for patients with chronic illness, a frequently offered strategy is the incorporation of PA/NPs on primary care teams^{16,51-53}. The results of this study suggest that PA/NPs perform a wide variety of roles that could potentially be designed to reflect organizational goals and the needs of the patient population being served. While this new evidence addressing flexibility should be considered encouraging, conclusions regarding the appropriateness of one role over another are premature. Until the PA/NP role is defined relative to the full scope of patients served in primary care, the impact of PA/NP role on a range of organizational and patient outcomes including job turnover, provider satisfaction and quality of care is evaluated, effective utilization of PA/NPs on primary care teams will remain elusive.

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Figure 1.
PA/NP Roles on Panels with Medicare Patients with Diabetes (N=263). PA = Physician Assistant; NP = Nurse Practitioner.

Table 1

Provider and Panel Characteristics of Primary Care Panels of Patients with Diabetes (N=263)

Characteristic	All Panels Mean (SD) N=263
Usual Provider Specialty	
Internal Medicine or Geriatrics	41
Family Medicine	59
Number of Study Patients on the Panel	10 (13)
Average Panel ACG	1.4 (0.7)
Average Panel Age	70 (9)
% Female Patients on Panel	57 (33)
% Medicaid Buy-in on Panel	23 (30)

ACG=Johns Hopkins Adjusted Clinical Groups Case-Mix System