

# Estimating a Reasonable Patient Panel Size for Primary Care Physicians With Team-Based Task Delegation

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## ABSTRACT

**PURPOSE** Primary care faces the dilemma of excessive patient panel sizes in an environment of a primary care physician shortage. We aimed to estimate primary care panel sizes under different models of task delegation to nonphysician members of the primary care team.

**METHODS** We used published estimates of the time it takes for a primary care physician to provide preventive, chronic, and acute care for a panel of 2,500 patients, and modeled how panel sizes would change if portions of preventive and chronic care services were delegated to nonphysician team members.

**RESULTS** Using 3 assumptions about the degree of task delegation that could be achieved (77%, 60%, and 50% of preventive care, and 47%, 30%, and 25% of chronic care), we estimated that a primary care team could reasonably care for a panel of 1,947, 1,523, or 1,387 patients.

**CONCLUSIONS** If portions of preventive and chronic care services are delegated to nonphysician team members, primary care practices can provide recommended preventive and chronic care with panel sizes that are achievable with the available primary care workforce.

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## INTRODUCTION

Primary care faces a dilemma. On the one hand, the average primary care physician's panel size is too large for delivering consistently high quality care under the traditional practice model. Estimates suggest that a primary care physician would spend 21.7 hours per day to provide all recommended acute, chronic, and preventive care for a panel of 2,500 patients.<sup>1-3</sup> The average US panel size is about 2,300.<sup>4</sup> On the other hand, the decreasing number of physicians entering adult primary care—in part due to the excessive work of primary care physicians, which dissuades US medical students and residents from choosing primary care careers—means that panel size will increase,<sup>5</sup> particularly as more people have insurance coverage and seek access to a primary care medical home.

Data on quality of care illustrate the results of this predicament. Patients receive only 55% of recommended chronic and preventive services.<sup>6</sup> About one-half of US adults have at least 1 chronic condition.<sup>7</sup> Fifty percent of people with hypertension have uncontrolled blood pressures,<sup>8</sup> more than 80% of people with hyperlipidemia have not attained cholesterol control,<sup>9</sup> and 43% of people with diagnosed diabetes have not achieved glycemic control.<sup>10</sup>

The mismatch between workload and primary care physicians' capacity to deliver consistently high quality care has given rise to 2 alternative practice models.<sup>11</sup> The first model substantially reduces panel sizes for these

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physicians so that they are able to personally provide comprehensive primary care within a reasonable workday schedule. Concierge practices with panel sizes of 200 to 600 patients are the extreme version of this model, with the low-overhead Ideal Medical Practice version having somewhat larger panel sizes but typically fewer than 1,000 patients. The problem with this solution as a national model is that there are not enough primary care clinicians in the United States to meet this standard. Absent a huge, rapid increase in the supply of primary care physicians, the small panel size approach would leave many people without primary care. The alternative approach, the Organized Team Model,<sup>11</sup> promotes the building of primary care teams that distribute the responsibility for patient care among an interdisciplinary mix of team members, allowing physicians to practice high-quality care with a reasonable workday and a large but manageable panel size. Fundamental to the team model is that all team members perform at the top of their skill level, and that many tasks currently performed by primary care clinicians are safely and effectively delegated to nonclinician members of the team or delivered through the use of health information technology without requiring direct primary care physician involvement. An example is standing orders for mammograms that could be acted on by medical assistants during visit intake or by patients scheduling mammograms directly through an electronic patient portal.

In this study, we explored the implications of a delegated team model of primary care for determining appropriate panel size. In a practice model that transfers responsibility for the health of a panel of patients from the lone physician to a team, how many patients could be empanelled with a primary care physician-led team so that the dual goals of comprehensive, evidence-based primary care and a manageable physician workday could be achieved? To address this question, we used analyses from investigators at Duke University of the time needed to deliver preventive, chronic, and acute care services, modeling differing assumptions about the extent of delegation of tasks to nonclinician members of the team.

## METHODS

### Time Required for Preventive, Chronic, and Acute Care

Three companion studies from Duke University's Department of Community and Family Medicine have estimated the time needed to meet the preventive, chronic, and acute care needs of a panel of 2,500 patients.<sup>1-3</sup> The authors used a hypothetical panel with a US population-wide distribution of age and disease burden. We used these studies as a starting point and accepted their conclusions as reasonable estimates.

To arrive at the time required for 1 physician to provide all grade A and B services of the US Preventive Services Task Force to a panel of 2,500 patients, the Duke University authors considered the frequency of performing each of these services, the number of people requiring each service, and the time required to administer the service, using demographic data and previous studies to estimate the time. The authors concluded that 1,773 hours per year of primary care physician time are required to deliver all recommended preventive care.<sup>2</sup>

To estimate the time required for chronic disease care, the authors focused on the 10 most common chronic diseases, those with high prevalence in primary care, with measured prevalence in the population, with accepted guidelines, and for 5 of the diseases, the percentage of patients having achieved disease control.<sup>3</sup> With these data, the authors calculated recommended encounter times for patients with controlled and uncontrolled diseases. They estimated that 2,484 hours per year of primary care physician time were needed to meet the chronic care needs of a panel of 2,500 patients.

Finally, using data from the National Ambulatory Medical Care Survey, the authors estimated that a physician would need to spend 888 hours per year to provide acute care for a panel of 2,500 patients.<sup>1</sup>

Using these estimates, we calculated the time per patient per year needed for each category of service by dividing the authors' estimates of total time per year for the panel by 2,500. We refer to this model in which all care is delivered by the primary care physician as the nondelegated model.

### Estimating Amount of Time Delegated

We next estimated the amount of this primary care physician effort that could potentially be appropriately and safely delegated to other personnel in the practice or delivered through automated methods. We defined clinicians as those health professionals who are authorized to diagnose and treat, and who are reimbursed under standard fee-for-service regulations, namely, physicians, nurse practitioners, and physician assistants. Nonclinician members of the primary care team were registered nurses, pharmacists, health educators, and medical assistants. (Practice managers and other administrators were not included.)

For our first model, we examined specific categories of services within the models developed by the Duke authors and made assumptions about the degree to which services within each category could be delegated. Yarnall et al<sup>2</sup> split preventive services into 4 categories: screening, counseling, immunizations, and chemoprophylaxis. Screening included performing and interpreting Papanicolaou tests and other clinical tests; we considered these responsibilities as clinician-level

work that could not be delegated. For immunizations and chemoprophylaxis, we assigned the work of administering these medicines to nonclinicians but left to clinicians the responsibility of explaining these services to patients. We estimated that all routine preventive counseling could be delegated. Cumulatively across these categories of preventive services, these assumptions enable delegation of 77% of primary care physician time usually spent on preventive services.

To determine the amount of chronic disease management that could be delegated, we accepted the method of the Duke authors that focused on only 10 common chronic conditions.<sup>3</sup> Of the 2,484 hours per year of primary care physician time in chronic care, one-third of the time was needed for patients in good control and two-thirds of the time was needed for patients in poor control. We estimated that 75% of the physician's time for patients in good control and 33% of the time for patients in poor control could be delegated, for a total of 47% of effort delegated. This degree of delegation assumes that nonclinicians can provide large portions of routine chronic care services involving patient education, behavior-change counseling, medication adherence counseling, and protocol-based services delivered under standing physician orders.

We refer to this first model in which 77% of preventive care and 47% of chronic care are delegated to other team members as delegated model 1. Because the degree of task delegation in the above assumptions may be ambitious in many practice settings, we also modeled the effects of more modest degrees of delegation: 60% of all preventive care time and 30% of all chronic care time (delegated model 2), and 50% of all preventive care time and 25% of all chronic care time (delegated model 3).

We assumed that all acute care service time would continue to be provided by primary care physicians.

### Computing Panel Sizes

The final step in our modeling estimates was to compute primary care physician patient panel sizes using

these different assumptions about delegated time. We set the average hours worked per year by a family physician at 2,025, using the American Academy of Family Physicians estimates of 43 hours per week times 47.1 weeks per year.<sup>12</sup> We divided 2,025 by the sum of the hours per year per patient needed for preventive, chronic, and acute services to compute the panel size, making the assumption that a physician's annual work effort is fully devoted to ambulatory care services in these service areas. In other words, total hours per year of work divided by hours per patient equals number of patients. This calculation was done using the hours per patient per year under a nondelegated model and for each of the delegated models, using different assumptions about the degree of delegation achievable for preventive and chronic care.

## RESULTS

The average time per patient per year needed for preventive, chronic, and acute care services derived from the Duke estimates was 0.71 hours, 0.99 hours, and 0.36 hours, respectively, for a total of 2.06 hours of service per year per patient (Table 1). Using the assumption of 2,025 work hours per year per primary care physician and the same age-sex distribution of the patient panel used in the Duke analyses, 1 physician could reasonably care for a panel of 983 patients under a nondelegated primary care model.

Under the most ambitious assumption about the degree of delegation possible (delegated model 1), 1 physician could reasonably care for a panel of 1,947 patients. Models with less service time delegated by physicians result in intermediary estimates of panel sizes: delegated model 2 results in a panel size of 1,523, and delegated model 3 in a panel size of 1,387.

## DISCUSSION

The series of studies by the Duke University group provided powerful, quantitative data to help explain

**Table 1. Estimated Panel Sizes Under Different Models of Physician Task Delegation to Nonphysician Team Members**

Type of Care	Nondelegated Model (Panel = 983)		Delegated Model 1 (Panel = 1,947)		Delegated Model 2 (Panel = 1,523)		Delegated Model 3 (Panel = 1,387)	
	Time Delegated %	Hours per Patient/Year	Time Delegated %	Hours per Patient/Year	Time Delegated %	Hours per Patient/Year	Time Delegated %	Hours per Patient/Year
Preventive	0	0.71	77	0.16	60	0.28	50	0.35
Chronic	0	0.99	47	0.53	30	0.70	25	0.75
Acute	0	0.36	0	0.36	0	0.36	0	0.36
Total	–	2.06	–	1.04	–	1.33	–	1.46

why so many primary care physicians feel overwhelmed at work and why the delivery of preventive and chronic care services continues to fall below targeted goals. Our study extends the work of those authors by translating their data into estimates of what panel sizes might be reasonable for these physicians under different models for delivering primary care.

Many primary care physicians in the United States have panel sizes far exceeding 2,000 patients and work under a prevailing model whereby physicians continue to personally deliver most routine preventive and chronic services. Our results suggest that this traditional practice model would be viable only if a primary care physician could care for a panel of slightly fewer than 1,000 patients. This finding makes it clear why some primary care physicians have gravitated toward concierge models of practice, with panel sizes of fewer than 1,000 patients and the physician personally delivering the entire scope of services, including most routine preventive and chronic care services. Although this model has its appeal for patients who can afford to enroll in concierge practices, it is not a model that can serve as a national solution for primary care under current conditions. The nation has about 1 primary care physician per 1,500 population, including some who work less than full time in patient care.<sup>13</sup> Unless the United States embarked on a dramatic change in workforce policy to move toward the Cuban national standard of approximately 1 primary care physician for every 500 people, our nation will need to implement models that reengineer the delivery of primary care and deploy our existing physician supply in a more efficient manner. A key component of this reengineering process must be delegating to non-primary care physician personnel and technology a substantial portion of the tasks currently delivered by primary care physicians that do not require clinician-level training to effectively and safely perform.

One delivery system in the United States that has carefully documented its success in implementing an innovative model of primary care is Group Health Cooperative of Puget Sound. Before implementing the new model of primary care, the average panel size at Group Health was approximately 2,300. Under the new model,<sup>14</sup> the average panel size was reduced to about 1,800—a number close to our estimate of a reasonable panel size of 1,947 under an ambitiously delegated model of primary care. The redesigned primary care model at Group Health included innovative approaches to delegate tasks to non-primary care physician personnel on the primary care team, as well as health information technology applications to facilitate delivery of preventive and chronic care services. The Veterans Administration (VA) has embarked on

a national program of team-based primary care, with an average targeted panel size of 1,200 patients per primary care physician.<sup>15</sup> The patient population in the VA system is older and has more chronic illnesses than the hypothetical panel population used in the Duke studies, and our analysis suggests that the 1,200 average panel size target would be a reasonable one for the VA under a care model that delegates a share of primary care physician tasks to other members of the primary care team.

Our model has a number of limitations. The Duke data on time per service are estimates and not derived from precise measurement through time-motion studies; the chronic care estimates are based on 10 common chronic conditions, not all chronic conditions. Our projections of the share of tasks that can be redistributed to nonclinician team members are estimates. Although some practices have demonstrated considerable degrees of task delegation, no empirical study has enumerated the exact amount of task delegation achievable in these practices. This model may overestimate the times required for chronic and preventive care, but it underestimates or ignores the time for care coordination and administrative activities. The model does not account for the time required for training nonclinicians to perform the additional tasks allotted to them, nor does it address the payment reform needed to create a business case for team-based care. Additionally, the panel size discussion assumes panels representative of the entire population, whereas in reality, different primary care practices have different mixes of young and healthy vs older and sicker patients. We did not differentiate between family physicians, general internists, and pediatricians, nor did we account for some primary care physicians spending time providing hospital care.

We based our model on primary care physicians rather than clinicians (physicians, nurse practitioners, and physician assistants) because the Duke articles based their analysis on physicians rather than clinicians. The analysis is applicable to nurse practitioners and physician assistants when they function as clinicians with their own panel of patients and have opportunities to delegate nonclinician tasks to other members of the team. Finally, we do not address how team-based care, with task delegation, affects the building of therapeutic relationships between patients and physicians.

The delegated model requires a major change in how primary care is organized and delivered but does not directly address other changes taking place in primary care, for example, a greater emphasis on shared decision making and patient self-management. Although the delegated model affects the relation-

ship between the physician and the care team, greater patient engagement in care affects the interaction between the patient and the care team. Changing relationships among the 3 entities—physician, care team, and patient—are central to the paradigm shift currently taking place in primary care.

Solving the primary care dilemma—excessive panel sizes in an environment of a primary care physician shortage—requires the replacement of physician-only care with team-based care. Such an unprecedented change in both the culture and structure of primary care practice can be accomplished only through a change in clinician mindset, the training of nonclinician team members, the mapping of workflows and tasks, the creation of standing orders that empower nonclinicians to share the care, the education of patients about team-based care, and the reform of primary care payment. Fortunately, all these elements are being implemented in many innovative primary care practices around the United States. These practices point to a future of high-functioning primary care teams that can ensure health care access and quality for the nation's population with a reasonable work life for physicians and other team members.

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**Key words:** primary care; delegation; panels; health care team; allied health personnel; physician's practice patterns; models, organizational; practice-based research

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