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ANALYSIS & COMMENTARY

Expanding Primary Care Capacity By Reducing Waste And Improving The Efficiency Of Care

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ABSTRACT Most solutions proposed for the looming shortage of primary care physicians entail strategies that fall into one of three categories: train more, lose fewer, or find someone else. A fourth strategy deserves more attention: waste less. This article examines the remarkable inefficiency and waste in primary care today and highlights practices that have addressed these problems. For example, delegating certain administrative tasks such as managing task lists in the electronic health record can give physicians more time to see additional patients. Flow managers who guide physicians from task to task throughout the clinical day have been shown to improve physicians' efficiency and capacity. Even something as simple as placing a printer in every exam room can save each physician twenty minutes per day. Modest but systemwide improvements could yield dramatic gains in physician capacity while potentially reducing physician burnout and its implications for the quality of care. If widely adopted, small efforts to empower nonphysicians, reengineer workflows, exploit technology, and update policies to eliminate wasted effort could yield the capacity for millions of additional patient visits per year in the United States.

In 2014 the United States will improve equity in health care access by expanding health insurance coverage to millions of previously uninsured citizens through the implementation of provisions of the Affordable Care Act. Recent popular debate about the insurance expansion has principally focused on its political consequences and cost implications. Less attention has been paid to the capacity of the health care workforce to accommodate the anticipated influx of newly insured Americans, although health reform has underscored concerns about the adequacy of the primary care workforce. Indeed, even before passage of the Affordable Care Act—which includes provisions to strengthen primary care—many groups had predicted a shortage of primary care physicians in the United States.^{1–3} Expanded access to insurance in the midst of a

primary care physician workforce shortage will not translate into increased access to care.

Common approaches proposed to ameliorate the projected shortage of primary care physicians can be divided into the following three imperatives: train more, lose fewer, or find someone else. This commentary articulates the need to look beyond those approaches and pursue a fourth tack: waste less. To demonstrate the potential of reducing waste and inefficiency, we review evidence of many time-consuming, inefficient activities that greatly diminish the capacity of today's primary care workforce.

Finally, we present solutions to inefficiencies that we have observed through site visits and related contacts with leaders of innovative primary care practices across the country. These observations stem from our separate professional efforts through the Association of American

Medical Colleges (Shipman) and the American Board of Internal Medicine Foundation (Sinsky).⁴ Site visits typically included direct observation of clinical activities and semi-structured interviews with administrators, clinical leaders, physicians, nurses, and other team members, in which we sought to understand the motivations behind their innovations, keys to successful implementation, and the impact on the practice and on provider and team satisfaction.

We also offer our reflections on solutions that could increase the proportion of physicians' time spent on activities that require a physician's expertise, increase physicians' productivity and efficiency, and extend the ability of the current workforce to meet the needs of the population. We begin by reviewing the substance and limitations of the three approaches typically considered to be the principal options available to solve the shortage of primary care physicians.

Three Typical Approaches

TRAIN MORE The projected shortage of physicians has driven a pronounced expansion of new and existing medical schools, with nearly 45 percent more students expected to graduate from allopathic and osteopathic medical schools in 2017 than in 2002.⁵ Yet primary care has fallen out of favor for US medical graduates, with fewer than 20 percent of recent graduates expecting to enter primary care careers.⁶ Furthermore, persistent geographic maldistribution of the physician workforce demonstrates that newly trained physicians often do not end up practicing where they are needed most.^{7,8}

Even if a greater number of incoming medical students were attracted to careers in primary care, the positive effects on the workforce would not be realized for years because of how long training takes. Furthermore, caps on residency funding limit the potential for net growth of the physician workforce.

LOSE FEWER Primary care physicians experience a high level of burnout⁹ and higher rates of leaving clinical practice than their subspecialty colleagues do.¹⁰ Many primary care physicians respond to burnout and competing personal responsibilities by practicing part time, while others leave practice altogether.¹¹

In response, organizations including the American Academy of Pediatrics and the American Medical Association have drawn attention to the need to facilitate providers' reentry into practice.^{12,13} Although reentry programs are commendable, they apply only to a relatively small number of physicians who are out of the workforce and seeking to return to practice.

Consequently, the net effect of such efforts is likely to be limited.

FIND SOMEONE ELSE Potential solutions to the shortage of physicians include expanding the numbers of physician assistants and nurse practitioners, the roles they can play, or both.^{14,15} These providers already serve a vital role in delivering services in primary care and most other clinical settings, and their numbers are increasing. However, like physicians, more physician assistants and nurse practitioners are electing to enter subspecialty practices.^{16,17}

In addition, current scope-of-practice regulations in many states restrict the potential of these professionals to serve as substitutes for physicians. Nevertheless, they will increasingly represent an important element of the health care team, offering a broad set of complementary skills while helping meet the comprehensive needs of patients.

Assessing Inefficiency In Primary Care

Although efficiency is highly prized in most industries, it has not been a high priority in many sectors of health care. That is now changing because of expanding efforts to control health spending and to incentivize value over volume of services.

For our purposes, increased physician efficiency translates into the ability to serve a larger population at a constant level of quality, to expand comprehensiveness or improve the quality of care delivered to a population with a given input of physician time or effort, or both. Improved efficiency at the expense of quality or patient and provider satisfaction would ultimately be self-defeating. To improve efficiency, it is first necessary to identify the sources of wasted time—that is, time spent on activities not requiring physician expertise or not adding value to the patient—that consumes much of the primary care physician's workday.

HOW PRIMARY CARE PHYSICIANS SPEND THEIR TIME In 2008 Richard Baron reported the activities of an independent five-physician general internal medicine practice that had an electronic health record system.¹⁸ His findings illustrated the many directions in which primary care physicians were pulled throughout the workday. On an average day, each physician handled eighteen in-person visits, twenty-four phone calls, twelve prescription refills, seventeen e-mail messages, twenty lab reports, eleven imaging reports, and fourteen consultation reports. Many of these activities generated additional work for the physician beyond direct patient care.

Kimberly Yarnall and coauthors demonstrated

that providing just the preventive services recommended by the US Preventive Services Task Force to an average-size panel of 2,500 patients would take 7.4 hours per day.¹⁹ This excluded the time needed to enter the exam room, greet the patient, conduct a physical examination, address patients' concerns, and manage chronic illnesses or acute symptoms.

Tosha Wetterneck and colleagues identified 191 discrete tasks that physicians accomplish during a typical primary care office visit, including twenty-six tasks associated with gathering information from patients and thirteen associated with addressing treatment options.²⁰ One important reason for the high level of burnout among primary care physicians is their daily workload.²¹

Several authors have reported that physicians devote a substantial amount of time to patient care activities outside face-to-face visits with patients. Valerie Gilchrist and colleagues found that 39 percent of a physician's day in the office is spent outside the exam room.²² Andrew Gottschalk and Susan Flocke found that physicians spend 45 percent of the day this way, mostly working on documentation and follow-up.²³ The consequences of this allocation of effort are substantial. In settings where fee-for-service is the predominant form of reimbursement, each minute that a physician spends outside direct patient care costs the practice four to six dollars in lost revenue—assuming that a physician providing direct care is reimbursed for that care at a rate of \$250–\$360 per hour.

Jeffrey Farber and coauthors studied physician work flow and determined that each thirty minutes of scheduled patient visits generates an additional 6.7 minutes (range: 1.7–13.8 minutes) of care outside clinic time.²⁴ Across a variety of primary care settings, activities occurring outside scheduled office visits are estimated to result in at least seven to ten hours of work per week for a physician.²⁵

►**CLERICAL WORK:** Clerical work has become a major element of the physician's workday. This work includes signing off on normal and abnormal lab results in paper and electronic inboxes, responding to notifications that a patient failed to show up for a test, processing requests for prescription renewals, and completing computerized order entry.

Physicians handle these tasks in a variety of ways. For example, a physician interviewed at Group Health reported: "I spend 30 minutes before clinic on inbox work and making phone calls. ...I have a working lunch for charting and inbox work; otherwise I am unable to keep up. ...I spend another hour at the end of the day completing charts and working on my inbox. ...

I...might spend another 30–60 minutes that night, clearing out my inbox to prepare for the next day. ...Work on the weekends and days off is generally limited to 1–2 hours to clear out the inbox for the next work day."²⁶

Although electronic health records are designed to help providers transmit and retrieve data more efficiently than paper records, the process of entering required patient and billing information takes up considerable physician time. Our interviews with primary care leaders at several centers reveal the ubiquity of the clerical burden. In the words of Daniel Johnson, a general internist at Mayo Clinic Health System in Menomonie, Wisconsin, "The [electronic health record] has become the eye of the needle through which all medical care must pass. The mind-set is that no care can occur until it is in the [record]" (personal communication, May 10, 2013). In general, up to two-thirds of the time of a typical patient visit is spent on data entry. At many primary care practices, simple orders once given orally by a physician to a nurse now require the time-consuming and cumbersome process of creation, routing, and acknowledgment of an electronic order.

The encroachment of clerical work affects physicians' training as well. Nearly twice as many residents reported spending four or more hours on documentation and clerical work daily as reported spending that much time on direct patient care.²⁷ Senior medical students perceive the burden of paperwork in primary care to exceed that in other specialties.²⁸

►**ADMINISTRATIVE TASKS:** Nonclerical administrative demands, such as speaking with insurance company staff to obtain prior authorization for an imaging test or a medication, also pull physicians away from direct patient care. Lawrence Casalino and coauthors reported that physicians spent 4.3 hours per week on insurance matters,²⁹ and Julie Sakowski and colleagues found that clinicians spent thirty-five minutes per day dealing with billing and insurance.³⁰

Casalino and coauthors also reported that the time physicians, nurses, and clerical staff spent interacting with health plans cost at least \$23–\$31 billion annually.²⁹ In 2011 these authors found that US physicians reported spending 50 percent more time interacting with payers than did physicians in Canada, and that the cost of time devoted to those interactions was four times greater in the United States than in Canada.³¹

►**INEFFICIENT TECHNOLOGY** In the practice of one author of this article (Sinsky), a time-motion analysis showed that on average each physician spends seven minutes a day "refreshing" locked

computers, ten minutes signing in online repeatedly, and thirteen minutes completing rote attestation—for instance, clicking through multiple screens to scan and confirm previously transcribed notes. Most electronic billing is now the responsibility of the provider. Creating an electronic invoice requires, on average, twenty-one clicks, eight scrolls down or up, and five screen changes—together, the tasks require slightly more than a minute. Assuming an average caseload of twenty patients, that means a physician spends more than twenty minutes creating invoices each day.

Based on the literature and our observations, we estimate that at least half of a physician's time during a visit with a patient is spent on clerical work that is of limited value to the patient. Anyone who has spent time in a doctor's office and experienced the doctor interacting more with his or her laptop than with the patient is likely to agree.³²

Opportunities To Improve Efficiency In Primary Care

Research and experience confirm that inefficiency in primary care is widespread. As shown above, physicians currently spend too much time and effort on activities that draw them away from direct patient interaction—activities that neither require a physician's skills and expertise nor build rapport with patients and that therefore should be considered wasteful of physicians' time.

Fortunately, numerous opportunities for improved efficiency exist in primary care practice, with benefits that—in the aggregate—can substantially expand workforce capacity. These opportunities can be grouped into the following categories: teamwork, work flow, technology, and policies.

TEAMWORK Conservatively, research suggests that other staff members could perform tasks that now consume 15 percent of the time physicians spend on patient care activities outside of visits.³³ Based on our observations of innovative primary care practices, we believe that the savings could be much greater.

For instance, many of the clerical duties that physicians have always performed, such as writing a note about each visit, take up more of the physician's time since the introduction of the electronic health record. Practices have found that empowering staff such as health coaches (at Iora Health in Las Vegas, Nevada, for example), medical assistants (at the University of Utah and at Martin's Point Primary Care in Bangor, Maine), or nurses (at Medical Associates Clinic in Dubuque, Iowa) to help doc-

ument the office visit can markedly improve physicians' efficiency. With their clerical obligations reduced, physicians can increase the time they spend interacting directly with patients during visits, manage a larger panel of patients, and avoid having to devote evening and weekend hours to documentation.

Similarly, the roles of clinical staff can be expanded to include management of a physician's electronic in-box under well-defined work plans and protocols. In states from Washington to Maine, practices we visited have found that these efforts yield improved efficiency, resulting in reduced after-hours work for physicians, less overtime for staff members, and improved physician satisfaction.

Another innovation, perhaps implemented most effectively in the primary care practices of Virginia Mason Medical Center, in Seattle, uses medical assistants as "flow managers" for physicians. The flow manager guides the physician's activities throughout the workday with comments such as: "the patient is ready," "return this call," "take care of these tasks," and "sign this form." Physicians find that their day is much more efficient and less stressful when they trust their flow manager to guide them through it.

Beyond their roles as flow managers and scribes, team members can help meet patients' clinical needs more effectively and comprehensively with less use of the physician's time. For example, medical assistants and nurses can be trained to provide routine preventive counseling and to "close" the visit by answering a patient's questions and ensuring that he or she understands the care plan.

In some cases, pharmacists embedded in practices are responsible for protocol-guided care such as the use of anticoagulants and routine hypertension or cholesterol management.³⁴ In other practices, behavioral specialists such as counselors, social workers, and clinical psychologists provide a wide range of mental health care services.³⁵

The gains that can be achieved through using every member of the team effectively are significant. For example, Justin Altschuler and colleagues suggested that up to 77 percent of preventive care and 47 percent of chronic care could be delegated to nonclinician team members, with the potential to more than double the panel size of a primary care physician.³⁶

WORK FLOW Redesigning the clinical work flow has the potential to improve efficiency and reduce waste through the identification of redundant efforts, improvements to the physical layout of a practice, and other factors. Primary care practices we visited that had the luxury of designing new clinical spaces, for instance, have

uncovered opportunities to improve efficiency by placing physicians not in private offices but side by side with the rest of the primary care team in “flow stations.” That arrangement facilitates real-time communication and reduces the down time that can occur when one member of the team can’t find another member to request assistance or share information. HealthPartners, in Minneapolis, determined that the use of flow stations can save thirty minutes of a physician’s time per day (Beth Averbeck, associate medical director for primary care, HealthPartners Medical Group, Minneapolis, personal communication, December 9, 2012).

More modest modifications of the clinic layout can also pay efficiency dividends: HealthPartners found that placing a printer in every exam room can save another twenty minutes daily for each physician, and the use of large monitors near work stations to assess patients’ arrival and visit status can save fifteen minutes more (Averbeck, personal communication). In addition, primary care clinics we visited such as those at Virginia Mason and the South Jordan family medicine clinic at the University of Utah have demonstrated that standardizing the placement of equipment and supplies in every exam room and establishing seamless protocols for restocking can reduce wasted effort and time. Even small efficiency gains multiplied over many visits and many providers can yield substantial new systemwide capacity.

TECHNOLOGY Use of an electronic health record improves efficiency in information retrieval. However, it has created inefficiencies in entering data (such as visit notes and billing information) and in some other tasks (such as orders, messages, and reviews of test results). The cumbersome ordering process for tests has led to anecdotal reports that physicians, in the interest of saving time, put off some tests until the patient’s next visit.³⁷

In time and with feedback from clinicians, the user interface could be improved to reduce the cognitive burden of information input and retrieval, and thus the time required to complete tasks in the electronic record. Whether there are sufficient financial and policy incentives for vendors to make these improvements is uncertain.

Other elements of technology are being harnessed to improve efficiency. As one of us saw during a site visit, Martin’s Point has a problem-oriented software program that enables front-office staff to appropriately triage patients when they call for appointments. The program also has the capacity to recommend treatment without a visit for a small number of straightforward conditions, with a nurse or physician confirming

Even small efficiency gains multiplied over many visits and many providers can yield substantial new systemwide capacity.

the recommendation. The same program incorporates relevant data entered by patients and medical assistants into the visit note to streamline the documentation process.

HealthPartners has established an online evaluation and treatment tool, called Virtuwel, that allows patients to receive care for any one of forty conditions without an office visit. Nurse practitioners who are available around the clock review data supplied by patients, make protocol-guided treatment decisions, and call patients to provide guidance and treatment, typically within thirty minutes after the data are submitted online. If this model were widely adopted, up to 20 percent of acute patient visits could be moved online (Averbeck, personal communication).³⁸

Other types of technology that are becoming more widely used—such as e-mail, patient portals, and home monitoring devices to digitally transfer patients’ health data to providers—offer physicians a growing range of methods to reduce the need for face-to-face visits with some patients. These tools can certainly improve efficiency from the patient’s perspective. The net impact on physicians is less clear: For instance, some physicians resist the use of e-mail and secure messages from patients because they believe it will introduce new burdens.³⁹ Advanced team-based care models that empower nonphysician staff to respond to such communications with standing orders and care protocols will be necessary to free up physicians’ time for higher-level tasks.

POLICIES A reexamination of policies at the institutional, state, and federal levels could facilitate greater efficiency in practice. Examples of well-intended policies that serve as barriers to efficient practice include measures that protect sensitive patient information but preclude other team members from managing a physician’s task list and that require an electronic health record to rapidly and automatically sign a user out, meaning that users must sign in multiple times

during a single patient visit.

Nonclinicians could be allowed to order a limited set of tests, such as a fasting cholesterol level, under established protocols. Scope-of-practice regulations could be standardized to allow all team members to consistently function at the level appropriate to their training and skills. As David Eitrheim, a family physician at Mayo Clinic Health System in Menomonie, Wisconsin, observed, “Every minute spent doing order entry or tasks that don’t require a physician level of training is less time spent on making a correct diagnosis, creating a plan of care, or engaging the patient in motivational interviewing and goal setting” (personal communication, May 10, 2013).

In addition, rules regarding the renewal of prescriptions for chronic conditions could be standardized, with longer intervals between renewals to reduce the time staff spend renewing medications multiple times throughout the year. Based on time-motion analysis and interviews and observations in site visits, we estimate that primary care physicians may waste an average of thirty minutes per day, and nurses sixty minutes per physician per day, on prescription renewal tasks that policy changes—coupled with workflow modifications—could reduce substantially.

Conclusion

A robust primary care workforce is essential to a high-value health care system, and efforts to ensure a sufficient supply of primary care physicians are needed. However, there is a great deal of untapped capacity available in the current primary care workforce. The solution is not to ask hardworking physicians to do more but rather to support them with infrastructure, systems, and staff to enable them to achieve greater efficiency.

A major barrier to incorporating the innovations we have described is the requirement of up-front investments. Training staff in new and expanded roles requires an investment of time on the part of both trainees and trainers. Buying printers for every exam room requires an outlay without an immediate return on investment. Studying clinic work flow requires dedicated time outside of clinical service. As one physician said, “The hardest thing in the beginning is that you first have to take time out to figure out the problem and that takes away from provider time.”⁴⁰

Yet through this process of discovery, important opportunities to increase efficiency can be identified and targeted. The clinics we have visited show that these efforts yield efficiencies that can improve physician satisfaction, reduce evening and weekend work hours, reduce staff over-

time, expand the comprehensiveness of services delivered, and make it possible for more patients to receive care.

It may be a challenge to convince some physicians, administrators, and policy makers that nonclinicians can perform many of the day-to-day elements of care as well as or better than a physician, at lower cost. However, the notion that the physician should be directly in charge of every aspect of care is becoming increasingly outdated. Bundled payment, accountable care organizations, and other emerging reimbursement models that incentivize efficient care may catalyze necessary change among practices and providers.

Even with those models, additional challenges exist, such as developing institutional and regulatory policies that support a team-based model of care. Academic discourse has moved in the direction of support for teams, but many institutional and federal policies have, paradoxically, moved in the opposite direction.

Despite the support for team-based care provided by the Affordable Care Act, we have observed that many institutions are pushing more work onto the physician out of fear of running afoul of institutional or federal compliance issues. The result is that only the physician can turn on the computer, reconcile a patient’s medications, record his or her history, enter orders for tests, compose the after-visit summary, and complete the billing invoice—all tasks that reduce the physician’s capacity to perform higher-value work.

More value can be extracted from the existing physician workforce by empowering other personnel, reengineering work flows, exploiting technology, and updating policies to eliminate waste and leverage the skills of the physician. A medical education is a terrible thing to waste: The unique skills of the physician should be put to use not just a fraction of the time, but the majority of the time.

By disseminating existing innovations that reduce the physician’s clerical work, the capacity of the primary care physician workforce can be greatly increased. Extending these efforts so that physicians delegate certain aspects of direct patient care, including preventive counseling, patient coaching, and certain aspects of acute and chronic care, will yield greater efficiencies. New models of primary care delivery that enhance patient convenience—such as care delivered by phone and secure messaging; web-based tools for screening, evaluation, and management of common acute conditions; and technology-mediated management of chronic illnesses—can create still greater capacity with the existing workforce.

30 minutes

Saved each day

If each physician saved 30 minutes a day in reassigning clerical tasks to others, and spent that time with one additional patient per day, 30–40 million more physician visits could take place each year.

It is important to realize that even incremental gains in efficiency can pay substantial dividends, if enacted widely. For instance, reducing time spent on routine prescription refills and walking repeatedly to a printer outside the exam room or delegating certain in-box tasks to nonphysician members of the team could readily save at least thirty minutes per day. That time could be spent instead on one additional thirty-minute visit with a patient. If each of the 150,000–200,000 primary care providers currently practicing⁴¹ had one more visit on each of the 200 workdays in a year, that would be an additional thirty to forty million visits annually.

In comparison, policy researchers have estimated that the insurance expansion through the Affordable Care Act will generate fifteen to twenty-four million additional primary care visits each year.^{42,43} Thus, independent of growth in the supply of primary care physicians, broad adoption of modest efforts to improve efficiency could lead to sufficient gains in workforce capacity to meet this additional demand.

Altogether, there is great potential in primary care to increase physician capacity through enhanced efficiency without relying on more physicians as the chief solution to workforce shortages. Whether that increased capacity would lead to larger panel sizes, improved access for patients (either reduced wait times, improved

New models of primary care delivery that enhance patient convenience can create still greater capacity with the existing workforce.

continuity of care, or both), higher-quality care, or more comprehensive care would depend upon many local factors—including the needs of the population, the predominant payment models, and the goals of the physician.

Ideally, the increased capacity would be spread out across each of these desirable outcomes, resulting in primary care providers who served more patients, better met their patients' needs, earned more, went home earlier, did less work at home, and were thereby motivated to stay in practice longer. ■

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