

## CLINICAL REVIEW

## A Narrative Review of Slow Medicine Outcomes

Rani Marx, PhD, MPH and James G. Kahn, MD, MPH

**Background:** Primary care practice in the United States suffers from short consultation duration and distracting electronic health record tasks. This leads to patient and physician dissatisfaction and physician burnout, as well as potentially unnecessary referrals and interventions. Slow medicine – providing longer and higher-quality consultations – has been proposed to improve medical care quality and patient outcomes. However, definitive outcome data for US settings are lacking.

**Methods:** Following a structured narrative approach, we identified, reviewed, and synthesized existing reports (peer-reviewed and grey) to determine if there is sufficient evidence to support systematic evaluation of slow medicine in the US. We assessed whether longer versus shorter face-to-face primary care consultations were associated with quantitative patient outcomes including utilization; prevention; visit elements; medication adherence and prescription volume; mortality; and costs.

**Results:** We found suggestive evidence of substantial savings in hospital use and costs in varied geographic and clinical settings. However, this evidence lacks investigative rigor such as convincing prospective or natural randomization.

**Conclusions:** With potentially significant health and financial benefits from slow medicine and little risk to subjects, randomized trials, natural experiments, and mixed methods evaluations are strongly indicated. We discuss the need for modified payment practices to facilitate a slow medicine approach. (J Am Board Fam Med 2021;34:1249–1264.)

**Keywords:** Consultation, Narrative Review, Physician–Patient Relations, Primary Health Care, Slow Medicine

## Background

The time-constrained primary care delivery model that dominates United States (US) health care pleases neither clinicians nor patients. Although both groups desire high-quality consultations, visits are typically brief, focused on directed clinical data gathering, with the physician tethered to a computer.<sup>1–3</sup> The financing structure of US health care drives these time constraints,<sup>4–7</sup> in particular Medicare’s “relative value unit” payment model.<sup>8</sup> Diagnostic and therapeutic advances, proliferation of clinical practice guidelines, increased preventive service demands on primary care physicians, and federal reporting requirements

contribute to increasingly circumscribed patient–physician interaction.<sup>8–10</sup>

The expanding demands of the electronic health record (EHR) further erode time.<sup>11–13</sup> The EHR increases physician workload, both during visits and after hours, but diminishes face-to-face and hands-on interactions between doctor and patient (detail in Appendix). Designed largely for billing purposes, the EHR has inadvertently impaired clinical interaction. Many EHR characteristics are unique to the US, with greater complexity and requirements even for the same vendor’s product.<sup>12</sup> Only about half of physician time is spent on direct interaction with patients, even less if EHR tasks in the patient’s presence are strictly excluded.<sup>1,2,14</sup> The complexity of coding using the relative value units (RVUs) demanded of physicians to reimburse for Medicare patients may further erode consultation duration and unfairly penalize practitioners who are less knowledgeable or creative about their use.

“Fast medicine” can backfire clinically. It may preclude sufficient time for appropriate exploratory discussion and contemplation, yielding an array of undesirable outcomes: impaired

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From Initiative for Slow Medicine, Berkeley, CA (RM, JGK); Institute for Health Policy Studies, University of California, San Francisco (JGK).

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Corresponding author: Rani Marx, PhD, MPH, Initiative for Slow Medicine, 81 Alvarado Road, Berkeley, CA 94705 (E-mail: [ranimarx1960@gmail.com](mailto:ranimarx1960@gmail.com)).

physician–patient communication; missed or incorrect diagnoses; unneeded tests, procedures, and specialist consultations; overprescription; avoidable emergency visits and hospitalizations; medical errors; inability to assess and address the social determinants of health that influence a patient’s prognosis and care plan; physician and patient dissatisfaction; and a rising epidemic of physician burnout.<sup>1,6,15–22</sup>

Myriad publications, organizations, and movements describe the underlying causes and offer tools and resources for addressing this erosion of time (detail in Appendix). Some focus on particular settings or populations, while others are more broadly targeted.<sup>23–29</sup> However, most proposed solutions function within our existing health care structure and the accompanying time-constrained clinical consultation.

“Slow medicine” is one promising approach to reclaim quality consultation time. The idea originated in 2002<sup>30</sup> inspired by the 1986 Italian slow food movement and other *slow* movements.<sup>31,32</sup> In 2011, Italy established a Slow Medicine Society<sup>33</sup> aligned closely with the Choosing Wisely movement<sup>24</sup> and convened a conference.<sup>34</sup> The Netherlands and Brazil have also published slow medicine precepts.

The central concept is to take the time needed for the clinical task at hand. Slow medicine proponents suggest that giving doctors enough time to thoroughly learn about their patients (medically, psychologically, and socially) will enable an accurate diagnosis and effective treatment, improve patient outcomes, increase patient and physician satisfaction, and reduce costs.<sup>30–36</sup>

Very few clinical settings embrace slow medicine. Concierge medicine and direct primary care (CM/DPC) are the prime examples, structurally diverging from fast medical practice. Physician and patient desire for more face-to-face time helps explain their appeal. Both models charge patients monthly or annual fees; have smaller patient panels than usual primary care; and offer easier access and longer, often unlimited, appointments.<sup>37–40</sup> Appointments usually include ongoing care, limited urgent care, and some preventive screenings (detail in Appendix). However, reports on the successes of DPC and concierge care are generally not published in the scientific literature nor use optimal evaluation designs.<sup>37,38</sup>

In general, studies empirically comparing slow to fast medicine in the US are sparse, lacking formal trials (global literature detail in Appendix). Review articles do not find US studies of high enough quality to contribute to formal syntheses. There are no rigorous studies with

strong comparison groups on patient outcomes related specifically to consultation duration; evaluations of lengthened consultations incorporate other intervention components, making it impossible to isolate the effects of duration. Furthermore, studies are hard to generalize due to location or date. Thus, the final word on slow medicine is not in.

Our goal was to identify, review, and summarize existing reports to determine if there is enough evidence to support randomized controlled trials (RCTs) or other systematic evaluation of slow medicine. In other words, is existing evidence sufficiently suggestive of a clinical or economic benefit to warrant best practice clinical trials in the US?

## Methods

“Slow medicine” has no universal defining criteria but usually includes elements of increased consultation duration and improved engagement, as well as shared decision-making with patients.<sup>34</sup> For this review, we focused on the effect of increased face-to-face consultation duration (with or without other care enhancements) on quantified clinical process and health outcomes. We confined our scope to primary care, including CM and DPC.

We found publications that compared the effect of shorter and longer consultations on utilization (hospitalization, hospital readmission, emergency department [ED] visits, acute care use, surgeries); preventive care (service delivery, quality indicator performance, immunizations, referrals); visit performance (problems addressed, in-depth assessment, patient history scores, physical examination scores, emotional distress diagnosis, coding for chronic conditions); medication adherence and prescription volume; mortality; and cost. We omitted studies that focus solely on patient or physician satisfaction or communication.

We limited our review to the US because of our unique circumstances: complex insurance and reimbursement arrangements alongside related time-consuming EHRs; malpractice and litigation; primary care training and practice environment; the role of specialist referrals; and attitudes, practices, and incentives regarding prescriptions, testing and screening, and interventions.

We searched PubMed and Google using the following terms and syntax: [primary care OR ambulatory care] AND [visit length OR consultation duration OR consultation length OR patient

physician encounter OR time with patients OR visit time OR panel size], plus further targeting with US, intervention, and patient outcomes. We also searched using keywords contained in articles included in our review. Finally, we reviewed citations in published reports and e-mailed experts in the field.

## Results

We found 11 assessments, in 3 categories, that included both information on consultation duration (quantified or implicit) and outcomes of interest: 4 case studies of the effects of concierge care<sup>1</sup> and DPC,<sup>3</sup> with increased consultation time and no insurance, EHR, or meaningful use constraints; 3 evaluations of increased consultation duration along with other enhancements for elders; and 4 cross-sectional evaluations of nationally representative data assessing the association between consultation duration and patient outcomes (3 precede widespread EHR use).

We consider these 11 assessments representative of a slow medicine approach either due to lack of restrictions on or lengthier consultation duration (concierge care and DPC); lengthier consultation duration, smaller patient panel size, or more frequent visits (multifaceted care models for elders); and measurement of consultation duration associated with outcomes of interest (cross-sectional evaluations).

All studies are discussed below, with more detailed numeric results presented in Table 1 (methods) and Table 2 (results), and in the Appendix. Information on methods and outcomes that are present for some but not all assessments reflect reporting inconsistencies.

### *Assessments of Concierge Medicine and Direct Primary Care*

Use and cost data from CM and DPC studies are limited by lack of randomization and, in some instances, inadequate reporting of methods and results. Findings as reported are strongly favorable.

#### *Concierge Care: MDVIP*

MDVIP provides primary care in 45 states, individualizing preventive care guided via screening questionnaires and lab diagnostics. We found 2 evaluations.

A 2006 to 2010 study in 5 states found 49% to 72% lower utilization for elective, nonelective, emergent, urgent, avoidable, and unavoidable

admissions for MDVIP members than for nonmembers insured by commercial plans, and 71% to 79% lower use than for Medicare enrollees.<sup>41</sup> In 2009, MDVIP Medicare enrollees were readmitted less frequently than nonmembers for several conditions. Lowered use led to overall cost savings versus both commercial (\$10 million) and Medicare (\$109 million) enrollees.

The interpretation of these differences is unclear because concierge patients often differ from other patient groups due to self-selection (they may be more motivated to address health concerns or have conditions that have not been sufficiently addressed previously), and concierge physicians may practice differently than peers. Concierge patients may be healthier, and concierge physicians may be more motivated and adept at providing prevention.<sup>41,42</sup> Demographics may also differ: a 2005 survey found fewer CM and DPC patients of color compared with a national random sample of conventional primary care patients.<sup>43</sup>

A more recent and rigorous 2009 to 2014 study compared MDVIP members and controls matched on propensity to enroll in MDVIP from the United HealthCare employer health plan database. It found significant reductions in emergency room (ER) and urgent care use and inpatient readmissions but not inpatient admissions.<sup>42</sup> Medical and pharmacy expenditures were higher for MDVIP members in year 1 but similar by year 3. Increasing cost savings of \$150 per member per month (pmpm; the average membership cost), was realized over 3 years. Member characteristics associated with higher savings differed by year.

As with the earlier study, self-selection cannot be entirely eliminated as an explanation, even though matching incorporated enrollment propensity scores.

#### *DPCs: Qliance, Iora, and R-Health*

Utilization assessments from DPC practices are few and challenging to assess because they are not reported in the scientific literature. Two large DPC providers, Qliance and Iora, reported reductions in costly use compared with non-DPC participants from the same population groups.

#### *Qliance*

Qliance, in the Seattle area, served employees of many large employers.<sup>44,45</sup> Unpublished 2010

**Table 1. Methods of Reviewed Reports (1979–2019) on the Effects of Primary Care Consultation Duration**

Category and Setting	Author, Year, Pub Code,* Reference #	Years of Data	Location, Clinical Setting	Population, Patient Characteristics	Intervention	Consultation Duration Indicator	Study Design/n	Control/Comparison Strategy
<b>Concierge Medicine and Direct Primary Care</b>								
MDVIP	Klames 2012 S <sup>41</sup>	2006 to 2010	NY, FL, VA, AZ, NV Clinical setting n.s.	Two analyses: Medicare >65 years, commercial <65 years	Concierge care (MDVIP) Personalized prevention based on questionnaires and lab tests	Panel size < 600	Observational, longitudinal. MDVIP patients matched to non-MDVIP on state, age, payer n: see next column	Medicare: MDVIP (n = 363 to 563) versus non (>1 million) Commercial: MDVIP (n = 1770 to 2768) versus non (>2.2 million)
	Musich 2016 S <sup>42</sup>	2009 to 2014	Multisite US Clinical setting n.s.	Age 35 to 84 years (mean 66); 50% to 55% employer health plan members	Personalized medicine: focus on healthy behaviors, prevention, care coordination	60 to 90 minutes annual appt: screening diagnosis, coaching, "executive style" physical	Observational, longitudinal Multivariate regression controlled for demographics, SES, insurance plan type, region, supply of health services in zip code, health status, psychological diagnosis group, # inpatient admits before study n = 10,186 year 1; 5,908 year 2; 3,915 year 3	I: United Healthcare MDVIP plan members C: randomly selected United Healthcare plan members, propensity score paired with MDVIP members
Qliance	Qliance 2015 P <sup>47</sup> Wu 2010 P <sup>48</sup>	2010	Seattle metro, WA 3 clinics	Non-Medicare	DPC	Panel size ≤800; typically 10 patients/ doctor/day, 30 to 60 minutes.	Observational n = 3088 Qliance	Qliance versus similar populations from Ingenix health and other unspecified
	Qliance 2015 P <sup>47</sup> Huff 2015 J <sup>45</sup>	2013 and 2014	Seattle metro, WA 32 providers at 5 clinics serving ~25,000 patients	Employees of large companies	DPC	n.s.	Observational n = 4000 per group	Qliance versus employees of same companies not in Qliance
Iora	Govindarajan 2018 S <sup>48</sup>	2010 to 2017	8 states (CT, NH, GA, MA, CO, WA, AZ, NV) 24 clinical locations, 8 cities	n.s.	DPC. Extensive use of health coaches, custom IT system	Average appt = 1 hour.	Single cohort, longitudinal n > 400	Change over time: no controls
	Shenkus 2015 N <sup>49</sup>	n.s.	Location n.s. 3 clinical sites	n.s.	DPC	Average appt = 1 hour	Observational n not specified	Conventional care patients (no details)
	Schiff 2016 P <sup>50</sup>	2013 to 2016	Hanover, NH1 clinical site	Employees at 3 companies	DPC. Care teams assigned to each patient: doctor, nurse, health coach	n.s.	Observational n not specified	Matched controls outside DPC
R-Health	Beck 2017 N <sup>50</sup> Brubaker 2019 N <sup>51</sup>	2016 to 2019	2 states (NJ, PA) 6 clinical offices	Mainly NJ public sector employees	DPC (R-Health)	Panel size cap = 1000	Cohort n = 3999	Change over time: no controls.

*Continued*

Table 1. Continued

Category and Setting	Author, Year, Pub Code,* Reference #	Years of Data	Location, Clinical Setting	Population, Patient Characteristics	Intervention	Consultation Duration Indicator	Study Design/n	Control/Comparison Strategy
Multifaceted Care Models in Elders								
ChemMed	Taniguchi 2013 S <sup>52</sup>	2010	FL, 4 senior medical centers	>65 Medicare Advantage; low-mid income, 5 + chronic conditions	Custom EHR, intensive coaching, 1-stop multi-specialty, on-site pharmacy	Panel size: 350 to 450; 18 patients/day/doctor; average 13.3 visits/year/patient	Cross-sectional n = 8527	National mean
	Ghani 2018 S <sup>53</sup>	2014 to 2015	7 states, 20 sites	>65 Medicare Advantage	"High touch": walk-in, courtesy transport, patient EHR access, urgent care, on-site CVD prevention and lab/imaging	Panel: 450 (vs 1000 controls); longer and more frequent visits: 189 minutes per patient-year (vs 90)	Retrospective cohort, propensity-matched to controls on age, gender, comorbidity/claims n = 5695 per group	Controls in multispecialty practice Ingenix health and satellite clinics
	Chen 2017 JC <sup>54</sup>	2015 to 2016	40 sites in 9 markets	>65 Medicare Advantage, 66% racial minority, mean chronic cdmns = 5	n.s.	189 minutes per patient-year (vs 20.9 NAMCS)	Cross-sectional n not reported	NAMCS and other Medicare enrollees in same counties
WellMed	Phillips 2011 S <sup>55</sup>	2000 to 2008	21 San Antonio, TX clinics	>65 Medicare Advantage	Team-based, coordinated care and transport, chronic disease programs, some in-house pharmacies, customized EHR	650 for MDs with hospital care, 750 others; patient panel size: 104 to 941 (480 median)	Cohort n = 14,411 to 18,491	Change over time; no controls.
Signature	Signature 2015 R <sup>56</sup>	2012 to 2013	Brockton, MA Primary care practices of 3 doctors	>65 Medicare Advantage with >3 of 5 chronic conditions that worsen over time	Complex care clinic: team-based, links/transport to services, coordinate care, post-hospital continuity, meds reconciliation, quarterly care visit; monthly visit goal, customized EHR	30 to 40 instead of 15 consultations	Parallel cohorts n = 320	1080 usual care patients

Continued

**Table 1. Continued**

Category and Setting	Author, Year, Pub Code,* Reference #	Years of Data	Location, Clinical Setting	Population, Patient Characteristics	Intervention	Consultation Duration Indicator	Study Design/n	Control/Comparison Strategy
Observational Studies on Consultation Duration and Patient Outcomes								
NAMCS	Chen 2009 S <sup>58</sup>	1997 to 2004	Nationally representative sample of primary care	18 + year-olds	No intervention	n.r.	Survey, association of visit duration, and quality of care	
North Carolina Ambulatory Care	Hulka 1979 S <sup>59</sup>	1976 to 1977	4 population centers in NC, 31 doctors in solo or group practice	90% white; median age 40 Categories: (1) 1 year follow-up of adult onset diabetics and initial care hypertensives; (2) annual physicals; (3) women w/acute dysuria	No intervention	Minutes per patient 9.3 to 37.5; patients per hour 1.6 to 6.4.	Observational, based on questionnaires and medical records n = 869	
Group Health Cooperative, Puget Sound	Hartzema 1983 S <sup>60</sup>	11 months, 2 dates	Western WA, HMO, 80 family practice doctors, 11 primary care clinics	0 to 40 years: 60%, 41 to 64: 30%; 65+: 9%	No intervention	Consult duration: 17.8 minutes (13.3 to 26.1); panel size: 1600; visits 355/mo	Observational Multivariate stepwise regression 245,000 enrollees	
Pennsylvania Primary Care Centers	Camasso 1994 S <sup>61</sup>	7 months, 1985	15 publicly funded primary care centers, 64 doctors, in PA	Age 18+, receiving preventive care or physical. Excludes patients w/chronic NCDs	No intervention	Consult duration: 16.7 minutes (10 to 60); patients/hour: 3.6 (1 to 6)	Observational n = 1424 Linear and stepwise or piecewise regression	

CVD, cardiovascular disease; DPC, direct primary care; EHR, electronic health record; IT, information technology; NAMCS, National Ambulatory Care Medical Survey; NCD, noncommunicable disease; SES, socioeconomic status.

\*Publication codes (for primary reporting): N = newspaper; S = scientific research article; JC = academic journal commentary; P = publicity, trade journal, R = report. Electronic copies of tables available from authors.



**Table 2. Results of Reviewed Reports (1979–2019) on the Effects of Primary Care Consultation Duration**

Category and Setting	Author, Year, Pub Code,* Reference #	Utilization	Cost	Clinical†	Remarks
Concierge Medicine and Direct Primary Care					
MDVIP	Klimes 2012 S <sup>41</sup>	Hospital admission rates lower in MDVIP by these percentages (by year): Commercial: 49%, 58%, 61%, 65%, 72% Medicare: 71%, 71%, 74%, 75%, 79% Readmissions lower in MDVIP Medicare patients in 2009 by 97% acute MI, 95% CHF, 91% pneumonia	Estimated savings to the 5 states: \$109.2 million Medicare, \$10.2 million commercial	–	Concierge care enrollment voluntary, thus concierge patients and concierge MDs may differ; deaths not measured
	Musich 2016 S <sup>42</sup>	MDVIP lower ED visits years 2 and 3; lower urgent care use all 3 years; lower inpatient readmits year 1; no differences hospital admissions	Mean monthly cost increase (vs controls) \$86 year 1, \$29 year 2, \$2 year 3 Savings ≥ \$150 pmpm (monthly fee) for 24%, 26%, 63% MDVIP in years 1 to 3 Patient traits associated w/savings magnitude: Year 1: chronic conditions, more prescriptions, older (55 to 64) Year 2: chronic conditions, 35 to 64 Year 3: no distinctions	–	Self-selection may influence results despite matching
Qliance	Qliance 2015 P <sup>47</sup> Wu 2010 P <sup>44</sup>	92% more primary care visits Fewer ED visits (by 65%), hospital visits (35%), hospital days (43%), specialist visits (66%), advanced radiology (63%), surgeries (82%)	–	–	No details enabling evaluation of results
	Qliance 2015 P <sup>47</sup> Huff 2015 JC <sup>45</sup>	58% more primary care visits Fewer ED visits (by 14%), hospital days (60%), specialist visits (14%), advanced radiology (29%)	Savings per patient-year: net \$679 (19.6% of fees). Includes <i>decreases</i> \$5 ED, \$417 hospital, \$436 specialists, \$82 advanced radiology; and <i>increase</i> \$251 primary care	–	Enrollment voluntary; no data. Available to determine comparability of enrollees to controls
Iora	Govindarajan 2018 S <sup>48</sup>	40% reduction in hospitalizations	–	Patient retention 98%, 90% patients BP under control versus 60% in the industry	No control group
	Shemkus 2015 N <sup>49</sup>	1 site: 37% fewer hospitalizations; 2 sites: 30% fewer ER visits	1 site: 12% decrease in costs	–	No detail on controls
	Schiff 2016 P <sup>50</sup>	35% fewer hospitalizations, 23% fewer ER visits	–	Patients w/high BP controlled = 64% in 2013 to 86% in 2016	No detail on controls

*Continued*

Table 2. Continued

Category and Setting	Author, Year, Pub Code,* Reference #	Utilization	Cost	Clinical†	Remarks
R-Health	Beck 2017 N <sup>39</sup> Brubaker 2019 N <sup>51</sup>	⌊	15% savings to employers on total costs; 27% savings for 1 employer over 4 years via fewer ED and UC visits	High prevalence of cholesterol and cancer screenings; drug adherence, blood sugar control	No controls; #s reported are for R-Health and other DPCs serving private-sector employers
Multifaceted Care Models in Elders ChenMed	Tanio 2013 S <sup>52</sup>	1058 hospital days/1000 versus 1712 national	⌊	Patients w/diabetes: 44% Rx possession increased to 73%	Controls national mean
	Ghany 2018 S <sup>53</sup>	Lower hospital admissions (0.10 vs 0.20, <i>P</i> <.01); more annual primary care visits (8.7 vs 3.8, <i>P</i> <.01)	Care costs (\$87 median pmpm, 95% CI: \$26 to 278) ChenMed versus \$121 (95% CI, \$52 to \$284) controls ( <i>P</i> <.01)	More frequent use of 5 cardiovascular medications (all< 0.01)	Matching on only 3 factors
	Chen 2017 JC <sup>54</sup>	ER visits 33.6% lower than other Medicare (500 vs 753 per 1000 patients) Hospital days 26% lower (1246 vs 1677 per 1000 patients)	ED \$269,000 savings/1000 patients Hospital \$979,000 savings/1000 patients	⌊	Controls from general population, not matched
	Phillips 2011 S <sup>55</sup>	No significant change in ER or hospital admissions/readmissions	⌊	Rise in preventive screening for colon cancer and mammo and screening + optimal levels for HgA1c, LDL, and BP in high-risk groups. Mortality half state age-specific rate	Minimal outcome data reported; no control group
Signature	Signature 2015 R <sup>56</sup>	Intervention 30% fewer ED visits than control; 43 % fewer acute hospital admissions	⌊	⌊	Based on interview, no data published Decent control strategy
Observational Studies on Consultation Duration and Patient Outcomes					
NAMCS	Chen2009 S <sup>58</sup>	Visits with any of 3 counseling/screening indicators (dietary, exercise, BP check) 2.6 to 4.2 minutes longer than visits without ( <i>P</i> <.001)	⌊	Appropriate treatment not associated with visit length	
North Carolina Ambulatory Care	Hulka 1979 S <sup>59</sup>	⌊		Doctors w/heavier workload lower adherence for hypertensives and women w/dysuria; less patient history detail for all but women w/dysuria; less physical exam detail for diabetics. Greater lab for patients w/general exams and women w/dysuria	Unclear if busy doctors doing less or recording less Small patient n per doctor <sup>1-15</sup>

Continued



Table 2. Continued

Category and Setting	Author, Year, Pub Code,* Reference #	Utilization	Cost	Clinical†	Remarks
Group Health Cooperative, Puget Sound	Hartzema 1983 S <sup>60</sup>	Prescription volume associated with larger panel size and older patients independent of # visits (46% of variance); patients/hour and visits/ month (14%); clinic differences (8%)	—	—	
Pennsylvania Primary Care Centers	Camasso 1994 S <sup>61</sup>	—	Busier doctors more likely to make referrals.	Patients of busier doctors more likely to receive procedures from support staff, less likely to receive immunizations, full medical history, and preventive care for women	Exclusion of chronic conditions skews primary care population

P values are noted where available.

NCD, noncommunicable disease; SES, socioeconomic status.

BP, blood pressure; CHF, congestive heart failure; DPC, direct primary care; ED, emergency department; ER, emergency room; HgA1c, hemoglobin A1c; LDL, low-density lipoprotein; MI, myocardial infarction; NAMCS, National Ambulatory Care Medical Survey; pmpm, per member per month; UC, urgent care.

\*Publication codes (for primary reporting): N = newspaper, S = scientific research article, JC = academic journal commentary, P = publicity, trade journal, R = report.

†Preventive care, examination-related performance, medication adherence and prescription volume, and mortality.

Electronic copies of tables available from authors.

claims data for non-Medicare Qliance enrollees found considerably higher primary care use (92%) but greatly reduced use (ranging from 35% fewer hospitalizations to 82% fewer surgeries) compared with similar populations.<sup>46</sup>

A 2015 news release comparing 2013 and 2014 claims data for Qliance enrollees to nonenrollees working for the same companies reported similar utilization findings.<sup>47</sup> The added cost of primary care was offset by nearly 20% savings on other types of use; annual savings per patient ranged from \$5 for ED visits to \$436 for specialist visits.

### *Iora*

Iora Health, currently with 47 clinics in 9 states, reported up to 20% decreased health care spending, a 40% reduction in hospitalization, and favorable blood pressure control (90%) compared with industry standards (60%) between 2010 and 2017.<sup>48</sup> Earlier Iora results found over a third lower hospitalization and just over 10% lower health care spending at 1 site and 23% to 30% fewer emergency department visits at 2 sites, compared with patients outside the practice matched on unspecified criteria.<sup>49,50</sup> Iora primarily serves full-risk Medicare Advantage patients and is in the process of being acquired by One Medical, a concierge fee-for-service provider.

These estimates lack control groups and instead are based on patterns over time for enrollees.

### *R-Health*

R-Health launched a pilot program for New Jersey public employees and retirees in 2016 at 6 offices, adding 4 offices serving large employers in Southeastern Pennsylvania.<sup>39,51</sup> Ameriflex, a private-sector employer that uses R-Health and other DPCs, reported a 15% overall cost savings and high prevalence of preventive screening, medication adherence, and blood sugar control in 2017 (no numbers provided).<sup>39</sup> Over 4 years, 27% cost savings were attributed primarily to reduced ER and urgent care use.<sup>51</sup> The absence of details precludes commenting on the quality of R-Health evaluations.

### ***Assessments of Multifaceted Care Models in Elders***

Three health care organizations assessed the effects of a more comprehensive service delivery model for Medicare Advantage enrollees. Two of the 3 explicitly noted longer consultation duration (ChenMed

and Signature), 2 had smaller patient panel sizes (ChenMed and WellMed), and 2 had more frequent visits (ChenMed and Signature). All 3 included additional enhancements and all reported improvements in patient outcomes. However, the contribution of consultation duration cannot be isolated from other intervention elements.

### *ChenMed*

Dr. James Chen founded ChenMed in Miami in 1985 after his experience as a cancer patient, adopting a “high intensity primary care” approach. Smaller patient panel size, a prevention emphasis, in-house multispecialty and pharmacy services, and other enhancements characterize the clinics. A 2010 evaluation of 4 Miami-area health centers found a two-thirds decrease in hospital days among Medicare Advantage enrollees with 5 or more chronic conditions and low to moderate incomes compared with the national average, and one-third increase in medication adherence for patients with diabetes.<sup>52</sup>

By 2014, ChenMed expanded to 7 states. A propensity-matched 2014–15 comparison for clinically high-risk primary care patients at more than 20 offices to those at a value-based multispecialty practice and its satellite clinics found \$34 lower monthly health care costs, lower hospital admissions, more annual primary care visits, and more frequent use of 5 cardiovascular medications.<sup>53</sup>

In 2015–16, ChenMed had 40 locations in 9 US markets.<sup>54</sup> ChenMed patients had a third fewer ER visits than Medicare beneficiaries in the same counties and a quarter fewer hospital days that together yielded savings of \$1.2 million per 1000 patients.

Although ChenMed patient populations seem high risk, potential bias due to self-selection for enrollment remains an important consideration. It is unclear which of many factors, including longer consultation duration, contribute to the observed differences.

### *WellMed*

WellMed, an accountable care organization (ACO), evaluated 21 San Antonio clinics with small patient panel size, team-based care, chronic disease programs, in-house pharmacies at many sites, coordinated care and transportation, and a customized EHR, among other enhancements.<sup>55</sup> Billing and EHR data from 2000 to 2008 found no significant differences in use for ED visits, hospitalization, or

hospital readmission. Increases in 12 clinical process measures (including colon cancer screening and mammography) and screening and optimal levels of HbA1c, LDL, and blood pressure for patients in specific high-risk groups, were reported. Mortality rates were half of age-specific rates for Texas peers.

It is unclear which aspects of the care model contributed to observed clinical improvements, nor is it possible to control for self-selection bias.

### *Signature Healthcare*

In 2013, Signature Healthcare implemented a complex care clinic in Brockton, MA for 320 frail elders with managed Medicare.<sup>56,57</sup> The team-based coordinated care model included links to community services, routine risk screening, posthospital discharge follow-up, medication reconciliation for patients at high risk of interactions, home visits, and an EHR template to identify geriatric issues. Patients were seen quarterly to monthly in primary care, and visit slots were increased from 15 to between 30 and 40 minutes.

Claims data for all high-risk elders were compared with patients receiving usual care the year before versus after complex care clinic implementation. The intervention group had a third fewer ED visits and just over 40% decreased acute admissions, whereas usual care patients had increased ED use and no change in acute admissions.

While in keeping with the 2 other studies with elders, the description of this intervention is difficult to evaluate as it is based on an interview (not a published report) and general descriptions of the intervention. The comparability of the intervention and control groups is unclear.

### **Observational Cross-Sectional Studies**

Four observational studies in usual care settings,<sup>58–61</sup> including 3 before widespread EHR use,<sup>59–61</sup> assessed the association of visit duration and clinical process outcomes. Changes in medical care structure, incentives, and information technology (IT) demands since these studies were conducted are considerable and should be considered when interpreting the results. All of these studies lack comparison groups but otherwise use rigorous methods, and all but 1<sup>59</sup> use multivariate analytics.

### *National Sample*

A retrospective analysis of a nationally representative sample of general primary care medical exams between 1997 and 2004 from the National

Ambulatory Care Medical Survey (NAMCS) found no association between appropriate prescribing practices and visit length.<sup>58</sup> However, all 3 counseling or screening indicators (dietary, exercise, blood pressure check) were significantly associated with longer visits; visits where any of the 3 counseling or screening indicators were provided were 2.6 to 4.2 minutes longer than visits for patients who did not receive these interventions.

### *North Carolina*

A study conducted in 1976 and 1977 in 4 major North Carolina population centers examined adherence to physician-defined consensus criteria on history taking, physical examination, and lab and other procedure ordering and recording among 31 randomly sampled ambulatory care physicians in solo and group practices.<sup>59</sup> Authors hypothesized an inverse relationship between workload and consensus criteria adherence.

Physicians with heavier workloads were significantly less likely to adhere to consensus criteria for hypertensives and women with dysuria; record patient history details (except for women with dysuria); and record physical examination details for patients with diabetes. However, physicians with heavier workloads were more likely to obtain and record lab and other procedure data for patients receiving general exams and for women with dysuria. The authors estimated that half the observed differences were real and not due to recording differences.

### *Western Washington*

An 11-month retrospective study published in 1983 examined physician and patient characteristics associated with prescribing patterns for 80 family practice physicians at 111 primary care clinics with the Group Health Cooperative of Puget Sound in Western Washington.<sup>60</sup> Based on stepwise multivariate regression, independent of number of visits, physicians with larger panels wrote more prescriptions (explaining 23% of the variance). Older panel age, number of patients seen per hour and visits per month, and interclinic differences were also independently predictive of prescribing patterns.

### *Pennsylvania*

A 1985 medical record review at 15 publicly funded Pennsylvania primary care centers evaluated the association between patient volume and preventive

and well care delivery.<sup>61</sup> Busier physicians made more referrals, were significantly more likely to delegate certain procedures to support staff, and significantly less often provided immunizations and preventive care for women or elicited risk behaviors and medical history. Both less busy and busier physicians conducted fewer blood count procedures.

## Discussion

Evidence we located suggests that in the United States, increased primary care consultation duration may foster improved clinical processes and patient outcomes and reduce use of expensive emergency and inpatient services. Interventions increasing consultation duration often result in greater primary care costs, but these were more than offset by decreased inpatient, ED, and specialist use.<sup>46,47,53</sup>

However, the data are not robust. Participants in settings with longer consultation duration are usually self-selected and thus potentially different in their health care habits. Patients may enter programs targeting high-risk patients due to frequent inpatient use and then regress to the mean (eg, as with diabetes),<sup>62</sup> creating a false impression of beneficial effects of care. Further, consultation duration is usually bundled with other care delivery enhancements, making its effects impossible to isolate. Finally, data disseminated in news or marketing channels sharply reduces scientific credibility. While we may believe that longer consultations should yield improved care and outcomes, and as suggestive as findings may be, the extant US data are inconclusive.

Nevertheless, the potential clinical and economic gains of slow medicine are substantial. We believe it is time to conduct high-quality clinical research (ie, well-done RCTs, natural experiments, and mixed-methods studies employing qualitative and quantitative approaches) on the effect of consultation duration on preventive care, visit elements, medication adherence and prescription volume, and mortality as outcomes of interest in addition to utilization and cost. Measures of physician and patient experience and satisfaction should be included in further studies. Time spent face-to-face by physicians with patients should be differentiated from EHR tasks, follow-up, administrative time, and so forth, using techniques such as observation and EHR logs that have set the standard in the literature.

We need definitive evidence to inform such substantial changes in the organization of care. Criteria for a clinical trial are met: we have a plausibly superior intervention and are in equipoise. Adding time will not place study participants at risk; to the contrary, they, along with physicians, will likely perceive the added time favorably and may realize clinical benefit. Randomization could occur at different levels, each with advantages and limitations: the clinical unit, the provider, or the patient.

Fast medicine primary care settings with longer consultation duration are worthy of study. These may include settings where physician practice style overrides pressures to restrict time with patients, teaching hospitals that assign physician researchers smaller patient panel sizes, practitioners who more fully capture diagnoses through RVU coding and thus gain time, organizations with different demands and constraints such as the Veteran's Administration, and rural settings where family physicians in individual practice still conduct house calls.

Natural experiments also have potential because they take advantage of factors beyond investigator control that create a natural randomization (eg, policy or budget decisions that start or stop programs). The best opportunity for a natural experiment we know of is the geographic staging of the DPC R-Health in New Jersey and Strada in Nebraska. The stepwise phasing in of R-Health and Strada should permit comparison of utilization in initial and delayed areas. As DPCs, they are not involved with insurance company reimbursement requirements and thus are not subject to limitations on consultation duration.

Large-scale demonstration projects may eventually have a role. If high-quality evidence at small scale confirms benefits, the next area of inquiry will be the feasibility and effects of implementation in larger patient populations, such as entire health systems in a metropolitan area.

High-quality clinical encounter data will facilitate research using any of these designs. Current clinical data reporting is piecemeal, available by health care provider and, in different form, by insurer. Enhancing existing efforts to combine claims databases would improve clinical data uniformity, quality, and timeliness. A unified health insurance system, such as single payer, would provide excellent data and might also facilitate compensation

structure adjustments necessary to foster longer consultation duration.<sup>63</sup>

In the absence of a unified health insurance system, efforts to pool and share encrypted longitudinal patient data to evaluate patient and physician experience and outcomes when the constraints of time, EHR burden, and administrative red tape are lessened would be beneficial.

Incorporation of longer consultations into routine clinical practice may require substantial adjustments to scheduling and per-visit reimbursements or capitation rates. Longer consultations in the absence of other changes will necessitate longer intervals between patient visits and/or greater use of nonphysician providers. If 25% of consultations are doubled in length, total consultation time will increase 25%. EHR burden may not be alleviated with slow medicine; time for EHR tasks may increase due to longer face-to-face time with patients. If longer consultations are accompanied by other changes, such as simplified EHR obligations, the changes may have offsetting effects on scheduling and payment needs. Further inquiry should identify operational efficiencies and optimal panel sizes necessary for implementation of longer consultation duration, especially in light of primary care workforce shortages. On the other hand, the ability to spend sufficient time with patients may attract medical students to primary care. Although we do not underestimate the challenges of making such adjustments, we believe that practical issues should follow on and reflect clinical trial results, not preclude those trials.

## Limitations

Our ability to identify all relevant articles was hampered by the broad literature that encompasses consultation duration; we may have missed studies that focus on other issues. As noted, we could not isolate consultation duration from other practice features (ie, consultation duration may be a marker for physician attributes) (details in Appendix). The nature of the publications is often compromised by inadequate methods specification and limited data presentation. In addition, many of the studies precede the current environment and demands of primary care. They all precede the COVID-19 pandemic, with its disruption of routine medical practice. The inadequacy of the data reinforces the need for controlled trials.

## Conclusions

We believe that high-quality research is both timely and necessary to better understand the effects of consultation duration on patient and physician experience, patient outcomes, utilization, and costs. Randomized studies in diverse primary care populations that isolate the effects of longer consultations could advance more effective and efficient patient care. Natural experiments, such as the DPC options offered on a population level to New Jersey public employees (R-Health) and in Nebraska (Strada), present rich opportunities for such evaluations. Given the extent of patient unhappiness and primary care physician burnout, as well as the high prevalence of overtreatment, such investigations may help restore some of primary care's full potential.

To see this article online, please go to: <http://jabfm.org/content/34/6/1249.full>.

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## Appendix

### Background: Impact of the Electronic Health Record on Physicians and Patients

Physician and patient experience with health care system functioning, and the electronic health record (EHR) in particular, is unique compared with similar countries. The United States ranks last among wealthy countries with respect to physician perception of health care system functioning, according to representative surveys in 10 countries conducted by the Commonwealth Fund.<sup>1</sup> Just 16% of US primary care physicians believe that the system works well, with only minor changes needed. US primary care physicians were fourth highest in terms of regarding the job as very or extremely stressful (43%) and fifth regarding being somewhat or very dissatisfied with the time spent per patient.

Consultations are widely perceived as uncomfortably rushed by patients and physicians.<sup>2,3</sup> Only 11% of 1,747 nationally representative patients aged 27 to 75 who saw the same physician at least twice in the previous year felt physicians had all the time they needed to provide the highest standards of care;<sup>3</sup> a similar proportion (14%) of 17,236 nationally surveyed physicians felt likewise.<sup>4</sup> Over half (57%) of patients who saw the same physician at least twice in the previous year strongly or somewhat agreed that physicians relied more on the computer screen and less on what the patient told them during exams, and 46% strongly or somewhat agreed that physicians spent more time looking at the computer or tablet and less time looking at them.<sup>3</sup>

The surveys in 10 countries also found the US ranked second lowest in being satisfied or very satisfied with the EHR (52%, after Sweden at 37%).<sup>1</sup> EHRs used in the US require far more administrative and low-clinical value data than in other countries, resulting in higher burden and lower physician satisfaction, suggesting the need and opportunity for simplified EHR documentation and billing requirements.<sup>5</sup> Only 11% of 17,236 physicians surveyed in 2016 felt that the EHR improved patient interaction, while 60% said it detracted.<sup>4</sup> An ethnographic study of physicians and patients in 2 specialist practices found that the EHR not only disrupts and complicates but drives the clinical consultation.<sup>6</sup>

EHR demands reduce the amount of high-quality consultation time. According to a systematic review on duration of consultations since 1946 in 67 countries, the US has the second longest consultation duration (22 minutes), after Sweden.<sup>7</sup> However, this longer time does not correspond with physician and patient satisfaction and is unadjusted for time physicians spend attending to the EHR during consultation. Indeed, increased duration of primary care visits in the US since 2004 tracks closely with EHR adoption, suggesting added computer, not consultation, time.<sup>8</sup> An evaluation of more than 31 million EHR transactions by 471 primary care physicians and more than 765,000 patients from 48 primary care

departments of a community-based fee-for-service health care system from 2011 to 2014 found equal time spent face-to-face versus on desktop activities.<sup>9</sup> Face-to-face time could include the computer and decreased over the study interval, while desktop time increased. According to EHR event logs validated by observation, from 2013 to 2016, family physicians (n = 142) at an academic medical center in Wisconsin devoted just under half of their workday (4.5 hours or 45%) to the EHR, with the remainder on direct patient care, team interactions and meetings, paperwork, e-mail, and other tasks. Physicians spent a further 1.4 hours daily outside clinic hours on the EHR.<sup>10</sup> This is similar to data gathered in 2015 from 57 physicians in 16 practices (including primary care, cardiology, and orthopedics) in 4 states that found physician time was spent 53% face-to-face with patients, 37% on the EHR and desk work, and 9% on administrative tasks.<sup>11</sup> Thus, only 12 minutes were spent talking with and examining patients. A 2018 survey of 8774 physicians reported spending 23% of work hours on nonclinical paperwork.<sup>12</sup> A study of 32 primary care and specialty physicians and 217 of their patients found that greater keyboard activity and gazing at the computer was significantly associated with less active patient participation and greater silence, respectively.<sup>13</sup>

Lack of sufficient time for physicians and patients and the demands placed on physicians by the EHR have contributed to physician burnout. The physician burnout crisis is long simmering and severe; in 2018 over three quarters (78%) of 8774 physicians surveyed nationally experienced burnout.<sup>12</sup> Increasing demands coupled with low compensation have led to a dangerously large primary care workforce deficit.<sup>14,15</sup> As a result, many physicians plan to reduce hours or change careers.<sup>12,16</sup>

### Background: Limited Consultation

#### Duration—Causes, Tools, and Resources

Numerous authors call attention to the erosion of time for clinical consultation, identify causes, and suggest tools and resources to mitigate the repercussions. Proposed solutions range widely and include technological and practical innovations (eg, scribes in and outside the examination room);<sup>17</sup> organizational and management strategies (eg, team-based care and care delegation);<sup>18–20</sup> judicious use of evidence-based diagnostic tests and interventions including joint patient-physician decision-making (eg, Choosing Wisely, Hochmann & Cohen's Updates in Slow Medicine blog, *Lancet's* 2017 Right Care Series);<sup>21–27</sup> training to enhance communication and empathy with patients (eg, Balint Society, Narrative Medicine);<sup>28,29</sup> and decreasing patient treatment burden (eg, Minimally Disruptive Medicine);<sup>30</sup> patient support and empowerment via resources and tools;<sup>31,32</sup> teaching and reclaiming the art of careful physical examination and diagnosis (eg, the Society to Improve Diagnosis in Medicine's journal *Diagnosis*, Stanford Medicine 25 website);<sup>33–35</sup> physician and practice support (eg, techniques to mitigate physician burnout and reclaim



joy in practice);<sup>19,36,37</sup> and restoring physicians' ability to practice contemplatively and communicate meaningfully with patients.<sup>32,38,39</sup>

Victoria Sweet recently popularized the concept of slow medicine in the US in 2 best-selling books.<sup>38,40</sup> She advocates sufficient time to practice contemplatively, proposing that the apparent "inefficiency" of this approach is ultimately more efficient and cost-effective. She recounts cases that were misdiagnosed or mishandled due to lack of time, reflection, or listening to and laying hands on patients, over her 2 decades practicing at San Francisco's long-term care hospital, Laguna Honda,<sup>38</sup> and during her years of training and practice.<sup>40</sup>

Some focus on specific populations: end-of-life care and elders<sup>41–44</sup> or avoiding costly use such as rehospitalization among high-risk patients.<sup>45,46</sup> Most clinical reforms do not involve changing the duration of consultations. Indeed, the preponderance of interventions that are formally compared with current practice emphasizes working within the current insurance-driven model of care. In this model electronic coding and billing demands of the EHR result in physicians having little control over how much time is spent interacting with patients.

## Background: Concierge and Direct Primary Care Practices

Concierge practices tend to have higher monthly fees and may also bill insurance for covered services; direct primary care (DPC) practices typically charge less and do not seek insurer reimbursement; they frequently serve uninsured patients and those with high deductible plans.<sup>47,48</sup> As DPC has expanded, average monthly fees have declined, and patient panel sizes have increased.<sup>49</sup> As of the beginning of 2021, there were 1423 DPC practices in 48 states and Washington, D.C.<sup>50</sup> A 2015 study of publicly available data on 116 DPC practices found average monthly patient fees were \$93 (median \$75; range: \$27 to \$563).<sup>51</sup> A 2018 survey reported DPC monthly fees averaged \$50 to \$75 for individuals and up to \$175 for families, with mean panel size of 345 patients and target panel size 600.<sup>52</sup> While added provider time increases costs, concierge medicine (CM) and DPC may realize offsetting savings by reducing use of high-cost services, such as emergency, inpatient, and specialist care.<sup>53</sup> Rapid scale-up of DPCs serving large employers ended in 2 DPCs (Qliance and a previous partner of Iora—Turntable) going out of business, perhaps due to the involvement of investors who sought rapid returns on investment,<sup>54</sup> failure to secure long-term funding,<sup>55</sup> and the nonrenewal of 2 large employer contracts.<sup>56</sup>

## Background: Global Literature on Consultation Duration Evaluation

The global literature is more extensive than the US literature and includes systematic and Cochrane reviews, but findings are inconsistent. Some studies report increased receipt of important aspects of

recommended care and better outcomes with increased consultation duration, while other studies are merely suggestive or find no association. In some studies, it is not possible to distinguish whether duration is associated with patient outcomes or whether it is a marker for other physician factors. Controlled intervention trials are called for by many of the authors.

An impressive systematic review spanning 1946 to 2016 in 67 countries assessed average primary care physician consultation duration by country and its association with country-level economic and health outcomes.<sup>57</sup> Across nations there was no association between consultation duration and specific procedures (radiograph, ultrasound, or other scan) in the past 12 months ( $P = .86$ ,  $R^2 = 0.001$ , 22 observations) or ED use ( $P = .75$ ,  $R^2 = 0.01$ , 22 observations). Countries with longer consultations had lower use as measured by hospital readmission for diabetes ( $P = .04$ ,  $R^2 = 0.27$ , 23 observations) but not for COPD or asthma.

Wilson and colleagues have conducted 3 systematic reviews on the outcomes of longer primary care consultations,<sup>58–60</sup> 2 of which<sup>58,59</sup> were Cochrane reviews. The 2002 review included 10 observational studies on the effect of duration on consultation process and patient outcomes (we include the 3 US studies in our review) and concluded that it is unclear whether duration is a causal factor or if it is a marker of other physician attributes.<sup>60</sup> Nevertheless, they find the results suggestive and state that longer consultations increase the likelihood of including important aspects of care. They concluded that long-term intervention trials including cost-benefit analyses are needed. The 2006 review assessed 4 randomized controlled trials (RCTs) and controlled clinical trials (CCTs)<sup>61–64</sup> in the UK that altered primary care consultation duration and did not support prior observational study findings.<sup>59</sup> The authors noted that self-selection of physicians who consult more slowly might be a marker of other attributes, or that short-term changes in duration are insufficient to alter physician behavior. The 2016 review included 5 small observational studies in the UK and found that longer consultation duration was associated with less prescribing, increased lifestyle advice and prevention, and a practice style allowing more problem-solving and greater information exchange.<sup>58</sup> However, the authors noted that valid generic outcome measures were lacking, and that without randomization it is unclear whether duration is related to these outcomes or is a marker of other physician attributes. The authors' confidence in the studies was very low and did not support policies on consultation duration; instead, they recommended further trials assessing clinical outcomes and cost-effectiveness.

Observational studies of note on consultation duration outside the US include 3 from the UK<sup>65–67</sup> and 2 with Canadian elders.<sup>68,69</sup> Longer consultations in these studies were associated with higher scores on quality of care for chronic disease management,<sup>65</sup> greater attention to psychosocial and long-term health problems as well as health promotion,<sup>66</sup> and

fewer prescriptions and returns for follow-up.<sup>67</sup> The 2 Canadian studies with elders found significantly more prescribing among physicians seeing more patients<sup>68</sup> and a significant association between increased visit length and appropriate elicitation of prescription contraindications and relevant patient history.<sup>69</sup>

A robust multifaceted intervention that included increased consultation duration (as well as continuity of care, physician support, holistic patient assessments, identified patient concerns and priorities, patient self-management tools, care plans, and linkages to community services) conferred benefits in a relatively recent cluster RCT in Glasgow.<sup>70</sup> Patients (n = 152) aged 30 to 65 with 2 or more chronic conditions in 8 general practices had longer consultation duration in the intervention arm (30 to 45 minutes). Though utilization was not reported, negative patient well-being was significantly lower and a gain in quality-adjusted life year (QALY) of 0.076 was observed over 12 months. However, the singular contribution of time to these outcomes is unclear.

## Results of Additional Information on Reviewed Studies

### *Concierge MDVIP*

Founded in 2000, MDVIP uses screening questionnaires (eg, for depression, anxiety, sleep, nutrition, sexual function, vision, and hearing) and lab diagnostics (eg, for diabetes, bone density, and cardiovascular disease) to tailor patient care.<sup>71,72</sup> The membership fee is \$125 to \$175 per month. For the earlier study,<sup>71</sup> comparative data were obtained from Intellimed, the US census, and Claritas, and patients were matched by state of residence, age, and third-party coverage.

For the later study,<sup>72</sup> MDVIP members ages 35 to 84 were matched on propensity score to a randomly selected equal number of controls, based on age, sex, insurance plan type, US region, income, supply of health services, health status, psychiatric diagnostic group score, and number of inpatient admissions before enrollment. The study population was 10,186 propensity-matched pairs: 10,186 (1-year), 5,908 (2-year), and 3,915 (3-year) members and nonmembers.

### *DPCs*

#### *Qliance*

Qliance opened 3 clinics in 2007 and by 2010 had 3000 patients; practitioner panel capacity was 800 patients with a typical day of 10 30 to 60 minute visits.<sup>73</sup> By 2015, Qliance had expanded to 5 clinics and 25,000 employees of large employers.<sup>48</sup> Unpublished 2010 claims for 3088 Qliance non-Medicare enrollees were compared with similar populations (based on regional benchmarks from Ingenix, United Health Group, a for-profit managed care company, and other unspecified sources).<sup>74</sup> Qliance claims data from 2013

and 2014 compared 4000 Qliance enrollees to nonenrollees working for the same large companies such as Expedia, Comcast, and Seattle Firefighters Union.<sup>75</sup>

#### *Iora Health*

Iora Health was founded in 2010.<sup>76</sup> Average consultation duration was 1 hour.<sup>77,78</sup> Results, reported in the *Boston Globe* and *Modern Healthcare*, are difficult to evaluate.

#### *R-Health*

R-Health's pilot program primarily serves New Jersey public employees and retirees (but also includes some private sector enrollees) and grew to serve 4000; their Pennsylvania clinics serve large employers and also include private-sector enrollees.<sup>79</sup> Pennsylvania clinics charge members a flat fee of \$60 to \$80 per month.

### *Assessments of Multifaceted Care Models in Elders*

#### *ChenMed*

The 4 Miami-area ChenMed sites are characterized by smaller physician panel sizes (350 to 450 patients; physicians see 18 patients daily), high primary care use (in 2011, patients averaged 13.3 visits per year), intensive health coaching and prevention, 1-stop multispecialty services and pharmacy, a collaborative physician culture, and a customized EHR.<sup>80</sup> Among their 8527 Medicare Advantage enrollees with 5 or more chronic conditions and low to moderate incomes, they found 62% lower hospital days (1058 per 1000 population, vs national average of 1712) and a 32% increase in medication possession, a measure of adherence (increasing from 44% to 73%).

The 2014–15 claims data analysis included 5695 enrollees in the 2 groups matching propensity to enroll on age, gender, and comorbidity and found significant differences including lower monthly health care costs (\$87 median per member per month [pmpm] ChenMed vs \$121 pmpm controls); lower hospital admissions; more annual primary care visits; and more frequent use of 5 cardiovascular medications (aspirin, angiotensin-converting enzyme [ACE] inhibitors/angiotensin receptor blockers [ARBs],  $\beta$  blockers, statins, diuretics).<sup>81</sup> The authors note that the limited number of matching factors may influence the results.

Some of the differences between ChenMed and the comparison model of care noted in the 2014–15 analysis included smaller patient panel size (450 vs 1000), longer and more frequent patient visits (average 189 minutes face-to-face per patient annually vs 90 minutes), walk-in hours, a preventive cardiovascular program on-site, and courtesy transportation. The comparison sites differed from ChenMed in permitting patient EHR access, providing on-site urgent care, and on-site lab and imaging services.

In 2015–16, ChenMed patients were described as diverse (66% racial minorities), older, full risk, and chronically ill (average chronic conditions = 5).<sup>82</sup> Enrollees had longer average annual face-to-face

consultation time (189 minutes per patient) than the national average (20.9 minutes according to the National Ambulatory Care Medical Survey [NAMCS]). Use was lower for ChenMed patients: 33.6% fewer emergency room (ER) visits than Medicare beneficiaries in counties served by ChenMed (500/1000 vs 753/1000) and 25.7% fewer hospital days (1246/1000 vs 1677/1000). Based on cost data from an American Hospital Association survey, the authors estimated a savings in 2015 of \$268,686 per 1000 patients due to fewer emergency department visits and \$978,801 per 1000 patients for inpatient hospitalization. Extrapolating further to a 5-physician value-based practice with 450 patients per physician panel, a practice savings of \$600,000 and \$2.2 million per year was estimated due to decreased ER and hospital use.

### *WellMed*

WellMed was founded in 1990 and in 2011 served more than 87,000 primarily Medicare-eligible seniors in 4 states (Texas, Arkansas, Florida, and New Mexico).<sup>83</sup> Patient panel sizes are 650 patients for physicians providing hospital care and 750 for those who do not; median panel size is 480 (range: 104 to 941). In addition to team-based care, chronic disease programs, in-house pharmacies at many sites, coordinated care and transportation, and a customized EHR, the clinics have multiple on-site services including case managers and health coaches; direct or phone access to social services; specialty care (in rheumatology, dermatology, podiatry); dental, vision, and hearing aid benefits; nutrition counseling; supervised walking programs; and hospitalists, inpatient care management teams, and nursing home nurse practitioners (NPs). Evaluation was based on 2000 to 2008 billing and 2002 to 2008 EHRs for 14,411 to 18,491 patients over the study duration.

### *Signature Healthcare*

Signature Healthcare owns a 245-bed hospital and provides primary and specialty care for 10,000 elders in Brockton, MA.<sup>84,85</sup> Their complex care clinic for high-risk elders (3 or more chronic conditions that worsen over time) opened in January 2013. Claims data before and after the complex care clinic opened for all high-risk elders in a 3-physician practice were compared with patients receiving usual care from 20 providers in different geographic locations. The intervention group had a 30% decrease in emergency department (ED) use and 43% decrease in acute admissions. Increased consultation duration enabled more in-depth assessment and ability to address all chronic conditions during visits as well as improving billing and coding (and thus increasing payments).

### ***Observational Studies on Consultation Duration and Patient Outcomes***

#### *North Carolina*

The North Carolina study sampled 869 patients (90% white, median age 49) and obtained outcome data from medical records on receipt of general physical exams, diabetes follow-up care, initial evaluation

for hypertensives, or care for acute dysuria (women).<sup>86</sup> Workload was based on physician-reported number of patients seen per hour over a typical 2-week period, validated by data from office staff. Visit length ranged from 9.3 to 37.5 minutes, and physicians saw 1.6 to 6.4 patients per hour.

### *Western Washington*

The Group Health Cooperative of Puget Sound serves 245,000 enrollees.<sup>87</sup> Average patient panel size was 1,600, with 355 mean patient contacts (visits) per month, an average consultation duration of 17.8 minutes (range: 13.3 to 26.1 minutes), and 3.4 patients seen per hour. Older panel age (% over 40) explained 23% of the variance, followed by number of patients seen per hour and visits per month (18% combined; 14% and 4%, respectively), and inter-clinic differences (8%).

### *Pennsylvania*

The evaluation of Pennsylvania primary care clinics occurred over 7 months for 4695 medical encounters of 1424 patients seen by 64 physicians.<sup>88</sup> Average consultation duration was 17 minutes (range 10 to 60). Physicians saw a mean of 3.6 patients per hour (range 1 to 6). Physicians were evaluated in 7 composite care delivery areas identified via factor analysis: blood chemistry, blood counts, inconsistency of test ordering, visit frequency, immunizations, medical history items, and preventive care for women.

Patients of busier physicians were significantly more likely to receive procedures (such as weight check, blood pressure measurement and blood count, and medication review) from support staff. Patients of busier physicians, characterized as more than 4 patients/hour, had more frequent visits and shorter intervals between visits. Physicians who saw 3 or more patients per hour often took less complete medical histories and were less likely to provide preventive care specifically for women. Those seeing 2.9 or more patients per hour less often assessed smoking, alcohol use, and family history and conducted fewer Papanicolaou smears and breast exams. Both less (less than 2.7 patients/hour) and more (3.9 to 4.5 patients/hour) burdened physicians conducted fewer blood count procedures.

### **Limitations: Consultation Features**

Authors of 2 early nonsystematic reviews<sup>89,90</sup> suggest that what transpires during the visit, rather than the amount of time, is critical. Wilson distinguishes between physician and patient factors that influence consultation length and concludes that physician factors, which he believes are idiosyncratic, account for much of the variance and thus underlie observed associations between duration and patient outcomes.<sup>90</sup> A cross-sectional study between 1996 and 1999 of 6 European countries found that patient factors explained more of the variation in consultation duration (55%) than physician factors (22%), and country factors (23%) based on data from questionnaires and



videotaped encounters among 190 general practitioners and 15 patients of each practitioner (3764 patients).<sup>91</sup> Median consultation duration varied widely by country: 7.6 to 15.6 minutes; 10.7 minutes overall.

Authors of a 1987 observational study of consultation duration in Scotland suggest consultation *style* rather than duration is more important to outcomes.<sup>66</sup> Based on their classification of 85 general practitioners by work style for 21,707 consultations on 1 day in every 15 over the course of a year, slower doctors who worked fast were similar to faster doctors. Slower doctors were not faster doctors who worked more slowly, rather consultation duration dropped with larger panels, suggesting that the ratio of long to short consultations is an important proxy for quality of care.

How consultation time is spent differs by country: by 2010, US physicians reported needing approximately 2 to 3 times longer to provide high-quality care for new patient appointments, routine consultations, and complete physicals compared with their German and UK counterparts.<sup>92</sup> Although the UK and several other countries have significantly larger patient panels and shorter patient consultations, in the US higher EHR demands minimize the available time within consultations for focused, high-quality communication. Increased protected time for physician-patient interaction might improve the qualitative experience, diagnosis, and management and thereby decrease costs. Decreasing unnecessary and redundant EHR tasks will reduce EHR burden and free up physician time.<sup>93,94</sup>

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