

The Effects of a Primary Care Transformation Initiative on Primary Care Physician Burnout and Workplace Experience

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BACKGROUND: Physician burnout is associated with deleterious effects for physicians and their patients and might be exacerbated by practice transformation.

OBJECTIVE: Assess the effect of the Comprehensive Primary Care (CPC) initiative on primary care physician experience.

DESIGN: Prospective cohort study conducted with about 500 CPC and 900 matched comparison practices. Mail surveys of primary care physicians, selected using cross-sectional stratified random selection 11 months into CPC, and a longitudinal design with sample replacement 44 months into CPC.

PARTICIPANTS: Primary care physicians in study practices.

INTERVENTION: A multipayer primary care transformation initiative (October 2012–December 2016) that required care delivery changes and provided enhanced payment, data feedback, and learning support.

MAIN MEASURES: Burnout, control over work, job satisfaction, likelihood of leaving current practice within 2 years.

KEY RESULTS: More than 1000 physicians responded (over 630 of these in CPC practices) in each round (response rates 70–81%, depending on round and research group). Physician experience outcomes were similar for physicians in CPC and comparison practices. About one third of physician respondents in CPC and comparison practices reported high levels of burnout in each round (32 and 29% in 2013 [$P=0.59$], and 34 and 36% in 2016 [$P=0.63$]). Physicians in CPC and comparison practices reported some to moderate control over work, with an average score from 0.50 to 0.55 out of 1 in 2013 and 2016 (CPC-comparison differences of -0.04 in 2013 [95% CI -0.08 – 0.00 , $P=0.07$], and -0.03 in 2016 [95% CI -0.03 – 0.02 , $P=0.19$]). In 2016, roughly three quarters of CPC and comparison physicians were satisfied with their current job (77 and 74%, $P=0.77$) and about 15% planned to leave their practice within 2 years (14 and 15%, $P=0.17$).

CONCLUSIONS: Despite requiring substantial practice transformation, CPC did not affect physician experience.

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Research should track effects of other transformation initiatives on physicians and test new ways to address burnout.

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KEY WORDS: burnout; control over work; job satisfaction; patient-centered medical home; primary care physician.

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INTRODUCTION

As payers increasingly test practice transformation initiatives to improve primary care, more evidence is needed on how transformation affects physician experience. Providing primary care practices with more resources to support care delivery might improve physician experience.¹ At the same time, such efforts require intensive work, including changing practice workflows and staffing substantially, shifting from a physician-centric to a team-based culture, and creating new clinical and administrative tasks. Such changes might add to physicians' burden, worsen their experience, and increase job dissatisfaction, at least in the short run.

Whether and in what contexts participation in transformation activities alters physicians' experiences are important questions. Burnout, defined as workplace stress that leads to emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment, has been linked to negative effects for physicians and, in some studies, their patients. For the physician, these include lower work satisfaction, increased likelihood of decreasing clinical work hours or leaving medicine, disrupted personal relationships, substance abuse, depression, and even suicidal thoughts; for their patients, these include lower patient satisfaction, higher rates of medical error, and increased costs.^{2–13} Among primary care physicians, the proportion reporting burnout is high—25% in two studies of national samples,^{14, 15} and 45% in a study of physicians practicing in Veterans Affairs primary care clinics.¹⁶

Evidence of the effects of practice transformation models on physicians' experiences is mixed.^{14, 17–21} Two studies found unfavorable effects from transitioning to patient-centered

medical homes (PCMHs). The National Demonstration Project (NDP) found that “the magnitude of stress and burden from the unrelenting, continual change required to implement components of the NDP was immense.”¹⁷ The Centers for Medicare & Medicaid Services (CMS) Federally Qualified Health Center Advanced Primary Care Practice Demonstration worsened burnout, control over work, and job satisfaction.²¹ In contrast, a PCMH pilot improved burnout, though it was tested in only one clinic.^{18, 19} Finally, two studies suggest no effect on burnout, in Veterans Affairs clinics²⁰ and in a cross-sectional study of primary care practices with and without PCMH recognition, though that study found worse burnout among practices participating in other types of practice transformation, namely accountable care organizations and those with meaningful use certification.¹⁴

This paper examines whether participation in the Comprehensive Primary Care (CPC) initiative had an effect on physician burnout, control over work, and job satisfaction. We studied this question by examining differences between physicians in CPC and comparison practices in 2013 and 2016, the first and last years of the initiative.

THE COMPREHENSIVE PRIMARY CARE INITIATIVE

CPC was a primary care payment and care delivery transformation model tested from October 2012 through December 2016 in nearly 500 diverse primary care practices in seven regions across the USA. CMS partnered with 39 public and private payers to provide practices with financial support; learning opportunities; and patient- and practice-level data feedback on cost, service use, and quality of care. CPC required participating practices to implement five primary care functions—access and continuity, planned care for chronic conditions and preventive care, risk-stratified care management, patient and caregiver engagement, and coordination of care with patients’ other care providers—supported by enhanced payment, continuous improvement driven by data, and optimal use of health information technology. Although CMS allowed CPC practices latitude in how they changed care delivery and implemented the five functions, practices were required to meet a series of annual milestones to guide care delivery improvements.²²

Financial support to practices came from care management fees from CMS and most of the 39 other payers, on top of traditional reimbursements. Beginning in year 2, support included the opportunity to share in any savings from CMS and two thirds of other payers. Care management fees were paid per attributed patient per month (and were not visit based). Care management fees were substantial; calculated as the median per clinician in the practice, annual payments were more than \$50,000 and, depending on the year, accounted for 10 to 20% of practice revenue.

CPC did not explicitly aim to reduce physician burnout or improve satisfaction. However, CPC might have improved

physician experience, given its emphasis on using teamwork and allowing physicians (and other practice staff) to spend more of their time on tasks commensurate with their licensure. In addition, practices could use the care management fees for activities related to improving care and transforming their organization, such as supporting non-billable practitioner time, augmenting care teams (e.g., hiring care managers), and investing in technology or data analysts. Together, these changes potentially allowed physicians to better care for their patients. On the other hand, CPC participation required considerable work for practices, including changes in workflows and integration of new staff (e.g., care managers), regular reporting to CMS and other payers on their progress, and participation in CPC learning activities (both in person and virtual). Physician perspectives on the benefits of data feedback and learning activities varied. Because CPC could have both favorable and unfavorable effects on physician burnout and satisfaction, the expected effects overall were indeterminate.

METHODS

Survey Administration

We mailed two rounds of surveys to a stratified random sample of primary care physicians in CPC and comparison practices. The first round was fielded September 2013 to March 2014, 11 to 17 months after CPC began; the second round was fielded June to November 2016, 44 to 50 months after CPC began. Estimated completion time was 15 to 25 minutes. Fielding included up to five questionnaire mailings, three thank-you/reminder postcard mailings, up to two telephone reminder calls for all sampled physicians, and email reminders for some physicians. We enclosed a \$100 check in the initial questionnaire mailing as an incentive to complete the voluntary survey.

Sampling

The sampling frame included primary care physicians working at CPC and comparison practice sites. We propensity score-matched CPC practices to comparison practices based on market-, practice-, and patient-level characteristics before CPC.²³ The size of the matched sets varied from 1 CPC practice matched with 5 comparison practices to 3 CPC practices matched with 1 comparison practice; the average ratio was 1.8 comparison practices to each CPC practice. We identified medical doctors and doctors of osteopathy most likely to provide primary care, using SK&A’s national database of more than 2.1 million health care providers. We identified eligible physicians as those working at the practices with a national provider identifier and an SK&A specialty code of general practice, family practice, internal medicine, geriatrics, or internal medicine/pediatrics.

In 2013, we randomly selected from each CPC practice one physician (for solo practices) or two physicians (for other practices) and one to three physicians from each matched set of comparison practices. In 2016, we retained the physicians

from the 2013 sample, replacing physicians who departed the practices with previously unselected physicians and/or those entering the practices since 2013. Thus, survey estimates in each round reflect responses from all physicians in the practices, regardless of tenure at the practice. In total, we sent surveys to 867 of the 1831 CPC physicians and 714 of the 3113 comparison physicians in 2013 and to 912 of the 1677 CPC physicians and 788 of the 2981 comparison physicians in 2016 (Table 1). Because we sampled from each practice for CPC practices and from each matched set for the comparison practices, we sent surveys to physicians in 100% of CPC practices and 51% of comparison practices in 2013 and 59% in 2016.

Nonresponse Adjustments

To reduce potential bias from survey nonresponse, we applied a response propensity adjustment to each respondent’s sample weight. These adjustments were calculated using logistic regressions with response as the outcome and a set of characteristics of the physician’s practice, its county, and its attributed Medicare fee-for-service beneficiaries that predicted response. Adjustments were calculated separately for CPC and comparison physicians in each round.

Measures

To measure burnout, we used two single-question measures related to level and frequency of burnout (both of which have been validated against the Maslach Burnout Inventory, or MBI)^{24–27} and three scales that reflect dimensions of burnout (based on a shortened version of the MBI that uses 9 of the 22 questions): emotional exhaustion, depersonalization, and reduced personal accomplishment (Table 2).²⁸

To measure control over work, we used a scale that summarizes physicians’ responses about how much control they have over seven areas of work: (1) their work hours, (2) details of the office or practice schedule, (3) their volume of paperwork, (4) work interruptions, (5) workplace issues, (6) their work pace, and (7) the allotment of additional time for difficult-to-help patients.²⁹

To measure job satisfaction, we asked, using a 5-point Likert scale, (1) how much physicians agreed or disagreed that they are satisfied with their current job and (2) the likelihood that they will leave their current practice within 2 years and their primary reason for leaving.²⁵

Analysis

Because we were not able to survey physicians before CPC, differences in either round may reflect preexisting differences between CPC and comparison respondents. In case CPC affected experiences before the first round, we did not calculate difference-in-differences estimates.

For each question, we calculated the distribution of responses among CPC and comparison practices. Because of low question nonresponse—between 0 and 2% per question—we calculated results among nonmissing responses. CPC responses were weighted for their probability of selection into the sample and were adjusted for survey nonresponse. Comparison responses were weighted to reflect comparison group matching and were adjusted for survey nonresponse. We also created scales to parsimoniously measure each of the three dimensions of burnout and control over work. Scales average nonmissing responses for component items (each rescaled so responses range from 0 to 1 and are oriented so larger values signify more favorable responses).

For each question and scale, separately for each round, we statistically compared the responses of physicians in CPC practices to those in comparison practices, using chi-square tests for distributions and two-sided *t* tests for means and binaries. Given similar characteristics of physicians in CPC and comparison practices after weighting, we did not regression-adjust the results. We also examined whether physicians who reported high burnout had less control over work, lower job satisfaction, and different demographics than those who did not report high burnout, combining CPC and comparison physicians. We clustered standard errors by practice for respondents in CPC practices and by matched set for respondents in comparison practices. Analyses were conducted using SAS 9.4, using survey commands for tests to account for the survey sampling design.

Table 1 Population and Sample Sizes, and Weighted Survey Response Rates, by Round

Sample type	2013				2016			
	Population size	Number sent surveys	Number responded	Response rate (%)*	Population size	Number sent surveys	Number responded	Response rate (%)*
Primary care physicians	4944	1581	1082	75	4658	1700	1124	74
CPC practices	1831	867	635	81	1677	912	630	76
Comparison practices	3113	714	447	70	2981	788	494	72
Primary care practices	1397	957	762	N/A	1305	966	761	N/A
CPC practices	495	495	432	N/A	480	480	412	N/A
Comparison practices	902	462	330	N/A	825	486	349	N/A

*We used Response Rate 3 calculations from the American Association for Public Opinion Research Standard Definitions, which uses the observed eligibility rate among those with known eligibility status to estimate the number eligible among those with unknown eligibility status.³³ Response rates were weighted using the sample design weights
N/A = not applicable

Table 2 Survey Questions and Topics Measuring Physician Experience

Topics and Questions
Burnout*
1. Using your own definition of burnout, please indicate which statement best describes your situation at work. Response options: I enjoy my work. I have no symptoms of burnout. Occasionally I am under stress, and I don't always have as much energy as I once did, but don't feel burned out. I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion. The symptoms of burnout that I'm experiencing won't go away. I think about frustrations at work a lot. I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.
2. How often respondent feels burned out from work (response options: never, a few times a year or less, once a month or less, a few times a month, once a week, a few times a week, or every day)
3-11. Maslach Burnout Inventory (MBI) subscales [†] (response options: never, a few times a year or less, once a month or less, a few times a month, once a week, a few times a week, or every day):
Emotional exhaustion [‡]
3. How often respondent feels emotionally drained from work
4. How often respondent feels fatigued from facing another day on the job
5. How often respondent feels working with people all day is a strain
Depersonalization [‡]
6. How often respondent feels he or she treats some patients as if they were impersonal objects
7. How often respondent has become more callous toward people since taking the job
8. How often respondent doesn't care what happens to some patients
Personal accomplishment
9. How often respondent deals effectively with patients' problems
10. How often respondent feels he or she is positively influencing others' lives through work
11. How often respondent feels exhilarated after working closely with patients
Control over work [§] (response options: slight or no control, some control, moderate control, great control, or does not apply or don't know)
1. The amount of control the respondent has over the hours he or she works
2. The amount of control the respondent has over details of the office or his or her practice schedule
3. The amount of control the respondent has over the volume of paperwork he or she has to do
4. The amount of control the respondent has over work interruptions
5. The amount of control the respondent has over workplace issues
6. The amount of control the respondent has over the pace of his or her work
7. The amount of control the respondent has over the allotment of additional time for difficult-to-help patients
Job satisfaction
1. Overall satisfaction with current job (response options: strongly disagree, disagree, neither disagree nor agree, agree, or strongly agree)
2. Likelihood that respondent will leave his/her current practice within two years (response options: none, slight, moderate, likely, or definitely)

* The first question was used in the Federally Qualified Health Center Advanced Primary Practice Provider and Staff Survey developed by the RAND Corporation^{25,27}. The second question is 1 of the 22 questions in the MBI,²⁴ validated as a single-question measure of burnout²⁶.

† The MBI contains 22 questions organized into the three subscales.²⁴ We use an abbreviated version of the subscales containing the 9 questions used in an evaluation of the Patient-Aligned Care Team (PACT) Personnel Survey²⁸.

‡ Responses to the questions in this subscale were reverse-coded when we constructed the composite measure, so the most favorable response received the largest value.

§ The seven questions in the control-over-work scale were used in a modified version of the Agency for Healthcare Research and Quality (AHRQ) Minimizing Errors and Maximizing Outcomes (MEMO) survey²⁹.

|| The two questions were used in the Federally Qualified Health Center Advanced Primary Practice Provider and Staff Survey developed by the RAND Corporation²⁵.

Using two-tailed tests at the 5% significance level, the analysis had 80% power to detect differences between responses of physicians in CPC and comparison practices of 8 to 12 percentage points for the categorical variables and 0.07 to 0.12 points out of 1 for the scales.

To limit the chance of false positives from multiple testing, we focus results on CPC-comparison differences in each survey round and do not examine changes over time within each research group. Instead of reporting on all outcomes, we report tests in each round of the two single-question measures of burnout, three MBI scales, one control-of-work scale, and two satisfaction questions, for a total of 16 tests (our primary tests). We would expect one test to be statistically significant by chance. We also consider both statistical significance and the size of the difference. (The tables also report secondary tests of the questions in each of the scales.)

RESULTS

Respondents. More than 1000 physicians from about 760 practices responded in each round. More than 630 of these responding physicians were from CPC practices. Weighted response rates ranged from 70 to 81%, depending on the round and research group (Table 1). These respondents practiced in 86% of CPC practices, and, 37 to 42% of comparison practices, depending on the round (the lower proportion of comparison practices represented reflects the sample selection within matched sets).

Responding physicians in CPC and comparison practices reported similar gender, age, race, ethnicity, and tenure at the practice, after weighting for selection probability, matching, and nonresponse (Table 3). In 2016, about two thirds of the respondents were male, more than half were age 50 or older, 86% were

Table 3 Characteristics of Physician Respondents

	Primary care physician					
	2013			2016		
	CPC	Comp	P	CPC	Comp	P
Number of respondents*	628	441		628	491	
Physician characteristics reported in the survey						
Male (%)	60	68	0.04	62	68	0.13
Respondent's current age (%)			0.38			0.52
Fewer than 20 years	0	0		0	0	
20–29	0	0		0	0	
30–39	18	13		15	19	
40–49	30	29		28	27	
50–59	32	37		29	24	
60 years or older	21	21		28	29	
Hispanic or Latino (%)	2	2	0.57	2	2	0.79
Respondent's race (%)						
White/Caucasian	90	88	0.47	86	86	0.77
Black or African American	1	1	0.18	2	2	0.90
Asian	8	10	0.42	10	10	0.75
Native Hawaiian or other Pacific Islander	0	0	0.09	1	0	0.53
American Indian or Alaska Native	1	1	0.19	2	0	0.0
Other	1	2	0.13	2	4	0.11
How long respondent has worked at the practice (%)						
< 6 months	0	1	0.26	0	0	0.47
6 months–1 year	1	0		2	5	
1–2 years	7	3		5	6	
2–5 years	14	14		13	14	
5–10 years	19	19		19	18	
> 10 years	59	62		59	56	

Note: We adjusted all results for the probability of selection into the sample, comparison group matching, and survey nonresponse
 *The number of respondents is the maximum number of respondents in the denominator for any of these questions. The number of respondents for which we had information varied due to item nonresponse. For CPC practices, the minimum number of responses was 624 in 2013 and 623 in 2016. For comparison practices, the minimum number of respondents was 438 in 2013 and 486 in 2016

white, and more than half had worked at the practice for more than 10 years.

Burnout. CPC and comparison physicians responded similarly to the various burnout measures. About one third of physicians in both CPC and comparison practices reported *high levels* of burnout in each round, based on the severity of symptoms reported (32 and 29% in 2013 [$P=0.59$], and 34 and 36% in 2016 [$P=0.63$]). When asked how *often* they felt burned out from their work in the past year, 44% of CPC physicians and 47% of comparison physicians reported feeling burned out a few times a month or more in 2016; another 15% of CPC physicians and 10% of

comparison physicians reported burnout more than a few times a year ($P=0.27$; Table 4). Using the *three dimensions of burnout from the MBI*, mean scores were comparable for CPC and comparison practices in 2013 and in 2016. The only statistically significant difference was on the depersonalization scale in 2013, and it was small (0.03 out of 1.0, 95% CI 0.01–0.06, $P=0.02$). Physicians in both CPC and comparison practices reported more symptoms of emotional exhaustion than depersonalization or lack of personal accomplishment, although we did not statistically test differences between the three scales.

Control Over Work. Physicians in both CPC and comparison practices had an average score from 0.50 to 0.55 on a 1-point scale indicating some to moderate control over work in 2013 and 2016 (differences in mean scores were -0.04 out of 1 in 2013 (95% CI $-0.08-0.00$, $P=0.07$) and -0.03 in 2016 (95% CI $-0.08-0.02$, $P=0.19$; Table 5). Physicians in both groups reported having the most control over the hours they work and the details of the office or the practice schedule, and the least amount of control over work interruptions such as telephone calls and unscheduled patients, and the volume of paperwork (Table 5).

Job Satisfaction. In 2013 and 2016, there were no statistically significant differences between CPC and comparison physicians' reported job satisfaction. In 2016, 48% of physicians in CPC practices and 45% of physicians in comparison practices agreed, and 29% of physicians in CPC and comparison practices strongly agreed, that they were satisfied with their current job (Table 6). For both CPC and comparison physicians, only about 15% disagreed or strongly disagreed with the statement, and 10% neither agreed nor disagreed ($P=0.77$). Responses for both research groups were also similar in 2013.

A comparable 14% of CPC and 15% of comparison physicians reported in 2016 that they were likely or definitely leaving their current practice in the next 2 years ($P=0.17$; Table 6); more than half of these physicians were 60 or older (52% of CPC physicians and 62% of comparison physicians, data not shown). Reasons for leaving included retirement, high workload, career advancement, moving, inadequate compensation or benefits, poor management, and "too many regulations."

Burnout and Control Over Work and Job Satisfaction, for CPC and Comparison Physicians Combined. Physicians who reported high burnout reported lower control over each aspect of work and less job satisfaction than physicians without high burnout (Appendix Table 1). For example, in 2016, the average control over work score was 0.43 on a 1-point scale for physicians who reported high levels of burnout, compared to 0.59 for those who reported less burnout (95% CI -0.20 , -0.12 point difference, $P<0.001$). The average job satisfaction rating was 3.1

Table 4 Burnout Among Primary Care Physicians in CPC and Comparison Practices, 2013 and 2016

	2013				2016			
	CPC	Comp	Diff (95% CI)	P	CPC	Comp	Diff (95% CI)	P
Number of respondents*	625	443			626	491		
Using respondent's own definition of burnout, statement that best describes respondent's situation at work [†] (%)								
Low burnout	68	71	N/A	0.59	66	64	N/A	0.63
High burnout	32	29			34	36		
How often respondent felt burned out from work in the past year (%)								
Never to a few times a year	41	42	N/A	0.41	42	43	N/A	0.27
Once a month or less	13	16			15	10		
A few times a month to every day	47	42			44	47		
Emotional exhaustion subscale (0 [more exhausted] to 1 [less exhausted])								
Mean score	0.57	0.55	0.02 (-0.02, 0.06)	0.40	0.57	0.57	0.01 (-0.03, 0.05)	0.67
Depersonalization subscale (0 [more depersonalization] to 1 [less depersonalization])								
Mean score	0.87	0.84	0.03 (0.01, 0.06)	0.02	0.87	0.86	0.02 (-0.01, 0.05)	0.19
Personal accomplishment subscale (0 [less accomplishment] to 1 [more accomplishment])								
Mean score	0.88	0.86	0.02 (-0.00, 0.04)	0.051	0.87	0.85	0.02 (-0.00, 0.04)	0.07
Secondary tests of questions in MBI Subscales								
How often respondent feels emotionally drained from work (%)								
Never to a few times a year	21	20	N/A	0.91	22	22	N/A	0.45
Once a month or less	11	10			11	8		
A few times a month to every day	69	70			67	70		
How often respondent feels fatigued from facing another day on the job (%)								
Never to a few times a year	38	34	N/A	0.30	38	35	N/A	0.68
Once a month or less	16	13			14	14		
A few times a month to every day	47	53			48	51		
How often respondent feels working with people all day is a strain (%)								
Never to a few times a year	57	52	N/A	0.10	54	57	N/A	0.73
Once a month or less	10	16			12	11		
A few times a month to every day	33	33			34	32		
How often respondent feels he or she treats some patients as if they were impersonal objects (%)								
Never to a few times a year	80	73	N/A	0.04	83	78	N/A	0.23
Once a month or less	8	8			6	10		
A few times a month to every day	12	19			10	12		
How often respondent feels she or he has become more callous toward people since taking the job (%)								
Never to a few times a year	73	66	N/A	0.07	71	68	N/A	0.64
Once a month or less	7	12			10	11		
A few times a month to every day	20	22			19	21		
How often respondent doesn't care what happens to some patients (%)								
Never to a few times a year	92	91	N/A	0.45	92	90	N/A	0.01
Once a month or less	5	4			6	5		
A few times a month to every day	3	5			2	5		
How often respondent deals effectively with patients' problems (%)								
Never to a few times a year	0	0	N/A	N/D	0	0	N/A	N/D
Once a month or less	0	0			0	0		
A few times a month to every day	99	100			100	100		
How often respondent feels she or he positively influences others' lives through work (%)								
Never to a few times a year	0	0	N/A	0.31	1	2	N/A	0.86
Once a month or less	1	2			1	1		
A few times a month to every day	99	98			98	98		
How often respondent feels exhilarated after working closely with patients (%)								
Never to a few times a year	4	8	N/A	0.10	5	10	N/A	0.09
Once a month or less	5	7			6	5		
A few times a month to every day	91	85			89	85		

Note: We adjusted all results for the probability of selection into the sample, comparison group matching, and survey nonresponse

*The number of respondents is the maximum number of respondents in the denominator for any of these questions. The number of respondents for which we had information varied due to item nonresponse. For CPC practices, the minimum number of responses was 622 in 2013 and 617 in 2016. For comparison practices, the minimum number of respondents was 440 in 2013 and 488 in 2016

[†]We defined no or low burnout as responses of: I enjoy my work. I have no symptoms of burnout; or Occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out. We defined high burnout as responses of: I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion; or The symptoms of burnout that I'm experiencing won't go away. I think about frustrations at work a lot; or I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help

N/A Not applicable because the comparison is a comparison of distributions

N/D We were unable to perform chi-squared tests because of the small cell counts

out of 5.0 for physicians who reported high levels of burnout compared to 4.2 for those with less burnout (95% CI – 1.36, –

0.99 point difference, $P < 0.001$). In 2016, 27% of physicians who reported high levels of burnout reported that they were likely

Table 5 Average Control over Work Among Primary Care Physicians in CPC and Comparison Practices, 2013 and 2016

	2013				2016			
	CPC	Comp	Diff (95% CI)	P	CPC	Comp	Diff (95% CI)	P
Number of respondents*	626	442			624	490		
Control-over-work scale (0 [less control] to 1 [more control])	0.50	0.54	-0.04 (-0.08, 0.00)	0.07	0.52	0.55	-0.03 (-0.08, 0.02)	0.19
Secondary tests of questions in scale								
The mean amount of control the physician has over items in scale (1 [no/slight control] to 4 [great control]):								
The hours they work	3.03	3.15	-0.11 (-0.29, 0.06)	0.21	3.10	3.18	-0.23 (-0.30, 0.06)	0.19
Details of their office or practice schedule	2.99	3.21	-0.22 (-0.40, -0.04)	0.02	3.09	3.24	-0.15 (-0.35, 0.04)	0.11
The volume of “paperwork” they have to do (on paper or electronic)	1.52	1.61	-0.09 (-0.22, 0.05)	0.21	1.47	1.57	-0.10 (-0.24, 0.04)	0.18
Work interruptions (e.g., telephone calls, unscheduled patients)	2.18	2.24	-0.06 (-0.19, 0.07)	0.36	2.12	2.15	-0.02 (-0.18, 0.13)	0.78
Workplace issues (e.g., office space, facilities, supplies)	2.45	2.63	-0.18 (-0.35, -0.00)	0.05	2.50	2.63	-0.14 (-0.32, 0.05)	0.15
The pace of your work	2.70	2.85	-0.14 (-0.31, 0.02)	0.10	2.82	2.95	-0.13 (-0.32, 0.07)	0.20
The allotment of additional time for difficult-to-help patients	2.67	2.65	0.02 (-0.15, 0.19)	0.85	2.83	2.83	-0.01 (-0.19, 0.17)	0.94

Note: We adjusted all results for the probability of selection into the sample, comparison group matching, and survey nonresponse
 *The number of respondents is the maximum number of respondents in the denominator for any of these questions. The number of respondents for which we had information varied due to item nonresponse. For CPC practices, the minimum number of responses was 610 in 2013 and 609 in 2016. For comparison practices, the minimum number of respondents was 436 in 2013 and 483 in 2016

or definitely leaving their current practice within the next 2 years, compared to 9% of physicians with less burnout ($P < 0.001$).

DISCUSSION

In the first and last years of CPC, physicians in CPC and comparison practices reported similar burnout, control over work (such as paperwork and hours worked), job satisfaction, and plans to leave their practice, indicating that CPC did not alter physician experience. These results are encouraging given concerns that change fatigue from participation in this complex primary care delivery transformation would exacerbate burnout and lessen satisfaction among physicians.

However, the results from CPC and comparison practices combined raise two troubling issues. First, consistent with levels seen in other studies,¹⁴⁻¹⁶ primary care physicians in this study

suffered from substantial burnout, with one third reporting high levels of burnout. Further, physicians on average reported only some to moderate control over many aspects of their work, with fairly low control on average over the volume of paperwork they have to do and workplace issues and interruptions. Physicians in both CPC and comparison practices who reported high burnout reported less control over work and less job satisfaction than physicians without high burnout, suggesting these aspects of physician experience are related. These results underscore risks for the affected physicians, their patients, and the future workforce of primary care physicians.

This study has several limitations. First, we used matching, rather than random assignment, to select comparison practices. Although comparison practices were similar to CPC practices on observable characteristics, differences in unobservable characteristics could have influenced physicians’ experiences. Second,

Table 6 Job Satisfaction Among Primary Care Physicians in CPC and Comparison Practices, 2013 and 2016

	2013			2016		
	CPC	Comp	P	CPC	Comp	P
Respondent’s agreement with the statement: Overall, I am satisfied with my current job (%)						
Strongly disagree	5	4	0.75	5	7	0.77
Slightly disagree	10	12		10	11	
Neither disagree or agree	10	12		8	9	
Agree	49	46		48	45	
Strongly agree	27	27		29	29	
N	620	434		617	486	
Likelihood respondent will leave the current practice within two years (%)						
None	48	46	0.37	52	44	0.17
Slight	31	26		24	26	
Moderate	12	14		11	15	
Likely	6	10		7	10	
Definitely	3	4		7	5	
N	625	441		614	489	

Note: We adjusted all results for the probability of selection into the sample, comparison group matching, and survey nonresponse

regions, payers, and practices volunteered to participate, so results are generalizable only to these practices and their physicians. Finally, we did not measure physicians' experiences before CPC and thus cannot rule out prior differences between physicians in CPC and comparison practices.

Although the evidence shows CPC did not adversely affect physicians' experiences, these results highlight opportunities for transformation initiatives and practices themselves (or their owners) to reduce burnout, improve delegation, and streamline administrative work. Studies have pointed to organizational changes—such as fostering communication between members of the health care team, cultivating a sense of teamwork, improving work flows, conducting targeted quality improvement projects, and increasing control over work—as promising strategies to reduce burnout and improve physician experience.^{1, 5, 30–32}

CONCLUSION

Despite requiring practices to undertake substantial transformation and regularly report their progress, the CPC initiative did not affect primary care physicians' burnout, control over work, job satisfaction, or plans to leave their practice. Although this is good news, burnout remains a significant problem for primary care physicians. This poses substantial risks for the affected physicians, their patients, and the primary care workforce. Research should continue to track the effects of other transformation initiatives on physicians and test new ways to address burnout.

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Compliance with Ethical Standards:

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