

Financial Incentives and Physician Commitment to Guideline-Recommended Hypertension Management

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Objectives: To examine the impact of financial incentives on physician goal commitment to guideline-recommended hypertension care.

Study Design: Clinic-level cluster-randomized trial with 4 arms: individual, group, or combined incentives, and control.

Methods: A total of 83 full-time primary care physicians at 12 Veterans Affairs medical centers completed web-based surveys measuring their goal commitment to guideline-recommended hypertension care every 4 months and telephone interviews at months 8 and 16. Intervention arm participants received performance-based incentives every 4 months for 5 periods. All participants received guideline education at baseline and audit and feedback every 4 months.

Results: Physician goal commitment did not vary over time or across arms. Participants reported patient nonadherence was a perceived barrier and consistent follow-up was a perceived facilitator to successful hypertension care, suggesting that providers may perceive hypertension management as more of a patient responsibility (external locus of control).

Conclusions: Financial incentives may constitute an insufficiently strong intervention to influence goal commitment when providers attribute performance to external forces beyond their control.

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For author information and disclosures, see end of text.

Use of financial incentives as a tool to improve clinical quality is a growing trend in American healthcare¹; insurers and hospitals are using pay-for-performance programs to change clinician behavior and improve quality of care. Importantly, the Affordable Care Act of 2010 will implement a Value-Based Purchasing Program in 2012 that offers financial incentives to hospitals based on the quality of care provided. Consequently, understanding how to incentivize providers' behavior effectively may significantly improve quality of care.

Some researchers have identified an association between financial incentives and improved care, though these data are limited and additional evidence using rigorously designed methods is needed.²⁻⁷ In the largest randomized controlled trial to our knowledge about the impact of financial incentives on quality of care, preliminary findings by Petersen and colleagues⁸ were that financial incentives improved blood pressure control or an appropriate clinical response to uncontrolled blood pressure, suggesting that financial incentives *could* impact care if designed correctly. However, we are not aware of any healthcare studies to date that examined the mechanism by which financial incentives may act to change provider behavior. Without this knowledge, it is very difficult to design effective financial incentive programs.

ROLE OF INCENTIVES IN PROVIDER GOAL SETTING

Research from both industrial/organizational psychology and management has demonstrated that financial incentives are linked to behavior resulting from setting and committing to a goal.⁹⁻¹³ According to Locke and Latham's theory of goal setting and task motivation, setting goals positively impacts performance; goal commitment (ie, the psychological commitment to achieving a goal) moderates this relationship such that the greater the goal commitment, the stronger the impact of setting goals will be on performance.¹⁴ Although increasing goal commitment is mostly accomplished via intrinsic means, such as increasing self-efficacy or expectancy of task attainment, financial incentives present one of the few extrinsic tactics an organization can use to improve goal commitment (and subsequently performance), particularly if goals are assigned

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rather than self-set.⁸ The **Figure** displays these relationships.

Studies have shown that financial incentives are unrelated to performance once goal setting is accounted for^{10,12,14} and that goal commitment is the key driver of goal-setting behavior for both self-set and assigned goals. Goal commitment has also been linked to increased planning activities, which in turn lead to improved performance, much like intention is linked to actual behavior.^{15,16} We therefore hypothesized that financial incentives would significantly impact provider goal commitment to guideline-recommended hypertension management. We are not aware of any studies in healthcare settings exploring the relationship between financial incentives and goal commitment, nor of the impact of different financial incentive configurations (eg, group vs individual) on goal commitment.

Take-Away Points

Financial incentives may constitute an insufficiently strong intervention to influence goal commitment when providers attribute performance to external forces beyond their control.

- Among survey participants, patient nonadherence was perceived to be outside provider control and a barrier to successful hypertension care; consistent follow-up was perceived to be a facilitator.
- Designers of pay-for-performance programs for clinicians should consider rewarding clinicians for behaviors and outcomes under their direct control, as well as for behaviors and outcomes for which individual goal commitment could increase, in order to maximize the likelihood that the incentive will result in a positive clinical outcome.

The parent trial tested the impact of financial incentives (using the 4 arms described above) on improvements in 3 hypertension performance measures based on national guidelines (prescription of guideline-recommended medication, blood pressure control, and appropriate clinical response to uncontrolled blood pressure). A study protocol detailing the design and methods of this project has been published elsewhere.¹⁸ Performance data in the parent trial were collected via patient chart review. To assess the individual attitudes, cognitions, and interactions of interest in the current study, we surveyed and interviewed participating physicians at multiple time points to explore their commitment to meeting guideline-recommended hypertension management goals and improvement strategies. This mixed-methods design allowed quantitative attitudinal data to be linked to the chart review data to explore causal pathways between financial incentives and performance, and to qualitative data to gain a richer understanding of how these attitudes and explanatory phenomena manifest themselves in clinic settings.

METHODS

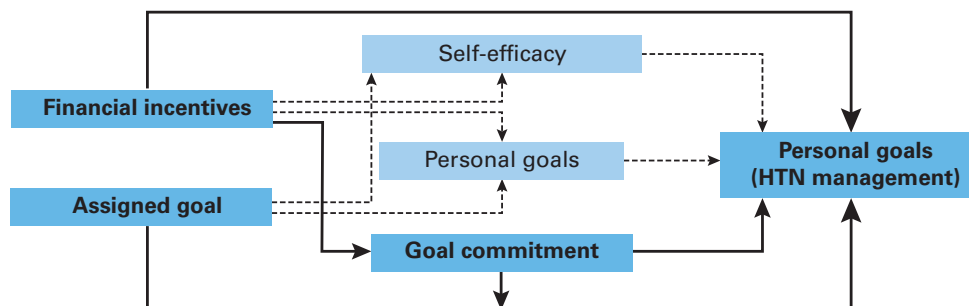
Design

This mixed-methods study is nested within a larger cluster-randomized controlled trial evaluating the impact of financial incentives on adherence to guidelines established in the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) in the primary care setting.¹⁷ Primary care clinics within 12 geographically diverse Veterans Affairs (VA) medical centers were randomly assigned to 1 of 4 study arms: (1) audit and feedback only (control); (2) physician-level financial incentive plus audit and feedback; (3) group-level financial incentive plus audit and feedback; and (4) physician- and group-level financial incentives and audit plus feedback (combined incentive).

Participants

We recruited 83 primary care physicians (approximately 7 from each site) who reported a full-time equivalent of at least 0.60 (approximately 3 days per week related to clinical activities) or had a primary care panel size of at least 500 patients (**Table 1**).

■ **Figure.** Study-Relevant Relationships From Locke and Latham’s Theory of Goal Setting and Task Motivation^a



HTN indicates hypertension.
^aAdapted from reference 14.

■ **Table 1. Physician Characteristics**

Characteristic	No.	%
Male	45	54
Race		
White or Caucasian	35	42
Asian Indian	23	28
Asian ^a	11	13
African American	6	7
Hispanic	4	5
Other	3	4
No answer	1	1
Primary specialty		
Internal medicine	71	86
General/family medicine	12	14
Years practicing since residency completion		
<5	12	14
5-9	19	23
10-14	26	31
15-19	9	11
≥20	17	20
Distribution of work duties, %	Mean	SD
Time in direct primary care	89	13
Time in teaching	5	7
Time in research	1	6
Time in administration	5	9

SD indicates standard deviation.
^aAsian included Chinese, Japanese, Korean, and Vietnamese; "Asian" and "Asian Indian" are mutually exclusive.

Measures

Goal Commitment. Hollenbeck and colleagues' 7-item Likert-type scale¹⁹ was used to measure goal commitment as part of the audit and feedback process (Appendix A). This measure is widely used in the organizational literature; reported reliability is 0.71.¹⁹

Knowledge and Attitudes About Guidelines. One possible confounder of goal commitment levels is previous knowledge and attitudes about hypertension management; for example, if participants hold negative views about the utility or appropriateness of the guidelines for managing hypertension, goal commitment would be unduly low. To account for confounders, participants completed a knowledge and attitudes questionnaire after viewing an educational presentation on the JNC 7 Hypertension Guidelines (see Provider Education section below). The questionnaire included questions about prior awareness and understanding of the JNC 7 guidelines, agree-

ment with its recommendations, and self-reports of whether the respondents apply the guidelines' recommendations. Participants also completed a demographics survey upon enrollment. Appendix A presents both questionnaires.

Planning Quality. Because goal commitment is associated with improvements in planning behaviors, which lead to improved performance, we sought to qualitatively identify participants' planning and improvement strategies in hypertension care. We used the taxonomy of Smith et al,²⁰ who posit 7 characteristics indicative of high-quality planning efforts: (1) clear definitions of roles and functions; (2) systematic strengths, weaknesses, opportunities, and threats analysis; (3) development of action plans; (4) communication of action plans; (5) extensive interaction among team members; (6) allocation of resources; and (7) future orientation (ie, thinking longer term). The more of these characteristics that are present in planning efforts, the higher the quality of those efforts. Allocation of resources and future orientation are the characteristics most likely to lead to actual changes in behavior; we coded for evidence of these characteristics in our interviews as our means of assessment.

Intervention Components

Provider Education. All participants received a standardized, web-based presentation summarizing the JNC 7 guidelines and educating participants about their study arm assignment and the study performance measures. A question and answer session followed. All participants also received pocket cards summarizing the JNC 7 guidelines and the study performance measures. The study website contained links to this presentation, pocket card, other JNC 7 resources, and patient resources for lowering blood pressure.

Financial Incentives. Participants in the intervention arms received payments approximately every 4 months over a 20-month intervention period. Incentive payments rewarded participants for chart-documented care of hypertensive patients (ie, prescribing guideline-recommended antihypertensive medications, providing guideline-recommended responses to uncontrolled blood pressure, and blood pressure control; see Petersen et al¹⁸ for chart abstraction and criterion data collection process details). In the individual arm, each physician received a direct payment based on his/her guideline adherence. In the group arm, a payment based on the collective performance of the participating physicians in the group was divided equally among all group members (both physicians and nonphysicians). In the combined arm, each physician received a direct payment based on his/her adherence; additionally, a payment based on the overall adherence of the physicians in the group was divided equally among all group members.

■ **Table 2.** Physician Response Rates to Goal Commitment Survey by Study Period

Response	Period				
	1	2	3	4	5
Number of physicians who viewed their feedback report	46	27	30	30	25
Number of physicians who completed postfeedback survey	35	18	23	26	22
Percentage of physicians who viewed their feedback report and completed postfeedback survey	76.09	66.67	76.67	86.67	88.00

Audit and Feedback. Audit and feedback reports were delivered to participants in all 4 arms approximately every 4 months for 5 consecutive periods via a website. Reports were designed based on the tenets of Feedback Intervention Theory,²¹ using feedback characteristics found to improve feedback effectiveness in healthcare.²² The report showed the percentage of patients meeting each performance measure, the amount earned for meeting each measure (incentive arm reports only), and performance goals for the following period, a feature shown to improve feedback effectiveness^{21,23} but not often found in feedback reports (see [Appendix B](#) for a sample feedback report and graph of performance over time). The participants' goal was to reach a benchmark based on the top performers in the previous period.²⁴ We tracked participant visits to the feedback reports to identify who viewed their report and thus had the opportunity to cognitively link their earnings to their performance.

Procedure

Human Subjects and Informed Consent. We obtained institutional review board approval at each of the 12 sites in the study. We followed the approval requirements for the most conservative institutional review board to secure approvals at all sites.²⁵

Surveys. Physicians completed 3 surveys: (1) a demographics survey upon enrollment in the study; (2) a knowledge and attitudes survey about the JNC 7 hypertension guidelines, administered as part of their provider education; and (3) a postfeedback survey containing the goal commitment measure of Hollenbeck et al, completed after receipt of each audit and feedback report. This survey also served to check that participants read their reports.

Interviews. Two rounds of 30-minute telephone interviews were conducted at each clinic, 1 each at months 8 and 16 (time points 2 and 4) of the study intervention period. Two physician participants were randomly selected from each site and invited to participate in the interviews; similarly, 2 nonphysician clinicians (eg, nurse practitioner, case manager) were selected from each site with a group incentive and invited to participate. Interview topics included any planning activities the participant used to improve their quality

of hypertension care and clinic operations. Appendix A lists the questions used to capture these constructs. The questions were deliberately broad and open ended to avoid leading the participants and to capture a wide range of potential behaviors. Interviews were transcribed and analyzed using Atlas.ti 6.2 (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany). Each transcript was reviewed and coded for themes by a trained coder and verified by an independent coder. Disagreements between coders were resolved by discussion and consensus; the lead author served as tiebreaker when needed.

RESULTS

Survey Response Rates

Demographics. All 83 physician participants completed the survey (100% response rate).

Knowledge and Attitudes. Of the 83 physician participants, 78 completed the survey (93.98% response rate).

Goal Commitment. [Table 2](#) summarizes goal commitment response rates. Of the physicians who received a feedback report each period, a mean of 42.45% viewed the feedback report. Goals were assigned to participants via the feedback report; in other words, only among participants who viewed the feedback report could goal commitment mediate the relationship between financial incentives and performance. Therefore, the appropriate denominator for this response rate is the number of physicians who viewed the feedback report, rather than all 83 physicians. Of these physicians, a mean of 78.5% completed the survey.

There were no significant differences in demographic characteristics or study arm assignment between the intervention arm physicians who viewed their feedback report and those who did not for any of the 5 periods (only 1 control arm participant viewed the feedback report over more than 1 period; hence the comparisons were restricted to the intervention arms). Similarly there were no significant differences in knowledge and attitudes between intervention arm physicians who did and did not view their feedback report; the only exception occurred during period 2, where intervention arm physicians who did not visit the feedback report were more

■ **Table 3.** Physician Knowledge and Attitudes About JNC 7 Guideline Recommendations

Knowledge or Attitude Marker	%
Read either the full or summarized JNC 7 guideline report	73
Reported having a good or excellent understanding of the guidelines before the educational presentation	62
Agreed or strongly agreed with the guidelines' recommendations, regardless of their prior knowledge	81
Reported implementing the hypertension guidelines with their patients	61

JNC 7 indicates Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.

likely to agree with lifestyle modification as an acceptable treatment than physicians who did view their feedback report ($F_{1,58} = 5.52, P < .022$). Because lifestyle modification was one of several possible ways to receive an incentive, this was unlikely to significantly impact goal commitment to guideline adherence.

Reliability Analysis

We calculated Cronbach's α on the goal commitment scale to check its internal consistency reliability. Analyses showed acceptable levels of reliability at 0.78.

Knowledge and Attitudes About Hypertension Guidelines

Table 3 summarizes physicians' knowledge and attitudes about guidelines. As can be seen from the table, most respondents were aware of and agreed with the JNC 7 guidelines, making attitudes an unlikely reason for goal commitment scores to be artificially deflated. Percentages noted in Table 3 did not significantly vary by study arm.

Hypothesis Test

To test the hypothesis that financial incentives positively impact goal commitment, we conducted a repeated-measures analysis of variance among the intervention arms. The control arm was not included in these analyses due to insufficient sample size (only 1 participant from the control arm chose to respond to our survey). This test, establishing a relationship between the independent variable and the potential mediator, was the first step in establishing goal commitment as a mediating mechanism between financial incentives and adherence to guideline-recommended hypertension management.^{26,27} Table 4 presents means and standard deviations for each study arm; Table 5 presents the results of the repeated-measures analysis of variance. Initial diagnostic analyses indicated goal commitment exhibited very limited variability. As shown in Table 5, we found no significant differences in goal commitment over time or across arms, nor did time and study arm interact to produce any significant effects. Our hypothesis was thus not supported. As no relationship was found between financial incentives and goal commitment, the latter cannot serve as an

explanatory mechanism through which financial incentives operate; thus, no further analyses were needed or conducted.

Follow-up Interviews

As the literature specifically identifies planning as an outcome of improved goal commitment, we used Smith and colleagues' taxonomy of planning quality²⁰ to search for evidence of planning activities to help improve hypertension care at each site. Three characteristics—extensive interaction, development of action plans, and communication of action plans—emerged as the most central to planning improvements in hypertension care:

Interviewer (I): So they were asking you for input on how to manage hypertension, is that what I'm hearing?

Responder (R): It was like a group session, you know just in a group, it was like feedback....

I: So tell me a little bit about what got discussed in that meeting....

R: Well, it's just, the uh, on the sheet, you know they'd be discussing just what, for the BP, for the sheet that they sent us. Like that.

I: So the notification sheet is something that came out of that feedback meeting?

R: Yes, ma'am.

I: And do you think that at that meeting people had a pretty good chance to sort of, you know, express their ideas or throw ideas into the mix?

R: Oh yes. Yes.

I: Did anybody try during that meeting or at any other time try to identify strengths and weaknesses of the clinic or ways the clinic could improve? Or was that it?

R: That was it.

—Nonphysician clinician in combined site A

Interestingly, however, the characteristics of planning quality, allocation of resources, and future orientation were scarce in our data; indeed, no passages were identified in our data as indicative of future orientation. This pattern was consistent across sites and arms.

As we found no differences across arms in our quantitative analysis of goal commitment and no differences across arms in

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■ **Table 4.** Means and SDs for Physician Goal Commitment Over 5 Study Periods, by Study Arm

Study Period	Study Arm											
	Control			Combined Incentive			Group Incentive			Individual Incentive		
	Mean	SD	No.	Mean	SD	No.	Mean	SD	No.	Mean	SD	No.
1	2.81	.36	3	3.06	.71	23	2.95	.48	15	2.83	.35	10
2	2.57	—	1	2.63	.55	16	2.78	.33	15	3.18	.24	4
3	2.86	—	1	2.80	.63	19	2.75	.61	16	2.88	.35	6
4	2.29	—	1	2.75	.68	16	2.85	.39	16	2.76	.26	7
5	2.29	—	1	2.87	.62	17	2.76	.33	13	2.71	.34	7

SD indicates standard deviation.

our qualitative analysis of planning quality, our next step was to search for external factors; that is, barriers and facilitators to improving management of hypertension. Patient nonadherence emerged as the chief barrier to guideline adherence:

We need mamas as far as the noncompliance is concerned. A lot of these patients really need a mother, a wife, whatever to make them take their medicines. If the VA could find someone to make the patients take their medicine, like a dorm mother or something, the numbers would look a lot better.

—Physician, control site A

Problems such as patient mental illness and inaccurate or missing patient contact information were cited as specific issues exacerbating the nonadherence barrier; however, the most often reported barrier in conjunction with patient nonadherence was lack of follow-up:

Seeing the patient back promptly for re-evaluation. That's the key part. If they come back late, that's time lost... Within a month, unless it's really high, then maybe a week. But for stage 1 hypertension, a month is good to get it addressed.

—Physician, individual incentive site A

Consequently, the most reported solution to help improve guideline adherence was a dedicated way of providing consistent patient follow-up.

So as a team, just starting from the nurse, they try to reinforce compliance with meds, lifestyle modifications, that kind of education. As a team we formulate a plan on how often to see the patient and after making adjustments, as a team we tell them what they need to be doing and give them an appointment in the near future to check it again. We go over the list and see who we need to see for the adjustments. That has helped actually, bringing them in more often...3 months is normal but some—on a multidrug regimen—we try to bring them back more often than that.

—Physician, combined incentive site B

For example, sites reported assigning the task of patient follow-up to other primary care personnel (eg, nurses, case managers, pharmacists) who had more capacity in their schedules to provide regular follow-up than the primary care provider.

There are patients who have difficulty coming back and forth to the clinic with transportation issues, etc. With those patients putting in the referral to the CM [case manager] really worked because she could get the information over the phone and reinforce education, dietary compliance. This saved the patient trips and we got a better result with better readings.

—Physician, group incentive site B

Patient nonadherence and patient follow-up were mentioned consistently across sites in all 4 arms as important factors.

■ **Table 5.** Repeated-Measures Analysis of Variance Results Summary

Source	SS	df	MS	F	P
Between subjects					
Intercept	282.86	1	282.86	637.62	.00
Study arm	.51	2	.25	.57	.61
Error 1	1.77	4	.44		
Within subjects (Huynh-Feldt correction)					
Time	.30	4	.08	.84	.52
Time × study arm	.39	8	.05	.54	.81
Error 2	1.45	16	.09		

df indicates degrees of freedom; F, F-ratio; MS, mean square; SS, sum of squared deviations.

DISCUSSION

We assessed the effect of financial incentives on physician goal commitment to adhere to hypertension management guidelines. Results from our quantitative survey revealed no variability in physician goal commitment over time or across study arms; physician attitudes about guidelines were generally positive and did not significantly vary across study arms. A priori qualitative analysis of interviews using the taxonomy of planning quality by Smith et al²⁰ showed consistently across arms some amount of development and communication of action plans to improve hypertension care, though there was little evidence of allocating resources for the developed action plans. Finally, post hoc qualitative analyses of interviews identified patient nonadherence and consistent follow-up as perceived barriers and facilitators, respectively, to successful hypertension care, regardless of study arm.

Provider perceptions of nonadherence could explain why we found no effect, and might suggest the presence of physician perceptions of external locus of control for hypertension care. That is, physicians might believe the outcome of hypertension care is mostly a patient responsibility, and thus perceive that they have little control over outcomes. Therefore, they would see no benefit in committing to a goal that they perceive as unachievable. Nonadherence perceptions could also explain the absence of resource allocation and future orientation noted during the telephone interviews.

An alternative possible explanation for our finding of a lack of variability in goal commitment is the existing VA policies and systems for hypertension management and clinical performance. The VA has various systems in place nationwide to improve and ensure quality. For example, some hypertension performance measures require that facilities be monitored and compared quarterly both with target performance standards and with other facilities²⁸; additionally, electronic clinical reminders exist to help ensure that providers deliver the required care during the patient encounter. This set of structures results in what is known in organizational psychology as a strong situation.²⁹ According to Chatman and colleagues,²⁹ strong situations (a) are construed similarly by participants (as was shown to be the case in our data),³⁰ (b) induce uniform expectancies, (c) feature incentives intended to induce a uniform response, and (d) are such that everyone has the skills to perform to standard. Hypertension care at VA fits all 4 criteria; therefore, goal commitment for hypertension care was unlikely to vary among physicians, and thus consequently unable to impact hypertension care.

Our findings can inform leaders trying to create a culture that values quality of care: Although structural elements such as policies and decision aids are critical foundations for high-

quality care,³¹ care must be taken to not squelch individual-level drivers of provider behaviors that result in higher quality care such as goal commitment or internal locus of control. Fundamentally, whether working alone or in a team, it is the actions of individuals that result in higher or lower quality care, and it is the behavior of individuals that we ultimately seek to change, whether by structures, incentives, or other forms of intervention. We caution, however, that the explanation of a strong situation was not endorsed one way or the other by the participant interviews.

Limitations

Our biggest limitation was sample size, particularly the dwindling number of respondents as the study progressed over time. However, the lack of significant findings in our study was not due to too much variability to detect an effect, which is often the case with small sample sizes (ie, the means appear to be different, but because of the large error terms resulting from the small sample size, significance cannot be established). On the contrary, it was due to insufficient variability: most physicians, regardless of study arm, exhibited a consistently modest level of goal commitment over time. Thus we can have confidence in our findings, despite the small sample size.³²

CONCLUSIONS

We conclude that to the extent that external forces (eg, strong situations, perceptions of external locus of control) influence physician goal commitment to hypertension care, financial incentives may be an insufficiently strong intervention to overcome these other influences on goal commitment, thus limiting the ability of goal commitment to serve as an operating mechanism for financial incentives. More research is needed to better understand the behavioral levers triggered by financial incentives in the clinician population, so as to better target both pay-for-performance and other quality improvement initiatives.

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■ **Appendix A. Measures Used in This Study**

Hollenbeck’s Goal Commitment Measure

We used the 7-item scale of Hollenbeck et al¹⁹ to measure goal commitment. This scale is well documented, has good reliability and construct evidence of validity, and has been used widely for this purpose. Respondents rated items on the 5-point Likert scale below.

What do you think of the hypertension treatment goals you received in your feedback report?

1. It’s hard to take these goals seriously.
2. It’s unrealistic for me to expect to reach these goals.
3. It is quite likely that these goals may need to be revised, depending on how things go.
4. Quite frankly, I don’t care if I achieve these goals or not.
5. I am strongly committed to pursuing this goal.
6. It wouldn’t take much to make me abandon this goal.
7. I think this goal is a good goal to shoot for.

Response Choices:

- 1 = strongly agree
- 2 = agree
- 3 = neither agree nor disagree
- 4 = disagree
- 5 = strongly disagree

Demographics Survey

1. What is your PERCENT (%) FTEE [full-time equivalent employee] in the clinic? _____
2. What is your GENDER?
 - Male
 - Female
3. What is your AGE? _____
4. What is your DATE OF BIRTH? _____

5. What is the RACE/ETHNICITY that best describes you?

- White or Caucasian
- Black or African American
- Asian (Chinese, Japanese, Korean, Vietnamese)
- Asian Indian
- Native Hawaiian/Other Pacific Islander
- Hispanic/ Spanish/ Cuban/ Mexican American/ Puerto Rican/ Latino/ Chicano/ Haitian
- American Indian/ Alaska Native
- Other (please fill in the blank): _____
- Refused to answer

6. What is your DEGREE(S)?

- M.D.
- D.O.
- Other (please fill in the blank): _____

7. What year did you graduate from medical school?

8. Are you BOARD CERTIFIED? _____

- If yes, what year were you last board certified?

9. What is your primary specialty?

- Internal medicine
- General/family practice
- Other (please fill in the blank): _____

10. Do you have a SUBSPECIALTY or SECONDARY SPECIALTY in the following areas? Check all that apply.

- Nephrology
- Cardiology
- Geriatrics
- Endocrinology
- Other (please fill in the blank): _____
- No subspecialty/secondary specialty

11. How many years have you been in practice since the completion of residency? _____

12. What percentage of your professional time is spent in each of the following professional roles? (should add to 100%)

- Direct primary care _____%
- Teaching _____%
- Research _____%
- Administration _____%

13. What is your annual household gross income? (Please select one.)

- Less than \$100,000
- \$100,000- \$125,000
- \$125,001- \$150,000
- \$150,001- \$175,000
- \$175,001-\$200,000
- \$200,001- \$225,000
- \$225,001- \$250,000
- \$250,001- \$275,000
- \$275,001- \$300,000
- Over \$300,000
- Refused to answer

Knowledge and Attitudes Survey

Thank you for participating in the RIGHT-BP study. We would like to know a little more about how you currently manage your patients' hypertension, and your views on the JNC 7 hypertension guidelines and the information you received in the educational presentation. We would greatly appreciate your taking 5-10 minutes to complete our questionnaire.

1. In my clinic we provide the following hypertension management resources (check all that apply):

- a. Educational literature/materials for the patient.
- b. Educational workshops for the patient.
- c. Hypertensive patient registry.
- d. Web-based blood pressure monitoring tools (eg, My HealthVet).
- e. Patient educational reminders (eg, periodic mailings reminding patients to eat healthfully).
- f. Reminders to patients of upcoming clinical appointments.
- g. Reminders to patients of upcoming medication refills.
- h. Pharmacy feedback systems to monitor patient compliance with medication (eg, provider reminders that medication supply should be running out for patients).
- i. Group visits for hypertension.
- j. None of the above.

2. To what extent were you aware of the JNC 7 guideline for treatment of hypertensive patients before today's information session? (Check all that apply—skip to question 5 if you select a or b.)

- a. I was not aware that JNC had issued a hypertension guideline.
- b. I was aware of its existence, but not aware of its contents.
- c. I had read the physician reference card.
- d. I had used the PDA application.
- e. I had read the JNC 7 Express Report.
- f. I had read the full report.

■ METHODS ■

Please rate how strongly you agree with each of the following statements, using the following scale:

1 = strongly disagree 2 = somewhat disagree 3 = neither agree nor disagree 4 = somewhat agree
5 = strongly agree

	Strongly disagree → Strongly agree				
	1	2	3	4	5
3. Before today's presentation, I had an excellent understanding of the JNC 7 guidelines' recommendations.					
4. I currently implement the guidelines' recommendations with all my hypertensive patients.					

Given what you learned from our educational presentation, please rate how much you agree with the JNC 7 guidelines' recommendations using the scale above.

5. Lifestyle modification recommendations.					
6. List of compelling indications for hypertension treatment.					
7. Use of thiazide-type diuretics as the first line of defense for most hypertensives.					
8. Use of 2-drug combination for patients with stage 2 hypertension.					

Please rate how strongly you agree with each of the following statements, using the scale above.

9. I have a better understanding of the JNC 7 guidelines now than before today's presentation.					
10. The incentive process was explained well to me.					
11. I have a good understanding of how the reward in this study will be calculated.					
12. The process for calculating the reward is fair.					
13. The criteria used to evaluate how well I follow the guidelines' medication recommendations are fair.					
14. The criteria used to evaluate how well I control my patients' blood pressure are fair.					
15. The amount of the incentive would motivate me to improve.					
16. In general, financial incentives are a useful tool for improving quality of hypertension care.					

Thank you for your candid responses, and for participating in our study!

Semistructured Interview Question Pool

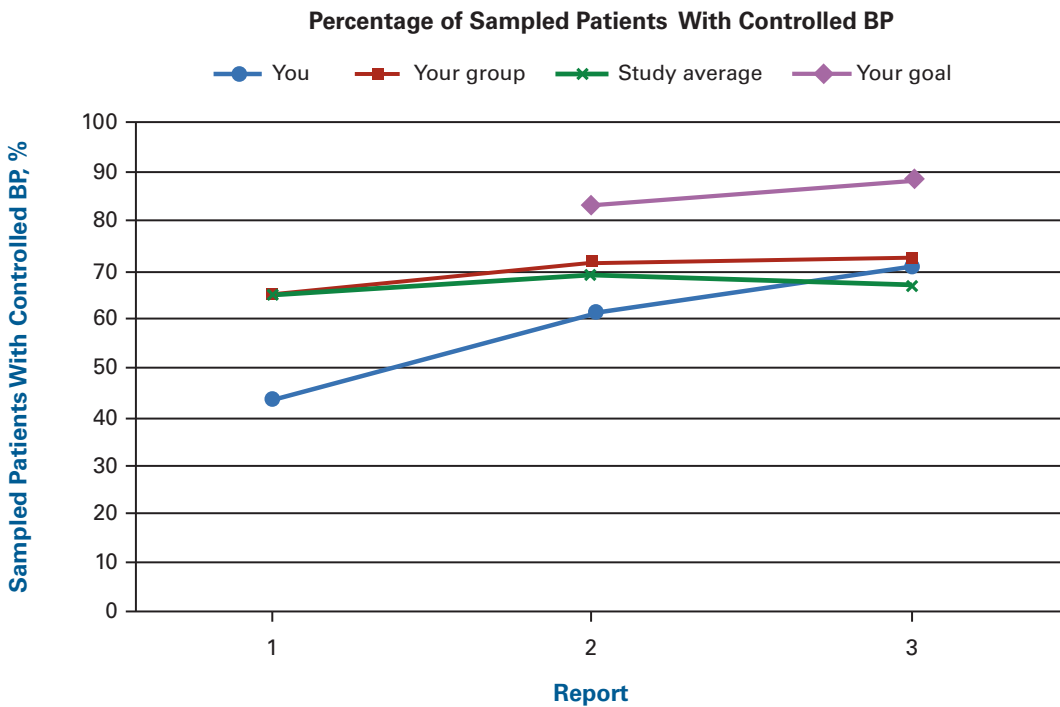
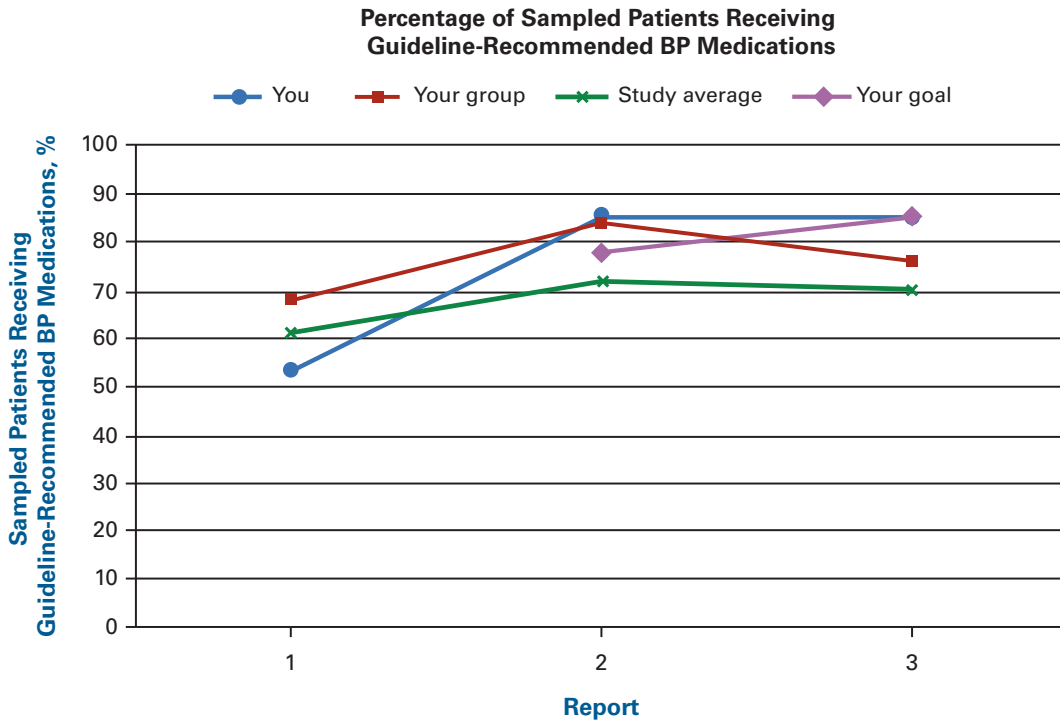
1. As a _____ (job title), what is your key responsibility in managing your patients' hypertension?
2. Who else in the primary care team plays a key role in managing your patients' hypertension? What are their key roles and responsibilities in managing patients' hypertension (eg, nurses are responsible for x, y, and z)?
3. How do primary care team members communicate information about a patient's situation?
4. Think about the last time your primary care team worked very well together as a team to manage a patient's hypertension. What was the situation? What did the team do that was so successful? What was the result?
5. Think about the last time your primary care team worked very poorly together as a team to manage a patient's hypertension. What was the situation? What did the team do that was so problematic? What was the result?
6. On a scale of 1 to 10, with your successful example being a 10 and your poor example being a 1, where does your primary care team operate most of the time with respect to hypertension care? Why?
7. What efforts, if any, were made to identify strengths, weaknesses, and opportunities for the clinic to improve?

■ METHODS ■

■ **Appendix B.** Sample Audit and Feedback Report for the Third Performance Period for a Physician in the Combined Incentive Arm

Report	You		Your Group	
	No. (%) of Patients	You Earned	No. (%) of Patients	Group Earned
Your scores this period				
Number of eligible hypertensive patients randomly sampled from your panel/group	40		280	
Number of patients who received guideline-recommended BP medications	34 (85)	\$309.40	213 (76)	\$1938.30
Number of patients with controlled BP				
Number of patients with controlled BP	28 (70)	\$254.80	201 (72)	\$1829.10
Number of patients with uncontrolled BP...				
... Who received an appropriate clinical response to uncontrolled BP this period	4 (33)	\$36.40	42 (53)	\$382.20
Total earnings				
This period—congratulations! Good work!		\$600.60		\$4149.60
Overall		\$1583.30		\$11,657.10
<i>Congratulations! You are among the top 10% of performers across the entire study for this period.</i>				
<i>For the next period, your goal is to maintain or exceed your current performance level. Keep up the great work!</i>				
Your goals for the upcoming period				
Percentage of eligible hypertensive patients in your panel/group...				
... Who will receive guideline-recommended BP medications	85		85	
...With controlled BP	85		85	
...With uncontrolled BP who will receive an appropriate clinical response to uncontrolled BP	83		83	
<i>If you and your group meet or exceed your goals next period, you and your group could earn at least:</i>		\$664.30		\$4650.10
Total earnings that you will receive this period: \$946.40				
BP indicates blood pressure.				

■ Appendix B (Continued). Graphs of Performance Over Time From Sample Report



BP indicates blood pressure.