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TECHNICAL
R E P O R T

Patient Incentives to
Motivate Doctor Visits
and Reduce Hypertension
Disparities

Laurie T. Martin, Joie D. Acosta, Teague Ruder,
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Preface

Nearly one in three adults—or 72 million people—in the United States have high blood pressure, also known as hypertension (HTN). Yet, despite increased awareness and numerous initiatives, estimates from the National Health and Nutrition Examination Survey (NHANES) suggest that fewer than half of them have their HTN adequately controlled.

Although the use of financial incentives to reward physicians delivering higher quality of care is increasingly common in the United States, most of these efforts have not focused specifically on the use of such incentives as a tool to help reduce disparities in care and outcomes among patients belonging to different racial/ethnic or socioeconomic groups. In 2009, CIGNA Healthcare (CIGNA) was awarded a grant to examine the extent to which small financial incentives for patients can motivate physician visits and reduce racial/ethnic disparities in hypertension. The project was administered as a partnership between CIGNA and the RAND Corporation. This report summarizes the findings from the formative and summative evaluation of CIGNA's initiative and should be of interest to health plans and other organizations considering quality improvement (QI) initiatives to address hypertension and reduce disparities.

This work was funded by a grant from the Robert Wood Johnson Foundation (RWJF), under its *Finding Answers: Disparities Research for Change* program. RWJF had no role in the design and conduct of the study; in the collection, management, analysis, or interpretation of data; or in the preparation of this document. The research was conducted in RAND Health, a division of the RAND Corporation. A profile of RAND Health, abstracts of its publications, and ordering information can be found at www.rand.org/health.

Contents

Preface	iii
Figures	ix
Tables	xi
Summary	xiii
Acknowledgments	xvii
Abbreviations	xix
CHAPTER ONE	
Introduction	1
Hypertension	1
Rationale for Financial Incentives to Patients	2
Conceptual Framework	4
Description of Initiative	4
Study Objectives	5
Study Design	5
Study Population	6
Data Sources	7
Administrative Claims Data and Medical Chart Review	7
Measures	7
Patient Feedback	8
Physician Survey	8
CIGNA Leadership Interviews	10
Analyses	10
Organization of This Report	10
CHAPTER TWO	
Summative Evaluation	11
Aim 1: To Assess Whether Patient Financial Incentives, Along with Educational Materials, Are Effective in Motivating Individuals with HTN to See Their Personal Physician	11
Any Physician Visit	11
Number of Physician Visits	12
Effectiveness of the Initiative for Individuals Not in Regular Care	13
Any Physician Visit	13
Number of Physician Visits Among Those Who Had Not Seen a Physician in the 12 Months Prior to the Start of the Study	13

Post-Hoc Analyses with Baseline Blood Pressure Control	13
Number of Physician Visits Among Those with SBP Between 120 and 139 or DBP Between 80 and 89	15
HTN as the Primary Diagnosis	16
Number of Physician Visits Where HTN Was the Primary Diagnosis	16
Aim 2: To Determine Whether the Initiative Encouraged the Control of or Improvement in BP for High-Risk Individuals	18
Aim 3: To Assess Whether Patient Incentives and Educational Materials Are Differentially Effective Across Racial/Ethnic Groups in Motivating Physician Visits and Improving BP Control and Whether These Differential Effects Lead to a Reduction in Racial/Ethnic Disparities in HTN.	19
Any Physician Visit	19
Change in Blood Pressure	19
 CHAPTER THREE	
Member Feedback	21
Perceptions of the CIGNA Initiative	21
Educational Materials	21
Other Recommendations to Improve the Initiative	24
 CHAPTER FOUR	
Physician Feedback	27
Perceptions of the CIGNA Quality Improvement Initiative	27
Perceived Patient Barriers	29
Strategies Suggested by Physicians to Address Patient Barriers	30
Suggestions for How to Include Physicians in Future Patient-Focused Quality Improvement Initiatives	30
 CHAPTER FIVE	
CIGNA Leadership Feedback	33
Aspects of the Initiative That Make It Attractive for CIGNA	33
Policies or Procedures That Supported Implementation	34
Barriers to Implementation or Sustainability	35
Sustainability, Replication, and Scaling	35
Patient-Focused Versus Physician-Focused Initiatives	36
External Influences on Quality Improvement Efforts	37
 CHAPTER SIX	
Summary and Implications for Quality Improvement Initiatives	39
Summary	39
Limitations	39
Implications for Quality Improvement Initiatives	40
 APPENDIXES	
A. Informational Letters, Educational Materials, and Costs of Implementation	43
B. Study Population and Randomization to Study Arm	49

C. Study Participant Interview Protocols	53
D. Physician Survey	59
E. CIGNA Leadership Interview Protocol	63
F. Analyses	65
G. Continuity of Care Results	69
References	73

Figures

1.1.	Conceptual Model Based on Andersen’s Behavioral Model.....	4
2.1.	Cumulative Proportion of Individuals Who Made a Physician Visit over the 12-Month Follow-Up Period.....	20

Tables

1.1.	Clinical Measures and Outcomes.....	8
1.2.	Member Demographics.....	9
2.1.	Percentage of Individuals with a Physician Visit, by Study Arm.....	11
2.2.	Comparison of Effectiveness of Study Arms.....	12
2.3.	Percentage of Individuals with a Physician Visit, Stratified by Time Since Most Recent Physician Visit Prior to Start of the Initiative.....	14
2.4.	Comparison of Effectiveness of Study Arms, Stratified by Time Since Most Recent Physician Visit Prior to the Start of the Initiative.....	15
2.5.	Percentage of Individuals with a Physician Visit, Stratified by Baseline Blood Pressure.....	16
2.6.	Comparison of Effectiveness of Study Arms, Stratified by Baseline Blood Pressure.....	17
2.7.	Percentage of Individuals with a Physician Visit, Where HTN Was the Primary Diagnosis, by Study Arm.....	18
2.8.	Comparison of Effectiveness of Study Arms.....	18
2.9.	Linear Regression Model Predicting Systolic Blood Pressure at Follow-Up.....	19
3.1.	Challenges and Solutions Identified by Members and Broadly Applicable to a Variety of Patient Incentive Quality Improvement Initiatives.....	25
4.1.	Physicians Perceptions of the CIGNA QI Initiative.....	28
4.2.	Challenges and Solutions Identified by Physicians and Broadly Applicable to a Variety of Patient Incentive QI Initiatives.....	31
B.1.	Study Population.....	50
B.2.	Racial/Ethnic Composition of Those Whose Last Visit Was Within 0–12 Months.....	52
B.3.	Racial/Ethnic Composition of Those Whose Last Visit Was Within 13–24 Months.....	52
B.4.	Final Sample.....	52
F.1.	Themes Identified in the Member Focus Group and Interview Transcripts.....	67
F.2.	Themes Identified in the Physician Survey.....	68
G.1.	Number of Physician Visits, by Study Arm.....	69
G.2.	Number of Physician Visits Within 12 Months Post-Initiative.....	70
G.3.	Number of Physician Visits, Stratified by Time Since Most-Recent Physician Visit Prior to the Start of the Initiative.....	70

Summary

Nearly one in three adults—or 72 million people—in the United States have high blood pressure, also known as hypertension (HTN) (National Heart, Lung, and Blood Institute, 2009). Yet, despite increased awareness and numerous initiatives, NHANES estimates from 2005–2006 (Ostchega, 2008) suggest that fewer than half (43 percent) of those people have their HTN adequately controlled, defined as less than 140/90 mm Hg in nondiabetic patients (Ong, Cheung, et al., 2007). Regular physician visits are critical to HTN management and provide an opportunity for physicians to evaluate and revise medication regimens and discuss potential lifestyle changes with their patients that may lower their high blood pressure.

Although the use of financial incentives to reward physicians delivering higher-quality care is increasingly common in the United States (Bailit Health Purchasing LLC and Sixth Man Consulting, Inc. 2001; Roski, Jeddelloh, et al., 2003), the use of financial incentives to reward patients for improved management of their chronic conditions is relatively rare. Most research on patient incentives has focused on co-pays or other negative incentives routinely used in health care to discourage overutilization (Brook, Ware, et al., 1984). However, evidence in other arenas suggests that small financial rewards influence consumer behavior, and evidence for the effectiveness of positive incentives to improve chronic care self-management (Jochelson, 2007) and health behaviors is growing (Volpp, John, et al., 2008; Volpp, Troxel, et al., 2009). But few of these efforts have focused specifically on the use of such incentives as a tool to help reduce disparities in care and outcomes among patients belonging to different racial/ethnic or socioeconomic groups.

In 2009, CIGNA was awarded a grant from the Robert Wood Johnson Foundation (RWJF) under the foundation's *Finding Answers: Disparities Research for Change* program to examine the extent to which small financial incentives can motivate physician visits and reduce racial/ethnic disparities in HTN. The project was administered as a partnership between CIGNA and the RAND Corporation. The quality improvement initiative was aimed at individuals with HTN in Maryland, Virginia, and Washington, D.C. This 24-month project was designed to address three objectives:

1. To assess whether a one-time \$15 patient financial incentive, along with educational materials, would be effective in motivating individuals with HTN to see their personal physician, compared with educational materials only or no intervention (usual care).
2. To determine whether patient incentives encourage the control of or improvement in BP for high-risk individuals relative to educational materials only or no intervention (usual care).

3. To assess whether patient incentives and educational materials are differentially effective across racial/ethnic groups in motivating physician visits and improving BP control and whether these differential effects lead to a reduction in racial/ethnic disparities in HTN.

Eligible members with a previous diagnosis of HTN (n=18,000) were randomized to one of three arms: (1) HTN materials (i.e., an educational letter and pocket blood pressure record) *plus* an offer of a one-time \$15 American Express gift card, contingent on making a physician visit (incentive group, n=6,000); (2) HTN materials only, without an offer of patient incentive (education-only group; n=6,000); or (3) usual care (n=6,000). Receipt of the gift card was contingent on having an appointment with a physician to discuss HTN; the card was mailed to the patient once the appointment had appeared in CIGNA's claims database. By design, approximately 15 percent of the study population had not had a physician visit in more than a year prior to the launch of the HTN initiative (n=3,076, 17.1 percent). This design feature allowed us to examine whether this initiative was successful in encouraging patients who were not in regular care to seek medical attention for their HTN.

The conceptual framework for this project is based on Andersen's Behavioral Model (Andersen, 1995), which postulates that people's use of health services is a function of their predisposition to use the services (e.g., demographic factors, aspects of the social structure, and health beliefs), the personal and community resources that enable or impede their use of the services (e.g., availability of health facilities, knowledge of how to access services, and means to get them), and their need for care.

The overall evaluation included a summative evaluation using data from administrative claims databases and medical record reviews and a formative evaluation using feedback from (1) study participants, (2) high-volume physicians, and (3) CIGNA leadership.

Summative Evaluation

Aim 1: To assess whether a \$15 patient financial incentive, along with educational materials, is effective in motivating individuals with HTN to see their personal physician, compared with educational materials only or no intervention (usual care)

Individuals receiving a financial incentive were more likely to have made a physician visit compared with those receiving educational materials only or those receiving usual care, although the results dissipated over time. The initiative did not affect the total number of physician visits over the 12-month period.

Post-hoc analyses of patient subgroups suggested that the initiative may be most beneficial for individuals who had not seen a physician in over a year and those who had a baseline systolic blood pressure (SBP) between 120 and 139 or a diastolic blood pressure (DBP) between 80 and 89. Additional post-hoc analyses limiting the outcome to those physician visits for which HTN was the primary diagnosis also suggest that the initiative was effective at encouraging physician visits.

By three months post-intervention, 33.8 percent of the individuals in the incentive arm had made a physician visit, 32.7 percent of the education-only group had made a visit, and 31.1 percent of those in usual care had made a visit (p<0.01). Within three months, the incentive resulted in a 2.7 percent absolute increase in the number of individuals having a physician visit for HTN compared with those in usual care (p<0.01). By six months post-intervention,

the differences between the groups had diminished, although they remained statistically significant ($p=0.04$). By 12 months post-intervention, the effect of the intervention on making a physician visit had dissipated.

The initiative had a significant effect on those who had not seen a physician in over a year. Within the first three months, 19.3 percent of individuals in the incentive group had made an appointment compared with 14.7 percent in usual care, an increase of 4.6 percentage points ($p<0.01$). Although more individuals receiving educational materials had a visit (17.6 percent) than did those in usual care (14.7 percent), this difference was of borderline significance ($p=0.07$).

Although all individuals had a previous diagnosis of HTN, actual blood pressure at baseline was not known until record reviews were completed at six months because blood pressure is not currently recorded in CIGNA claims data. At baseline, 35.9 percent of the study population had SBP ≥ 140 or DBP ≥ 90 ; 51.0 percent had SBP between 120 and 139 or DBP between 80 and 89, and 13.0 percent had SBP <120 and DBP <80 . Post-hoc analyses suggested that the educational materials may prompt individuals with SBP between 120 and 139 or DBP between 80 and 89 to make a physician visit. By three months, a larger percentage of both the incentive group (33.8 percent) and education-only group (34.0 percent) had made a visit compared with those in usual care (31.1 percent). These differences were statistically significant ($p=0.03$ and $p=0.02$, respectively). By six months, the education-only group continued to have a significantly larger percentage of individuals who had made a physician visit compared with those in usual care (53.5 percent versus 50.8 percent, $p<0.04$). Similarly, at 12 months, a significantly larger percentage of the education-only group had made an appointment relative to those in usual care (67.9 percent versus 64.0 percent, $p<0.02$). There were no differences between those in the incentive group and those in usual care after three months, or between those in the incentive and education-only groups.

When only visits for which HTN was listed as the primary diagnosis were included, both the incentive and education-only arms had significantly more visits than those in usual care after 12 months of follow-up ($p=0.04$ and $p=0.03$, respectively). Both groups had about 2 percent more visits than the usual care group.

Aim 2: To determine whether educational materials alone or in combination with a small financial incentive encourage the control of or improvement in BP for high-risk individuals

Although patient incentives and educational materials were not associated with an improvement in BP for the full sample, subsequent post-hoc analyses of subgroups suggested that the initiative may be effective in lowering blood pressure among those with SBP between 120 and 139 or DBP between 80 and 89 specifically; this group should be the focus of future study.

Individuals with SBP between 120 and 139 or DBP between 80 and 89 at baseline demonstrated significant and sustainable reductions in SBP over time. After six months, SBP had decreased an average of 0.5 points more for the incentive group and 0.7 points more for the education-only group relative to those in usual care. After 12 months, SBP had decreased by an average of 3.8 points more for the incentive group and 2.6 points more for the education-only group, relative to those in usual care. Post-hoc analyses stratified by baseline blood pressure suggested that the initiative did not result in an improvement in blood pressure among those with HTN at baseline.

Aim 3: To assess whether patient incentives and educational materials are differentially effective across racial/ethnic groups in motivating physician visits and improving BP control and whether these differential effects lead to a reduction in racial/ethnic disparities in HTN

Formal tests of interaction that compared the effectiveness of the initiative across racial/ethnic groups found no significant differences for either physician visits or reduction in blood pressure, suggesting that the initiative may not contribute to a reduction in racial/ethnic disparities in HTN.

Formative Evaluation

Patients were asked for feedback on each of the three components of the initiative and suggestions for how to improve and refine each component. Suggestions included strengthening the tone of the educational materials because many believed the educational materials were too reserved in tone and failed to express the seriousness of the condition; tying the incentive more closely to the condition, e.g., offering a discount on the purchase of a blood pressure cuff rather than a generic \$15 gift card; and customizing initiatives to the stage of illness and whether or not patients are actively engaged in care. Although the same intervention was implemented with all participants in the intervention group, the respondents believed that the letter and educational materials could be tailored to the condition of the individual participant, so that, for example, those with HTN would receive one type of information and those who had gotten their blood pressure under control would receive messages congratulating them and providing information about maintenance.

We also surveyed 24 physicians (29 percent response rate) to assess whether they thought the initiative was useful or helpful to their patients, whether the initiative would result in behavior changes among their patients, and ways in which physicians should be engaged in patient-focused quality improvement initiatives in the future. In general, physicians agreed that the letter, blood pressure record, and financial incentives would encourage their patients to schedule an office visit and keep better track of their blood pressure. Physician recommendations to improve the initiative included tying the incentive to compliance or improvements in blood pressure control, tying the incentive more closely to tools needed to treat hypertension, and providing additional education via phone calls.

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Abbreviations

AIAN	American Indian/Alaskan Native
BMI	body mass index
BP	blood pressure
CIGNA	CIGNA Healthcare
CPT	Current Procedural Technology
DBP	diastolic blood pressure
EMR	electronic medical record
GED	General Educational Development test
HEDIS	Healthcare Effectiveness Data and Information Set
HMO	health maintenance organization
HTN	hypertension
NHANES	National Health and Nutrition Examination Survey
NCQA	National Committee for Quality Assurance
PCP	primary care physician
QI	quality improvement
PI	Pacific Islander
ROI	return on investment
SBP	systolic blood pressure
SE	standard error

Introduction

Although the use of financial incentives to reward physicians delivering higher quality of care is increasingly common in the United States (Bailit Health Purchasing LLC and Sixth Man Consulting, Inc. 2001; Roski, Jeddeloh, et al., 2003), the use of financial incentives to reward patients for improved management of their chronic conditions is relatively rare. Most research on patient incentives has focused on co-pays or other negative incentives routinely used in health care to discourage overutilization (Brook, Ware, et al., 1984). Yet, evidence in other arenas (e.g., marketing) suggests that small financial rewards influence consumer behavior, and evidence for the effectiveness of positive incentives to improve chronic care self-management is growing in Europe and elsewhere (Jochelson, 2007). However, most of these efforts have not focused specifically on the use of such incentives as a tool to help reduce disparities in care and outcomes among patients belonging to different racial/ethnic or socioeconomic groups. In 2009, CIGNA Healthcare (CIGNA) was awarded a grant from the Robert Wood Johnson Foundation under the *Finding Answers: Disparities Research for Change* program to examine the extent to which small financial incentives can motivate physician visits and reduce racial/ethnic disparities in hypertension. The project was administered as a partnership between CIGNA and the RAND Corporation. This report summarizes findings from the formative and summative evaluation of CIGNA's initiative.

Hypertension

In the United States, 72 million people—nearly one in three adults—have high blood pressure, also known as hypertension (HTN) (National Heart, Lung, and Blood Institute, 2009). Yet, despite increased awareness and numerous initiatives, estimates from the National Health and Nutrition Examination Survey (NHANES) suggest that fewer than half (43 percent) of those people have their HTN adequately controlled (Ostchega, 2008), defined as less than 140/90 mm Hg in nondiabetic patients (Ong, Cheung, et al., 2007). The consequences of uncontrolled HTN for individuals and society are substantial, since it is an important risk factor for congestive heart failure, myocardial infarction, ischemic stroke, and kidney failure, all of which contribute significantly to the morbidity, mortality, and health care costs of adults in the United States (Sennett, 2000). In 2007, for example, the estimated direct and indirect cost of cardiovascular diseases and stroke was \$431.8 billion, \$66.4 billion of which could be attributed directly to hypertensive disease (American Heart Association, 2007).

Ideally, uncontrolled HTN should be less of a problem and racial/ethnic disparities less evident among commercially insured managed care members than among the general popu-

lation, since all enrollees presumably have access to care and can benefit not only from direct contact with and care from their physician but also from the extensive management infrastructure and support services available in managed health plans. Unfortunately, even in leading health plans that apply a wide range of routinely used quality improvement (QI) tools (e.g., automated reminders, disease management) and approaches (e.g., incentives to physicians, educational outreach to members), rates of HTN control are far from optimal. Nationally, only 60 percent of health plan members have their HTN under control, and control rates for top-performing (top-decile) plans suggest that only 70 percent of their members have their HTN under control (National Committee for Quality Assurance, 2008). Although less is generally known about racial disparities in HTN control among commercially insured plans, several studies have documented substantial racial disparities in blood pressure (BP) control among enrollees in Medicare managed care plans (Virnig, Lurie, et al., 2002; Fremont, Bierman, et al., 2005). Interestingly, although disparity size is not well correlated with overall plan performance, disparity size does show distinct differences by geographic region, ranging from a low of 3 absolute percentage points in the Pacific region to nearly 11 percentage points in the mid-Atlantic states (Virnig, Scholle, et al., 2007), which is the setting of the study.

Rationale for Financial Incentives to Patients

Within health benefit plans, QI initiatives have historically focused on encouraging the physician to render optimal, evidence-based care. Such initiatives relied on a gatekeeper health maintenance organization (HMO) model in which primary care physicians (PCPs) saw patients on a regular basis for the delivery and coordination of all health care services, including referrals to specialty care. In this environment, it was feasible for health plans to generate lists of patients in need of services or to provide specialized training to physicians based on their patient population.

Over the past decade, health plans have been moving toward self-directed open-access benefit plans in response to the desire of employer groups and members to have the flexibility to see specialists or other physicians without referral or the need to see a PCP first. However, this shift has made it more challenging to hold PCPs accountable for QI activities. Given that members enrolled in these open-access plans now have greater decisionmaking power in terms of when and where they seek care, there is a need to focus QI activities on patients and to provide them with tools and incentives to make good health care decisions, such as regularly seeing their PCPs for HTN care.

Compared with the increasingly common practice in the United States of using financial incentives to reward physicians for delivering higher-quality care (Bailit Health Purchasing LLC and Sixth Man Consulting, Inc., 2001; Roski, Jeddloh, et al., 2003), the use of financial incentives to reward patients for improved management of their chronic conditions is less common, although gaining popularity. Studies that have examined the use of economic incentives to either reward an individual for a desired behavior or outcome or penalize the individual (e.g., via loss of a financial reward) for failure to achieve it (Jochelson, 2007) have demonstrated some success. Volpp and colleagues, for example, demonstrated that the use of economic incentives, or “pay for performance for patients” (Volpp, Pauly, et al., 2009), was effective in promoting smoking cessation (Volpp, Troxel, et al., 2009) and weight loss (Volpp, John, et al., 2008), although the weight loss was not fully sustained.

There is also growing evidence for the effectiveness of positive incentives, particularly to achieve clearly defined, time-limited, simple behavioral tasks, such as keeping appointments (Jochelson, 2007). For example, CIGNA conducted a pilot project in Georgia that focused on increasing physician visits for HTN control by offering patients a \$10 incentive; that program demonstrated a threefold increase in HTN visits (CIGNA Healthcare, 2008). Similar effect sizes are found in other studies. For example, a small financial incentive increased attendance for a tuberculosis visit from 33 percent to 93 percent (Malotte, Rhodes, and Mais, 1998), and from 53 percent to 84 percent among the homeless (Pilote, Tulskey, et al., 1996). When offered a \$10 incentive to attend mental health visits, 86 percent of patients did so, compared with 69 percent without the incentive (Post, Cruz, and Harman, 2006).

While studies have demonstrated that the size of the incentive is important, few, if any, have examined how incentive structures may reduce disparities. However, it has been suggested that relatively small positive incentives may be more effective for low-income populations if they are enough to offset such barriers as transportation or childcare costs that are less of an issue for more-affluent persons (Laken and Ager, 1995). Health economists would argue that low-income groups have greater price elasticity around health behaviors, and smaller incentives may be sufficient to influence behavior (Jochelson, 2007). For example, while the RAND Health Insurance Experiment (Brook, Ware, et al., 1984) effectively focused on negative financial incentives (co-pays), one of the key findings was that whereas impacts of co-pays were similar across most patient groups, even relatively small financial incentives had pronounced effects on the utilization behavior of certain lower-income patients with the greatest medical need. It stands to reason, then, that for low-income minority patients, small incentives may be sufficient to prompt action. However, for more-affluent individuals, the pursuit of relatively small financial rewards to encourage such behaviors as doctor visits may not seem as worthwhile.

If we assume that less-affluent patients are more likely than more-affluent patients to respond to small financial incentives, the use of these relatively small incentives by health plans to patients has the potential not only to help improve the overall quality of HTN care received by their members but also to reduce disparities. That is, to the extent that the small positive incentive prompts any members, regardless of their race/ethnicity, to visit their physician and improve the management of their HTN, the overall rate of HTN control among plan members will improve. To the extent that small incentives show a stronger influence among members belonging to certain racial/ethnic minority groups (e.g., because minority members, on average, may have lower incomes), then a proportionally larger number of minorities may be prompted to visit their physician and/or better manage their HTN, and any disparities should narrow. Although a health plan could potentially achieve improvements in overall rates of control and reduction of disparities by offering incentives only to members of the racial/ethnic group facing the biggest disparity, offering the incentive to all members with HTN may be a better strategy if the intervention is to eventually be rolled out widely. In particular, although offering such incentives to all members may incur some additional costs, those costs are likely to be relatively small, since not all members are likely to take advantage of the incentive. Even if many nonminority members take advantage of the incentive, the return on investment of the small per-member expenditure should be positive if it leads to improved management of their HTN. Conversely, the potential costs of not including all members could be high if plan sponsors or members perceive the practice of offering incentives only to members in certain racial/ethnic groups as unfair.

Conceptual Framework

The conceptual framework for this project is based on Andersen’s Behavioral Model (Andersen, 1995) (Figure 1.1), which postulates that people’s use of health services is a function of their predisposition to use the services (e.g., demographic factors, aspects of the social structure, and health beliefs), the personal and community resources that enable or impede their use of the services (e.g., availability of health facilities, knowledge of how to access services, and means to get them), and their need for care.

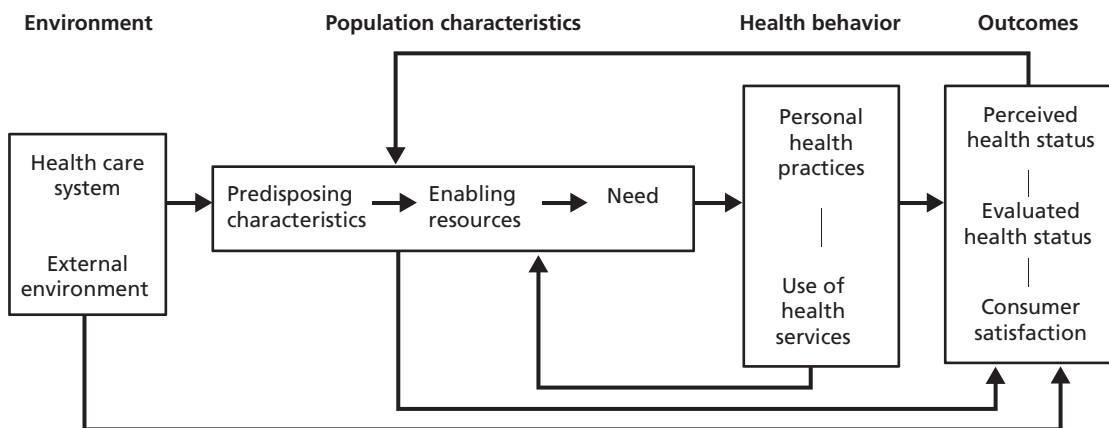
Materials for this initiative (see below) served as enabling resources, providing patients with a tool to document their need for health care. Our hypothesis was that the incentive would promote utilization of medical services. The educational materials were designed to affect members’ perceptions of their health care needs, further motivating patients to make a physician visit. Physician visits, in turn, can be used to discuss potential health behavior changes, medications, goal setting, and education, which should result in lowered blood pressure and more-optimal BP control.

Description of Initiative

The study included two intervention arms and a usual care arm. Individuals in both intervention arms received two items:

- a one-sheet, double-sided informational letter from CIGNA (educational material). On the front was a personalized letter from CIGNA that summarized why it is important to control high blood pressure. The first sentence of the letter asked patients to make an appointment to see their physician to discuss their high blood pressure. On the reverse side of the letter was additional information on HTN (Appendix A).
- a pocket blood pressure record. The BP health record provided a convenient way for members and their doctors to record current medications and relevant clinical information,

Figure 1.1
Conceptual Model Based on Andersen’s Behavioral Model



including immunizations, body mass index (BMI), cholesterol results, and BP. The record also highlighted current recommended goals for BP levels and laboratory values to help increase awareness of optimal results for each measure.

The only difference in the two interventions was that the letter sent to individuals in the incentive arm mentioned the incentive specifically and informed individuals that a \$15 gift card would be mailed to them automatically once the claim for their first visit had been received. Patients were eligible to receive one \$15 gift card. Of note, individuals in the usual care arm also received a copy of the letter (without mention of a financial incentive) after the 12-month follow-up had been completed.

Study Objectives

The quality improvement initiative was aimed at hypertensive individuals in the mid-Atlantic states of Maryland and Virginia, as well as Washington, D.C. This 24-month project was designed to address three objectives:

1. To assess whether a \$15 appointment-contingent patient financial incentive, along with educational materials, is effective in motivating individuals with a previous diagnosis of HTN to see their personal physician, relative to educational materials only or receiving no intervention (usual care).
2. To determine whether patient incentives or educational materials alone encourage the control of or improvement in BP for high-risk individuals.
3. To assess whether patient incentives and educational materials are differentially effective across racial/ethnic groups in motivating physician visits and improving BP control and whether these differential effects lead to a reduction in racial/ethnic disparities in HTN.

Our hypothesis was that those who receive a financial incentive would be more likely to have a physician visit and, as a result, to achieve better control of their HTN than those receiving either educational materials alone or usual care (comparison group). We further hypothesized that whereas patient incentives will improve physician visits and HTN control for all individuals, minorities will be more responsive to the financial incentive, providing a means to reduce racial/ethnic disparities.

Study Design

To investigate the effects of implementing patient incentives on increasing office visits and reducing racial and ethnic disparities in HTN, we randomized patients (n=18,000) across the three study arms:

1. initiative materials (i.e., a one-page informational letter from CIGNA asking the patient to make an appointment to see his or her physician and a pocket blood pressure record), *plus* an offer of a \$15 American Express gift card, contingent on making and keeping an appointment with the provider (incentive group, n=6,000)

2. initiative materials only (i.e., a one-page informational letter from CIGNA asking the patient to make an appointment to see his or her physician, along with a pocket blood pressure record), without an offer of an incentive (education-only group, n=6,000)
3. usual care (n=6,000).

Individuals with HTN who were not randomized to either intervention arm received usual care and served as the comparison arm for this study. Individuals in “usual care” did not receive any study materials and did not receive other forms of patient incentives. Detailed information on the study population and randomization to study arm is provided in Appendix B.

Materials were sent out to study participants in November 2009. A second mailing was conducted in March 2010 for those individuals who had not made a physician visit within four months of the initial mailing. Follow-up letters were mailed to 3,523 individuals (58.7 percent) in the incentive group and 3,581 (59.7 percent) in the education-only group. Incentives were automatically mailed to patients after the claim for the doctor visit appeared in CIGNA’s administrative database.

To facilitate buy-in and physician engagement, we sent physicians in the plan’s network a letter and/or email introducing the HTN initiative and its desired goals. In addition, we sent a copy of the letter and BP record sent to patients. Physicians were also notified of data collection efforts (e.g., chart abstraction, semistructured phone interviews for formative evaluation) in which they would be asked to participate over the course of the study.

Study Population

The study population was drawn from CIGNA’s clinical reporting database in October 2009. To be eligible, members had to be enrolled in a network HMO, Point of Service plan, Preferred Physician Organization plan, or an Open Access plan. None of the study population was uninsured or insured by Medicare or Medicaid.

We used the National Committee for Quality Assurance (NCQA) Controlling High BP Healthcare Effectiveness Data and Information Set (HEDIS) specifications to identify hypertensive members with HTN. These individuals were defined as having at least one outpatient encounter with a diagnosis of HTN (ICD-9-CM = 401) between July 1, 2007, and June 30, 2009. An outpatient encounter was defined as an encounter billed with one of the following Current Procedural Technology (CPT)-4 codes: 99201–99205, 99211–99215, 99241–99245, 99384–99387, and 99394–99397. This 24-month period was selected to ensure that we captured not only those considered to have HTN according to NCQA HEDIS specifications (high blood pressure within the past year; 0–12 months) but also patients with HTN who have not seen a physician in over a year (13–24 months), as this population may be at particular risk for poor blood pressure control and may benefit most from a physician visit.

To be included in the analytic sample, individuals had to be enrolled continuously from January 1, 2009, through the beginning of the initiative. Members whose HTN management might be secondary to another primary diagnosis or treatment, such as end-stage renal disease, pregnancy, active cancer, organ transplant, or HIV/AIDS, were excluded.

Although all study participants had a diagnosis of HTN, blood pressure readings were not available in claims data. Consequently, we had no information on participants' blood pressure levels prior to the intervention. We were able to obtain those data at the six-month follow-up.

Data Sources

Administrative Claims Data and Medical Chart Review

The summative evaluation had two primary data sources: (1) CIGNA's administrative databases and (2) patient medical charts.

CIGNA's administrative databases house member eligibility and demographics, benefit level information, physician demographics, medical and pharmacy claims, and clinical lab results. Administrative claims data (stripped of identifiers) were obtained from CIGNA six and 12 months post-initiative.

Medical records were abstracted at the six- and 12-month follow-up to obtain more-detailed information on BP readings, lab values, and measured height and weight. These data were collected by CIGNA staff for each office visit subsequent to the start of the initiative as well as for the visit just prior to the start of the initiative to serve as a baseline measurement. Obtaining additional information on medication use was not feasible for this project because of the additional time and costs required for data abstractors. Physicians are contractually obligated to work with CIGNA staff to facilitate data collection relevant to QI efforts. CIGNA staff supplied physicians with a list of study participants and a data abstraction form to be completed and faxed back to CIGNA staff. For those physicians who did not respond or who were unable to fill the request within the specified time, CIGNA staff visited physician offices and collected the relevant information. Medical chart abstraction was sought from all 18,000 participants at the six-month follow-up, and 16,884 (93.8 percent) chart abstractions were completed. At the 12-month follow-up, 1,206 individuals were selected for medical chart review using a stratified random sample (402 from each study arm). Medical chart reviews were completed on 910 of these individuals (75.5 percent).

Measures

In this study, we were primarily interested in the ability of the intervention to motivate patients to seek treatment and care for HTN (Objectives 1 & 3) and in the longer-term outcomes of BP management and BP control (Objectives 2 & 3). Table 1.1 specifies the definition of each measure, its source, and the observation period during which it was collected.

Physician Visits and Continuity of Care. A physician visit was defined as an outpatient encounter with a diagnosis of HTN. Visits were included if HTN was listed as the primary, secondary, or tertiary diagnosis. Continuity of care was created by summing the number of physician visits within the 12-month follow-up period. In addition, we ran an additional set of post-hoc analyses limiting physician visits to those patients for whom HTN was listed as the primary diagnosis.

Hypertension and Blood Pressure. For comparisons of the change in blood pressure levels in the intervention and control arms, we used reported level (mm Hg) as a continuous measure. Patients were also classified as being either hypertensive (i.e., blood pressure not controlled by HEDIS standards) or in control.

Table 1.1
Clinical Measures and Outcomes

Construct	Description	Data Source	Observation Period (months after initial visit)
Physician visits	An outpatient encounter with a diagnosis of HTN	Administrative claims data	3, 6, and 12
Continuity of care	Number of physician visits	Administrative claims data	12
BP level	Both systolic and diastolic BP	Medical record abstraction	6 and 12
BP control	BP < 140/90 mm Hg	Medical record abstraction	6 and 12

After initial results became available, we conducted post- hoc analyses using a three-category version of BP: (1) systolic pressure less than 120 and diastolic pressure less than 80, (2) systolic pressure between 120 and 139 or diastolic pressure between 80 and 89, or (3) systolic pressure of 140 or higher or diastolic pressure of 90 or higher.

Demographic Characteristics (see Table 1.2). Age and sex were obtained from claims and CIGNA membership data. Race and ethnicity were indirectly estimated; see Appendix B for additional details.

Patient Feedback

RAND staff conducted a focus group and semistructured telephone interviews with study participants to assess their reactions to each piece of the initiative: educational materials, pocket blood pressure record, and incentive (if applicable). The focus group sought participants' suggestions for improvement of the initiative, reasons for making a physician visit (or not), and information about the physician visit itself (if applicable) (see Appendix C, interview protocol). We sought feedback from individuals in the incentive and education-only arms of the study—both those who had and those who had not made an appointment—for a total of four groups.

The first focus group was conducted in Centreville, Virginia, with education only/appointment individuals (n=4) who lived within 15 miles of Centreville. We attempted to recruit the additional three groups but were not able to identify a large enough geographic concentration to hold additional focus groups. Therefore, we decided instead to conduct semistructured telephone interviews with individuals from the remaining groups, rather than focus groups. In total, we interviewed 13 individuals: incentive/appointment (n=5), incentive/no appointment (n=3), education only/appointment (n=1), and education only/no appointment (n=4).

Physician Survey

RAND staff fielded a survey of the 85 high-volume physicians who had at least 20 patients in this study (regardless of study arm). The survey covered such issues as CIGNA's interaction with physicians (including whether they were well informed of the intervention); perceived burden, if any, on physicians or staff with respect to visit length (patients who received educational materials might generate longer visits) or data collection efforts; whether patients discussed the initiative at their visit or brought any study materials with them (e.g., education materials, blood pressure record); and perceived short- and long-term impact of the intervention on patient knowledge, beliefs about BP, and health outcomes. Appendix D contains a copy of

Table 1.2
Member Demographics (n=17)

Demographic Characteristic	Percent (n)
Number of years a CIGNA member	
Less than 1 year	6 (1)
1–2 years	6 (1)
3–4 years	6 (1)
5 or more years	82 (14)
Gender	
Male	59 (10)
Female	41 (7)
Age	
30–39	12 (2)
40–49	6 (1)
50–59	65 (11)
60 and over	17 (3)
Race/ethnicity	
Black (non-Hispanic)	18 (3)
Hispanic	6 (1)
Asian/Pacific Islander	18 (3)
White (non-Hispanic)	58 (10)
Education	
High school graduate/GED	24 (4)
Vocational school beyond high school	6 (1)
Some college	12 (2)
College graduate	29 (5)
Graduate degree	29 (5)
Employment	
Full-time	65 (11)
Part-time	12 (2)
Not in the labor force (homemaker, retired, disabled)	23 (4)
Most recent visit to the doctor for hypertension	
In the past month	12 (2)
1–3 months ago	17 (3)
4–6 months ago	47 (8)
7–12 months ago	12 (2)
Not in the past year	12 (2)

the survey. The survey was mailed to physicians with a cover letter from CIGNA requesting participation, and physicians were promised a \$100 American Express gift card in exchange for their time. Twenty-four physicians returned the survey, for a 28 percent response rate.

CIGNA Leadership Interviews

RAND staff conducted semistructured phone interviews with a limited number of CIGNA managers and administrators (n=6). The interview addressed a variety of domains salient to understanding and documenting their perceptions of and experiences with efforts to address disparities in general and the current intervention specifically. CIGNA leadership also described practical considerations, potential challenges, and specific steps needed to address further uptake and dissemination of an intervention like this within CIGNA (Appendix E).

Analyses

Both quantitative and qualitative methods were used to analyze study data. Quantitative methods (e.g., t-tests, chi-square tests, regression analyses) were used to analyze our chosen outcome measures to answer our three research questions related to the impact of the intervention to increase physician visits (Objective 1), increase BP control (Objective 2), and reduce racial/ethnic disparities (Objective 3). For each objective, we compared both the incentive arm and education-only arm to usual care, but also assessed differences between the incentive and education-only arm to assess the added value of the financial incentive specifically. For analyses on the full sample, the randomization created similar groups across a range of sociodemographic characteristics (e.g., sex, age, socioeconomic status, race/ethnicity). As a result, we did not control further for these factors. However, we did control for these factors in subanalyses, where the full sample was not used. Standard qualitative methods were used to identify themes that emerged from patient and physician feedback and from CIGNA leadership interviews. Additional information on analytic methods employed in this study can be found in Appendix F.

Organization of This Report

This report summarizes the evaluation findings. Chapter Two presents results from analyses of administrative claims and medical record review data, with results presented separately for each aim. Chapters Three and Four provide additional context and feedback about the initiative from the perspective of CIGNA members and physicians, respectively. Chapter Five presents findings from CIGNA leadership interviews as well as limited information on costs related to the implementation of the initiative. Chapter Six describes implications of this project for future QI initiatives both within and outside of CIGNA, highlighting potential future research directions.

Summative Evaluation

Aim 1: To Assess Whether Patient Financial Incentives, Along with Educational Materials, Are Effective in Motivating Individuals with HTN to See Their Personal Physician

Analyses for this aim focused on assessing whether the initiative had an effect on (1) making a physician visit and (2) the number of physician visits (continuity of care). We also examined whether the initiative was differentially effective for individuals who had not seen their personal physician in the year prior to the study. Finally, we conducted post-hoc analyses to assess whether the effect of the initiative varied by baseline blood pressure control. Given that a number of individuals had medical claims that listed HTN as the second or third diagnosis code, we ran additional post-hoc analyses to examine whether the initiative was associated with physician visits where HTN was listed as the primary diagnosis.

Any Physician Visit

CIGNA's HTN initiative had a modest effect on motivating individuals with HTN to see their personal physician; this effect begins to appear two to three months after the intervention (Table 2.1).

By three months post-intervention, 33.8 percent of the individuals in the incentive arm had made a physician visit, 32.7 percent of the education-only group had made a visit, and 31.1 percent of those in usual care had made a visit. At three months, 2.7 percent more individuals in the incentive arm had made a physician visit for HTN compared with those in usual care, a relative increase of 8.7 percent (Table 2.2). The difference between education-only and usual care was borderline significant. Compared with those in usual care, 1.6 percent more

Table 2.1
Percentage of Individuals with a Physician Visit, by Study Arm (n=18,000)

Physician Visit	Total % (SE)	Incentive % (SE)	Education % (SE)	Usual Care % (SE)	prob(F)
Visit within 0-<1 month	12.8 (0.2)	13.1 (0.4)	12.8 (0.4)	12.5 (0.4)	0.65
Visit within 0-<3 months	32.5 (0.3)	33.8 (0.6)	32.7 (0.6)	31.1 (0.6)	0.01**
Visit within 0-<6 months	50.7 (0.4)	51.6 (0.6)	50.7 (0.6)	49.7 (0.6)	0.13
Visit within 0-12 months	64.4 (0.4)	64.4 (0.6)	65.1 (0.6)	63.8 (0.6)	0.43

**p<0.01.

Table 2.2
Comparison of Effectiveness of Study Arms

Physician Visit	Incentive vs. Usual Care			Education vs. Usual Care			Incentive vs. Education		
	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value
Visit within 0–<1 month	0.6	4.8	0.35	0.3	2.4	0.68	0.3	2.3	0.60
Visit within 0–<3 months	2.7**	8.7**	<0.01	1.6 ⁺	5.1 ⁺	0.05	1.1	3.4	0.21
Visit within 0–<6 months	1.9*	3.8*	0.04	1.0	2.0	0.26	0.9	1.8	0.37
Visit within 0–12 months	0.6	0.9	0.51	1.3	2.0	0.15	–0.7	–1.1	0.43

⁺p<0.10, *p<0.05, **p<0.01.

individuals receiving educational materials made a physician visit, a relative increase of 5.1 percent. Differences between the incentive group and the education-only group were not statistically significant.

Six months post-intervention, the differences between the groups diminished. There were no significant differences between the education-only group and usual care or between the incentive and education-only groups. Significant differences remained, however, between the incentive group and usual care group. Those in the incentive group had about a 2 percent absolute increase in physician visits compared with those receiving usual care, a 4 percent relative increase.

By 12 months post-intervention, the effect of the intervention on making a physician visit had dissipated; there were no statistically significant differences between any study arms. This finding suggests that the intervention does not necessarily increase the number of individuals who see a physician for HTN in a given year but that it prompts that visit to occur sooner than it would have without the intervention.

Number of Physician Visits

Implicit in the theoretical basis for this initiative is that individuals offered a financial incentive will not only be more likely to have a physician visit but will also engage in regular physician visits (i.e., continuity of care), resulting in better HTN control. For the full sample, the initiative did not have a significant effect on continuity of care over the 12-month follow-up period ($\chi^2=6.1$, $p=0.64$). Overall, 35.6 percent of the sample had made no physician visits, 23.3 percent had one visit, 18.4 percent had two visits, 10.2 percent had three visits, and 12.5 percent had four or more visits. The number of visits also did not differ for the incentive or education-only groups compared with usual care ($\chi^2=2.2$, $p=0.71$ and $\chi^2=4.1$, $p=0.39$, respec-

tively; see Appendix G). Differences between the incentive and education-only group were also not significant ($\chi^2=2.9$, $p=0.57$).

Effectiveness of the Initiative for Individuals Not in Regular Care

Any Physician Visit

By design, approximately 15 percent of the study population had not had a physician visit in over a year prior to the implementation of the HTN initiative ($n=3,076$, 17.1 percent). This inclusion characteristic allowed for an examination of whether the intervention was successful in encouraging those who were not in regular care to seek medical attention for their HTN. Those who had not had a physician visit in over a year prior to the start of the HTN initiative were slightly younger (mean age 49.5 years) than those who had a physician visit within 6–12 months prior to the start of the initiative (mean age 50.5 years) and those who had their most recent physician visit within six months of the start of the study (mean age 52.1 years). However, there were no statistically significant differences in race/ethnicity or gender between these groups.

Table 2.3 presents the percentage of individuals who made a visit within specified time frames after the start of the HTN initiative, stratified by the length of time since their last physician visit. As hypothesized, the initiative had a significant effect on those who had not seen a physician in over a year. Within the first three months, more individuals in the incentive group had made a physician visit than in the usual care group, a 4.6 percent absolute increase and 31.3 percent relative increase ($p<0.01$, see Table 2.4). Among those receiving educational materials only, 2.9 percent more individuals had made a physician visit than in the usual care group, a 19.7 percent relative increase ($p=0.07$). There were no significant differences between the incentive and education-only groups.

Number of Physician Visits Among Those Who Had Not Seen a Physician in the 12 Months Prior to the Start of the Study

There were no significant differences in number of physician visits between the incentive and usual care groups ($\chi^2=4.43$, $p=0.35$), between the education-only and the usual care groups ($\chi^2=2.01$, $p=0.73$), or between the incentive and education-only groups ($\chi^2=5.64$, $p=0.22$) over the 12 month follow-up period (Appendix G).

Post-Hoc Analyses with Baseline Blood Pressure Control

Although everyone in the study population had a diagnosis of HTN, actual blood pressure readings were available only in the medical record. During the six-month medical record review, we obtained the most recent blood pressure reading prior to the start of the initiative to serve as a “baseline” measure of blood pressure control. We used these data to conduct a post-hoc assessment of the extent to which the initiative was differentially effective depending on baseline BP level. Although all study patients had been diagnosed with HTN at one point, we did not have information on whether they were taking medications when their BP was most recently measured.

Table 2.3
Percentage of Individuals with a Physician Visit, Stratified by Time Since Most Recent Physician Visit Prior to Start of the Initiative

Physician Visit	Total % (SE)	Incentive % (SE)	Education % (SE)	Usual Care % (SE)	prob(F)
Most recent visit <6 months prior to initiative	n=10,434	n=3,520	n=3,476	n=3,438	
Visit within 0–<1 month	15.8 (0.4)	16.1 (0.6)	15.9 (0.6)	15.2 (0.6)	0.5686
Visit within 0–<3 months	39.9 (0.5)	40.9 (0.8)	40.3 (0.8)	38.5 (0.8)	0.0977
Visit within 0–<6 months	60.3 (0.5)	60.7 (0.8)	60.9 (0.8)	59.2 (0.8)	0.2737
Visit within 0–12 months	74.6 (0.4)	74.0 (0.7)	76.3 (0.7)	73.6 (0.8)	0.0211*
Most recent visit 6–12 months prior to initiative	n=4,490	n=1,475	n=1,479	n=1,536	
Visit within 0–<1 month	9.9 (0.4)	9.8 (0.8)	9.9 (0.8)	5.4 (.06)	0.9326
Visit within 0–<3 months	26.0 (0.7)	26.8 (1.2)	25.6 (1.1)	10.2 (0.8)	0.6856
Visit within 0–<6 months	43.5 (0.7)	0.446 (1.3)	42.6 (1.3)	25.5 (1.1)	0.5286
Visit within 0–12 months	57.5 (0.7)	0.585 (1.3)	56.2 (1.3)	43.2 (1.3)	0.4178
Most recent visit 12+ months prior to initiative	n=3,076	n=1,005	n=1,045	n=1,026	
Visit within 0–<1 month	6.9 (0.5)	7.3 (0.8)	6.4 (0.8)	6.9 (0.8)	0.7443
Visit within 0–<3 months	17.2 (0.7)	19.3 (1.2)	17.6 (1.2)	14.7 (1.1)	0.0214*
Visit within 0–<6 months	28.6 (0.8)	29.8 (1.4)	28.4 (1.4)	27.7 (1.4)	0.5791
Visit within 0–12 months	39.7 (0.9)	39.1 (1.5)	40.2 (1.5)	39.8 (1.5)	0.8799

* $p < 0.10$, * $p < 0.05$.

Table 2.5 shows how visits varied depending on baseline BP level, and Table 2.6 shows BP change stratified by baseline BP. These results suggest that the initiative had little effect for those individuals whose most recent BP reading prior to the intervention was in the normal range (systolic blood pressure [SBP] <120 or diastolic blood pressure [DBP] <80). Similarly, although the initiative had some effect for individuals whose BP was not controlled (SBP >140 or DBP >90), particularly within the first month, differences between the incentive group, education-only group, and usual care group were small and of borderline significance.

The initiative had the biggest impact on those individuals with SBP between 120 and 139 or DBP between 80 and 89 at the start of the study. By three months post-initiative, 2.7 percent and 2.9 percent more individuals in the incentive and education-only groups had made a physician visit than in the usual care group, an 8.7 percent ($p=0.03$) and 9.3 percent ($p=0.02$) relative increase, respectively. By six months, no significant differences were seen between the incentive group and those in usual care. However, the percentage of individuals in the education-only arm who made a physician visit remained elevated throughout the 12-month follow-up. By six months, 2.7 percent more individuals had made an appointment compared with those in usual care, a relative increase of 5.3 percent ($p=0.04$); by 12 months, the education-only group had a 3.9 percent absolute increase in visits, a relative increase of 6.1

Table 2.4
Comparison of Effectiveness of Study Arms, Stratified by Time Since Most Recent Physician Visit Prior to the Start of the Initiative

Physician Visit	Incentive vs. Usual Care			Education vs. Usual Care			Incentive vs. Education		
	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value
Most recent visit <6 months prior to initiative									
Visit within 0-<1 month	0.9	5.9	0.30	0.7	4.6	0.44	0.2	1.3	0.80
Visit within 0-<3 months	2.4*	6.2*	0.04	1.8	4.7	0.12	0.6	1.5	0.62
Visit within 0-<6 months	1.5	2.5	0.20	1.7	2.9	0.14	-0.2	-0.3	0.85
Visit within 0-12 months	0.4	0.5	0.67	2.7**	3.7**	0.01	-2.3*	-3.0*	0.03
Most recent visit 6-12 months prior to initiative									
Visit within 0-<1 month	-0.4	-3.9	0.72	-0.3	-2.9	0.79	-0.1	-1.0	0.92
Visit within 0-<3 months	1.3	5.1	0.43	0.1	0.4	0.95	1.2	4.7	0.48
Visit within 0-<6 months	1.4	3.2	0.45	-0.6	-1.4	0.73	2.0	4.7	0.27
Visit within 0-12 months	0.6	1.0	0.73	-1.7	-2.9	0.35	2.3	4.1	0.20
Most recent visit 12+ months prior to initiative									
Visit within 0-<1 month	0.4	5.8	0.76	-0.5	-7.2	0.64	0.9	14.1	0.74
Visit within 0-<3 months	4.6**	31.3**	0.01	2.9 ⁺	19.7 ⁺	0.07	1.7	9.7	0.02
Visit within 0-<6 months	2.1	7.6	0.30	0.7	2.5	0.71	1.4	4.9	0.58
Visit within 0-12 months	-0.7	-1.8	0.76	0.4	1.0	0.84	-1.1	-2.7	0.88

⁺p<0.10, *p<0.05, **p<0.01.

percent (p<0.01). By 12 months, the education-only group also had significantly more physician visits than those in the incentive group (p=0.01) and in usual care (p=0.02).

Number of Physician Visits Among Those with SBP Between 120 and 139 or DBP Between 80 and 89

No significant differences were observed in the number of physician visits between the incentive and usual care groups ($\chi^2=2.00$, p=0.74) or between the education-only and the usual care groups ($\chi^2=6.79$, p=0.15) over the 12 month follow-up period (Appendix G). There were also

Table 2.5
Percentage of Individuals with a Physician Visit, Stratified by Baseline Blood Pressure

Physician Visit	Total % (SE)	Incentive % (SE)	Education % (SE)	Usual Care % (SE)	prob(F)
SBP <120 and DBP <80					
Visit within 0–<1 month	n=2,036	n=654	n=702	n=680	
Visit within 0–<3 months	11.6 (0.7)	12.4 (1.3)	10.7 (1.2)	11.8 (1.2)	0.6110
Visit within 0–<6 months	31.2 (1.0)	33.2 (1.8)	30.2 (1.7)	30.4 (1.8)	0.4273
Visit within 0–<12 months	49.0 (1.1)	51.1 (2.0)	47.6 (1.9)	48.4 (1.9)	0.4085
Visit within 0–12 months	62.7 (1.1)	63.3 (1.9)	61.3 (1.8)	63.5 (1.8)	0.6289
SBP 120–139 or DBP 80–89					
Visit within 0–<1 month	n=7,973	n=2,659	n=2,655	n=2,659	
Visit within 0–<3 months	12.7 (0.4)	12.5 (0.6)	13.6 (0.7)	12.2 (0.6)	0.2875
Visit within 0–<6 months	32.9 (0.5)	33.8 (0.9)	34.0 (0.9)	31.1 (0.9)	0.0417*
Visit within 0–<12 months	51.9 (0.6)	51.4 (1.0)	53.5 (1.0)	50.8 (1.0)	0.1153
Visit within 0–12 months	65.3 (0.5)	64.0 (0.9)	67.9 (0.9)	64.0 (0.9)	0.0022**
SBP ≥140 or DBP ≥90					
Visit within 0–<1 month	n=5,612	n=1,891	n=1,862	n=1,859	
Visit within 0–<3 months	14.0 (0.5)	15.3 (0.8)	13.3 (0.8)	13.4 (0.8)	0.1288
Visit within 0–<6 months	34.4 (0.6)	35.6 (1.1)	34.2 (1.1)	33.3 (1.1)	0.3129
Visit within 0–<12 months	52.7 (0.7)	53.9 (1.1)	51.7 (1.2)	52.3 (1.2)	0.3717
Visit within 0–12 months	66.7 (0.6)	67.3 (1.1)	65.5 (1.1)	67.3 (1.1)	0.4088

*p<0.05, **p<0.01.

no significant differences in the number of physician visits between those in the incentive and education-only groups ($\chi^2=4.37$, $p=0.36$).

HTN as the Primary Diagnosis

Given that over the course of a year, individuals may see a physician for a range of medical concerns, we conducted an additional set of post-hoc analyses to assess whether the initiative had an effect on the number of physician visits where HTN was listed as the primary diagnosis. As shown in Tables 2.7 and 2.8, individuals in both the incentive and education-only arms had significantly more HTN-related visits than those in usual care arm after 12 months of follow-up. Both groups had about 2 percent more visits than the usual care group, a relative difference of about 4.7 percent.

Number of Physician Visits Where HTN Was the Primary Diagnosis

Overall, 57.3 percent of patients in the study had made no physician visits for which HTN was the primary diagnosis, 22.9 percent had made one visit, 11.5 percent had made two visits, 4.6 percent had made three visits, and 3.7 percent had made four or more visits (Appendix G). There were no statistically significant differences between study arms overall ($\chi^2=11.5$, $p=0.17$).

Table 2.6
Comparison of Effectiveness of Study Arms, Stratified by Baseline Blood Pressure

Physician Visit	Incentive vs. Usual Care			Education vs. Usual Care			Incentive vs. Education		
	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value
SBP <120 and DBP <80									
Visit within 0-<1 month	0.6	5.1	0.73	-1.1	-9.3		1.7	15.9	0.33
Visit within 0-<3 months	2.8	9.2	0.28	-0.2	-0.7	0.92	3.0	9.9	0.24
Visit within 0-<6 months	2.7	5.6	0.33	-0.8	-1.7	0.77	3.5	7.4	0.20
Visit within 0-12 months	-0.2	-0.3	0.93	-2.2	-3.5	0.38	2.0	3.3	0.44
SBP 120-139 or DBP 80-89									
Visit within 0-<1 month	0.3	2.5	0.74	1.4	11.5	0.13	-1.1	-8.1	0.25
Visit within 0-<3 months	2.7*	8.7*	0.03	2.9*	9.3*	0.02	-0.2	-0.6	0.88
Visit within 0-<6 months	0.6	1.2	0.66	2.7*	5.3*	0.04	-2.1	-3.9	0.12
Visit within 0-12 months	0.0	0.0	0.98	3.9**	6.1**	0.02	-3.9**	-5.7**	0.01
SBP ≥140 or DBP ≥90									
Visit within 0-<1 month	1.9	14.2	0.10	-0.1	-0.7	0.87	2.0+	15.0+	0.07
Visit within 0-<3 months	2.3	6.9	0.13	0.9	2.7	0.56	1.4	4.1	0.36
Visit within 0-<6 months	1.6	3.1	0.33	-0.6	-1.1	0.70	2.2	4.3	0.17
Visit within 0-12 months	0.0	0.0	0.96	-1.8	-2.7	0.24	1.8	2.7	0.26

†p<0.10, *p<0.05, **p<0.01

There were also no significant differences in continuity of care between those in the incentive and education-only groups ($\chi^2=2.10$, $p=0.72$) or between the incentive and control arms ($\chi^2=6.23$, $p=0.18$). Differences between the education-only group and those in the usual care group were borderline significant ($\chi^2=8.9$, $p=0.06$).

Table 2.7
Percentage of Individuals with a Physician Visit, Where HTN Was the Primary Diagnosis, by Study Arm (N=18,000)

Physician Visit	Total % (SE)	Incentive % (SE)	Education % (SE)	Usual Care % (SE)	prob(F)
Visit within 0–<1 month	6.8 (0.2)	6.8 (0.3)	6.9 (0.3)	6.6 (0.3)	0.70
Visit within 0–<3 months	17.9 (0.3)	18.2 (0.5)	18.2 (0.5)	17.1 (0.5)	0.20
Visit within 0–<6 months	30.1 (0.3)	30.6 (0.6)	30.5 (0.6)	29.3 (0.6)	0.21
Visit within 0–12 months	42.7 (0.4)	43.3 (0.6)	43.4 (0.6)	41.4 (0.6)	0.05

Table 2.8
Comparison of Effectiveness of Study Arms

Physician Visit	Incentive vs. Usual Care			Education vs. Usual Care			Incentive vs. Education		
	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value	Absolute Diff. (%)	Relative Diff. (%)	P Value
Visit within 0–<1 month	0.2	3.0	0.58	0.3	4.5	0.40	0.1	1.4	0.77
Visit within 0–<3 months	1.1	6.4	0.11	1.1	6.4	0.12	0.0	0.0	0.98
Visit within 0–<6 months	1.3	4.4	0.11	1.2	4.1	0.15	–0.1	–0.3	0.89
Visit within 0–12 months	0.9*	4.6*	0.04	2.0	4.8*	0.03	0.1	0.2	0.94

+p<0.10, *p<0.05, **p<0.01.

Aim 2: To Determine Whether the Initiative Encouraged the Control of or Improvement in BP for High-Risk Individuals

Aim 2 was designed to assess whether the effect of the initiative on physician visits (Aim 1) translated to actual changes in systolic blood pressure over time. Receipt of a financial incentive or of educational materials alone did not result in an improvement in BP for the full sample.

Post-hoc analyses suggested that individuals with a baseline SBP between 120 and 139 or DBP between 80 and 89 demonstrated significant and sustainable reductions in systolic blood pressure over time (Table 2.9). After six months, systolic blood pressure had decreased an average of 0.5 points for the incentive group and 0.7 points for the education-only group. After 12 months, systolic blood pressure had decreased by an average of almost 4 points for the incentive group and 2.6 points for the education-only group. At the 12-month follow-up, the incentive group differed significantly from the usual care group. Differences in blood pressure improvement were not significant between the incentive and education-only arm. The initiative had little effect on BP improvement among individuals with HTN at baseline (SBP \geq 140 or DBP \geq 90).

Table 2.9
Linear Regression Model Predicting Systolic Blood Pressure at Follow-Up

	Full Sample Beta (SE)	SBP 120–139 or DBP 80–89 at Baseline Beta (SE)	SBP ≥ 140 or DBP ≥ 90 at Baseline Beta (SE)
Six-month follow-up	n=12,297	n=6,311	n= 4,168
Intercept	124.2 (0.9)**	123.7 (1.1)**	127.4 (1.7)**
Incentive	–0.3 (0.3)	–0.5 (0.4)	0.6 (0.6)
Education-only	–0.5 (0.3)	–0.7 (0.4) ⁺	–0.36 (0.6)
12-month follow-up	n=910	n=311	n=295
Intercept	118.5 (3.7)**	119.1 (6.0)**	117.5 (5.7)**
Incentive	–1.6 (1.0)	–3.8 (1.6)*	1.4 (1.8)
Education-only	–0.3 (1.1)	–2.6 (1.7)	1.9 (1.9)

NOTE: Controlling for baseline blood pressure, number of months since baseline measurement, age, race/ethnicity, and gender.

⁺p<0.10, *p<0.05, **p<0.01.

Aim 3: To Assess Whether Patient Incentives and Educational Materials Are Differentially Effective Across Racial/Ethnic Groups in Motivating Physician Visits and Improving BP Control and Whether These Differential Effects Lead to a Reduction in Racial/Ethnic Disparities in HTN

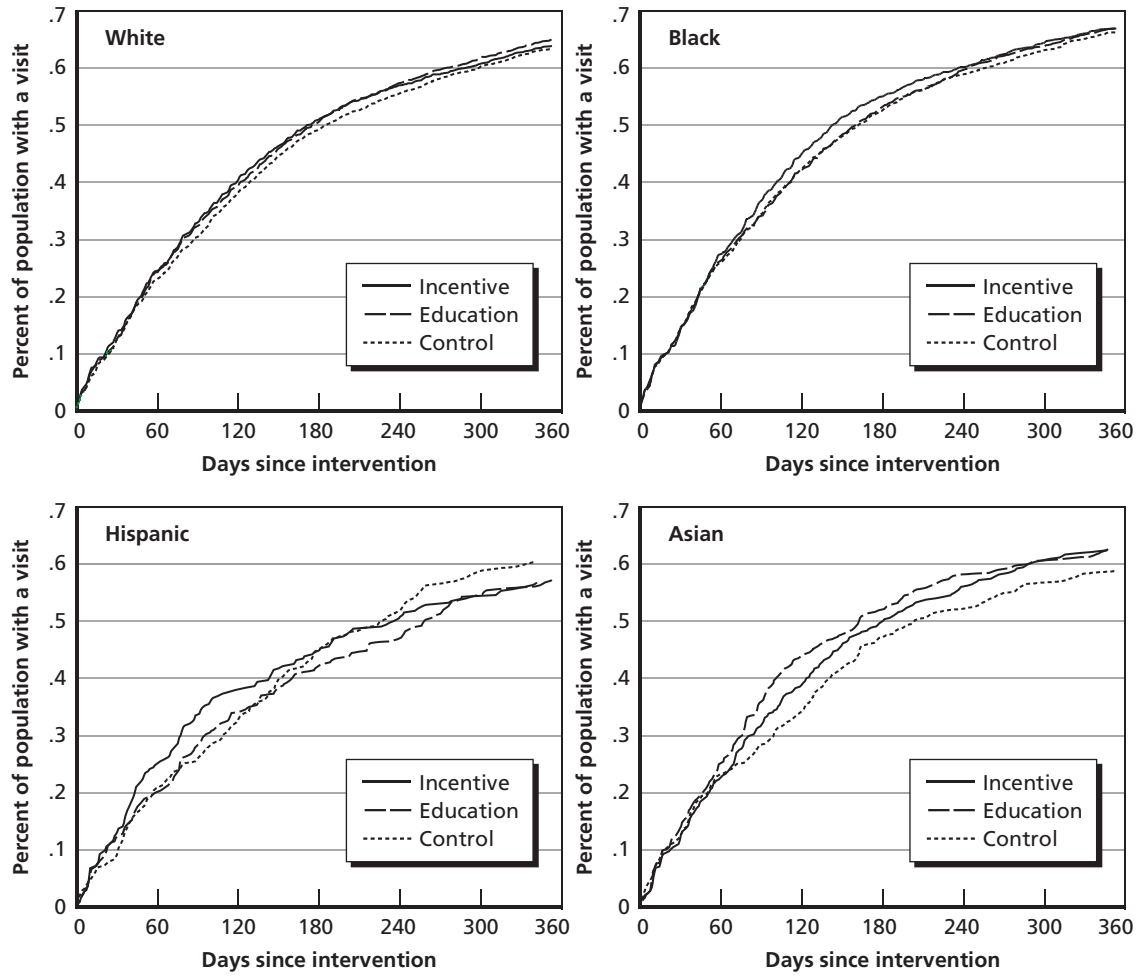
Any Physician Visit

Figure 2.1 shows the cumulative proportion of individuals who made a physician visit over the 12-month follow-up period, separately by study arm within each racial/ethnic group. Despite modest differences observed in the graphs, formal tests of interaction comparing the effectiveness of the initiative across racial/ethnic groups did not show significant differences, suggesting that the initiative may not contribute to a reduction in racial/ethnic disparities in HTN. Among Hispanics and, to a lesser degree, Black individuals, the financial incentive appeared to be more effective in motivating physician visits than educational materials alone or usual care, particularly during the first six months after the initiative. However, among Asians, those receiving educational materials only were more likely to make a physician visit than those receiving an incentive or usual care.

Change in Blood Pressure

The initiative did not have a differential impact on lowering blood pressure over time by race/ethnicity. Interactions between race/ethnicity and study arm that we added to the model to test this hypothesis were not significant, suggesting that the initiative did not appear to contribute to a reduction in racial/ethnic disparities over time.

Figure 2.1
Cumulative Proportion of Individuals Who Made a Physician Visit over the 12-Month Follow-Up Period



Member Feedback

To complement the chart review data, we conducted a focus group and semistructured interviews to gather feedback from 17 CIGNA members. These qualitative methods were intended to help us better interpret the findings from chart reviews and provide insight on how to scale up and replicate QI initiatives effectively.

Perceptions of the CIGNA Initiative

Members were asked for feedback on each of the three components of the initiative and suggestions for how to improve and refine each component. This feedback is summarized below according to each component and comprises a set of recommendations that CIGNA might consider in future QI initiatives. Members also made suggestions for two overall changes that could improve the effectiveness of the initiative. These additions are described at the end of this chapter.

Educational Materials

Feedback about the educational materials was mixed. More than one-third of the members interviewed (35.3 percent) reported that the materials were well written. Two members specifically mentioned that they learned the difference between systolic and diastolic BP as a result of the educational materials and found the chart describing how to read BP levels helpful. One member reported that the educational materials, although not providing new information, reminded him of the importance of seeing his doctor; as a result, he scheduled an appointment.

It didn't really have any information that I didn't already know, however, it did sort of reminded me . . . to go the doctor. . . . I scheduled right after I got this letter, because it reminded me, hey, you know, I haven't been in a while, I should go back And I immediately scheduled an appointment and went and got everything checked out.

However, another one-third of members interviewed (35.3 percent) reported that they did not open the letter or that the letter did not contain any new or interesting information.

I have had high blood pressure for a while so did not learn anything I did not know. It was very generic and just basically just outlined things I already knew.

One member raised concerns that CIGNA was targeting him based on his chronic disease status and, as a result, would use the information to raise premiums or reduce coverage. One member also recommended that CIGNA consider including a disclaimer in its communications alerting members about whether educational materials would be linked with changes to member premiums.

Strengthen the tone of the educational materials. Some of the participants reported that the letter could have gone further to describe the dangers of HTN and emphasize the long-term complications and consequences of not treating it. Members suggested including language in the letter that describes HTN as the “silent killer,” to help combat the perception that the condition is not serious, and emphasizing that individuals with HTN do not exhibit symptoms and that, “If you want to live, take precautions.” Two members expressed this sentiment well.

Maybe they should emphasize dangers of not going to the doctor more. Hypertension affects every part of body so if CIGNA would emphasize that, maybe they would go and get treated.

If you are trying to get people back to the doctor, the letter should say that “this is a reminder that it is important to continue taking blood pressure medicine because without it high blood pressure could cause long-term problems.”

Make the envelope containing educational materials more eye-catching. Three members (17.6 percent) indicated that CIGNA should consider changing the envelope used to mail the educational materials to be more compelling for members to open. One suggested branding the outside of the envelope with a compelling saying, such as “Important Blood Pressure Information,” or a graphic such as a picture of a heart.¹

Use email or other technology to communicate with members. One member suggested sending educational materials through email, as well as through traditional mail. Using email or other technology may be more appropriate for certain target populations based on their use of and comfort with technology. CIGNA may want to consider the age and information preferences of target populations when deciding how best to disseminate education materials for future QI initiatives.

The pocket blood pressure record may not be useful. Feedback from members indicated that the pocket blood pressure record was not being widely used. Although one-quarter of members reported that the blood pressure record was a good idea, when pressed, most were not using it. The most-common reason was that they had a blood pressure cuff and/or software that recorded their blood pressure automatically (47.1 percent). Technological advances may make paper records less useful in the near future, although the concept was well received.

Yes, I kept track, but I was using a different blood pressure record. By the time I received [the pocket blood pressure record] I had a machine at home so I didn't use it.

I have a home BP monitor that is digital and automatically records my blood pressure and I can just take that to my physician when I go. . . . So the paper thing wasn't helpful for me.

¹ Due to the Health Insurance Portability and Accountability Act of 1996, CIGNA is unable to place personal health condition information on the outside of an envelope.

Replace the paper record with a blood pressure cuff. One-third of members (29.4 percent) suggested that instead of sending a paper BP record, it would be more helpful to provide members with a HTN blood pressure cuff, a coupon for a \$10–\$15 discount on a cuff, or software to track BP. Members suggested that sending the cuff along with educational materials would increase the likelihood that members would open and review the materials.

A more powerful incentive would be to give people a discount on a blood pressure monitoring device to take advantage of the reminder and the booklet—a device would allow people to do the measurements needed to fill out their blood pressure record.

If a blood pressure device comes in the mail with the letter, this little box, everyone's going to open it up and they're going to read everything. Even someone like myself, it's a novelty.

Increase the financial incentive and ensure that office visit tracking is accurate. Approximately 40 percent of members reported that the incentive did not inspire them to schedule a visit with their physician. One-quarter of members reported that the incentive was not large enough to compensate them for the time they would spend at the visit. Three members in the incentive group reported that they went to see their physician but did not receive the incentive. It is not known, however, whether individuals were mailed the incentive but it was not opened or discarded, or whether physicians did not code HTN as one of the three diagnoses through medical claims. Members offered several suggestions to improve the effectiveness of the financial incentive.

Tie the incentive more closely to the condition or pay for things that promote a healthy lifestyle. Although those offered a financial incentive appreciated it, several members (29.7 percent) suggested the incentive should be more closely tied to the condition itself. Suggestions included financial discounts on medication, co-payments, and deductibles, as well as providing opportunities that made getting treatment easier, such as training on how to use the blood pressure cuff or a mail-order drug benefit program.

Personally more or less money would not have made a difference. To some people money may work, but it did not do anything for me. . . . CIGNA could partner with somewhere like Walgreens who is running a special right now—go in and get your BP taken and then they help you pick [a cuff] that's best for you. Discounts on things to help manage BP that are pricey would be nice. And then providing some training classes or information about how to use the BP cuff would be a good incentive.

If they wanted to make sure I was going to see the doctor and take the medication, [they] could have given me a coupon like this or a discount for a mail-order drug benefit program or a discount on my deductible to help stay on [my] treatment regime.

Money is not an incentive to me because I make good money. Making refills of prescription easier or cheaper would help keep me on my treatment regime.

One-third of members reported that incentives that supported members in making healthy lifestyle choices would be more helpful for keeping them in control of their blood pressure. Coupons for healthy foods, discounted gym memberships, and consultations with weight control specialists and nutritionists were mentioned as examples of incentives that could help support a healthy lifestyle.

I wish they would send us [people with high BP and diabetes] to a nutritionist to help us keep the weight off. Discounts on things like that would be very helpful.

Use the incentive to encourage an initial visit from newly diagnosed members. Two members indicated that offering financial incentives might be useful to get individuals who have been newly diagnosed with HTN to come in for an initial visit with their doctor. One member remarked that it would be “a good incentive for people who haven’t had their blood pressure checked.”

Other Recommendations to Improve the Initiative

In addition to specific feedback about how to improve the components of the initiative, members also provided suggestions for additional components that could improve future patient-focused QI initiatives.

Customize initiatives to the stage of illness and whether or not patients are actively engaged in care. Although every member in our study population had a diagnosis of HTN, many were well controlled, took their medicines regularly, had regular physician visits, and monitored their blood pressure regularly. These individuals viewed the initiative as less useful for themselves but felt that it would be useful as basic education for someone who was newly diagnosed. In addition, for this group, the initiative had little effect on seeking care.

There is a real difference between education targeted to individuals that have been taking maintenance drugs for a period of time and education for people that have been newly diagnosed. CIGNA should target education to people based on their specific treatment trajectories rather than primary diagnosis or medications prescribed.

The whole topic of high blood pressure if you are not being treated is one thing, but it is a separate issue [if you] understand the risks and the goal is to continue to be treated. Suggestion is that if it is part of the program that CIGNA has with an employer, and CIGNA has access to information [about] folks who are in a risk group but aren’t being treated, the high risk get one type of letter and incentive, and those who are being treated and on meds should have another approach that is tailored towards CIGNA and the employer wanting [them] to continue.

Members reported that initiatives targeting members who had been struggling with HTN for several years should address issues of medication maintenance and side effects.

What might be helpful is to remind people that if they are on medication, they need to take it regularly—can’t just forget it, need it every day. You don’t necessarily feel bad if you don’t take it. You could also tell people that they might need to be on more than one medication or try more than one to find one that doesn’t have bad side effects for them. Letting people know this is common and to keep seeing their doctor about this.

Use personal contact to offer support. Two members suggested that CIGNA consider using personal contact to help provide members support to achieve their treatment goals.

Maybe a different incentive would be better, like a group meeting and get all of us with high blood pressure in the area and get together and that would be another way, we could have a group discussion about health, that is another idea.

Leverage routine physician visits. When asked about their motivations for scheduling a doctor visit, approximately one-third of members (29.4 percent) indicated that they would not make a separate visit to their physician just to have their BP checked. The only reason they see the physician about their HTN, they said, is to adjust their medication levels. The most commonly cited reasons members scheduled a visit with their physician were to seek treatment for another chronic condition or for an annual check-up (29.4 percent).

I have another medical condition that requires them to monitor my blood, so I'm there no less than once a month, depending on how the medication goes, sometimes a couple times a month.

The last time I went in was for my diabetes and they work together so I try and pay attention and see the doctor when I need to. I know at one of the visits my blood pressure was going up so I added another medication—but it's been fine for several months. But my blood pressure was not and is rarely the primary reason I went to see my doctor. I only see the doctor for blood pressure to adjust medication.

They don't give me a prescription refill without seeing [my doctor], so I go.

It's not worth my time to go in to the doctor just to talk about my BP.

Based on patient feedback, future QI initiatives should consider whether it is appropriate to use routine visits as an opportunity to educate patients or monitor compliance with treatment plans for ongoing chronic diseases. For example, a patient who comes in for foot pain could be asked by his orthopedist whether he was taking his hypertension medication regularly. More research is needed to determine when these more-regular check-ins may be appropriate and whether they would improve patient compliance.

Several of the key points summarized above also have relevance for patient incentive QI initiatives more broadly.

Table 3.1 summarizes the major challenges to implementing patient incentive QI initiatives described by members and the solutions they suggested to address these challenges.

Table 3.1
Challenges and Solutions Identified by Members and Broadly Applicable to a Variety of Patient Incentive Quality Improvement Initiatives

Major Challenges to Patient Incentive Quality Improvement Initiatives	Solutions Suggested by Members
The incentive did not inspire some patients to schedule a visit with their physician.	Tie the incentive more closely to the condition (e.g., financial discounts on medication, co-payments, and deductibles).
Different incentives were reported to be relevant for patients at different stages of illness and engaged in varying levels of care.	Customize initiatives to the stage of illness and whether or not patients are actively engaged in care.

Physician Feedback

Open access and preferred physician organization plans have increased opportunities for patients to select and switch physicians. As a result, patients are increasingly responsible for accessing their own care, and as a result, there has been a shift from more traditional physician-focused QI initiatives to QI initiatives focused on the patient. Given these changes, CIGNA was interested in obtaining feedback about the initiative not only from patients but from physicians as well. We surveyed 24 physicians out of the 85 high-volume physicians contacted (28 percent response rate) to assess whether they thought the initiative was useful or helpful to their patients, whether the initiative would result in behavior changes among their patients, and ways in which physicians should be engaged in patient-focused QI initiatives in the future (see Table 4.1). We also gathered more-general feedback on the barriers to patients seeking care for their high blood pressure or adhering to treatment. The findings from the survey are discussed in more detail below. Where appropriate, we have also identified instances in which physician feedback was consistent with patient feedback.

Perceptions of the CIGNA Quality Improvement Initiative

Physicians were asked about their awareness of the initiative and whether they interacted with patients as a result of the blood pressure record provided by the initiative. The majority of physicians (62.5 percent) were not aware that this QI initiative was under way, and fewer than a quarter of them (12.5 percent) reported that patients had mentioned the blood pressure record or brought it with them to a visit. Among those with patients who brought the blood pressure record with them to a visit, physicians reported that the blood pressure record was useful for starting a conversation around the type and dosage of HTN medications patients were using, as well as the long-term consequences and complications associated with certain medications. One physician reported that, as a result of the blood pressure record, a particular patient felt like “the insurance company was part of the team working to address hypertension.”

We also asked physicians about their perceptions of the three key components of the initiative: the patient letter, the blood pressure record, and the financial incentive. Overall, physicians reported that the patient letter, blood pressure record, and financial incentives would be useful to their patients. All physicians who provided specific feedback on the initiative had positive comments (e.g., “a great idea,” “excellent program,” “this is a good plan”). Physicians who disagreed that the letter or blood pressure record would encourage patients to schedule a visit cited cost as a major barrier to care for patients, one that would not be addressed by the letter or blood pressure record. Among physicians who disagreed that the financial incentive

Table 4.1
Physician Perceptions of the CIGNA QI Initiative

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
I think the patient letter from CIGNA will encourage my patients to schedule a visit.	8 (33.3%)	14 (58.3%)	2 (8.3%)	0 (0%)
I think the blood pressure record will help my patients keep better track of their blood pressure.	10 (41.6%)	11 (45.8%)	2 (8.3%)	1 (4.2%)
I think offering patients \$15 will encourage my patients to schedule a visit.	12 (50%)	10 (41.6%)	2 (8.3%)	0 (0%)

would encourage patients to schedule a visit, difficulties getting time off from work and fear of new medications were cited as the greatest barriers to seeking care.

When asked how the initiative could be improved, physicians suggested improvements in three major areas: (1) tying the incentive more closely to HTN, (2) tying the incentive to compliance and/or improvement in blood pressure, and (3) providing additional education via follow-up phone calls made by nurses.

Tie the incentive to compliance and/or improvements in blood pressure. Over one-third of physicians (35.7 percent) reported that the initiative could be improved if it linked an incentive, such as an insurance premium reduction or a free gift, to improved blood pressure or maintaining control of blood pressure. Two physicians suggested that control of blood pressure should be tied to both an incentive for those who are able to maintain control (e.g., decrease in premiums) and a disincentive for those who cannot maintain control (e.g., increase in premiums). Another physician recommended that CIGNA provide a \$100 incentive payable to patients meeting a certain minimum set of criteria related to good health.

Tie the incentive more closely to tools needed to treat hypertension. Approximately one-third of the physicians recommended incentives other than a \$15 gift card—more specifically, incentives that were more closely linked to the treatment and monitoring of HTN. Like some members, physicians suggested offering patients financial incentives to cover medication co-pays and providing a free blood pressure monitor. Physicians also suggested that staggering incentives tied to medication over three to six months would help patients become accustomed to a treatment regime and could improve compliance. One physician commented that the free blood pressure monitor might also help encourage patients to schedule an appointment because patients could see “frequent elevations that might worry them enough to drive them into see a physician.”

Provide additional education via phone calls. One-quarter of physicians reported that the initiative should include additional education to answer questions, further educate patients about long-term complications, and assist patients with making appointments as necessary. These calls would be conducted by a nurse practitioner or a registered nurse. One physician remarked that “reminder calls prior to appointments should underscore the importance of getting treatment for hypertension”; another felt that the phone calls could be used to both monitor and more fully explain patients’ target goals. These phone calls could also serve as the personal contact recommended by members to provide support.

Other suggestions. One physician suggested that CIGNA should consider launching QI initiatives in concert with national campaigns to capitalize on education and attention being paid to the issue. Leveraging the momentum generated by national campaigns about breast,

prostate, and other cancers, as well as diabetes, could encourage more patients to participate in the QI initiative. Although this suggestion does not represent a consensus of the physician perspective, we believe it is innovative and may benefit CIGNA. Therefore, we have included it here.

Perceived Patient Barriers

We also asked physicians to describe the greatest barriers to getting their patients with HTN to come in for a visit and to adhere to a treatment plan for HTN. Physicians identified four major barriers to seeking care and adhering to treatment plans, which are described below.

Cost of hypertension medication and co-pays for physician visits. Over half of the physicians (54.2 percent) reported that cost was a major barrier to getting patients to come in for a visit and adhere to treatment plans, particularly because of the ongoing economic recession. Physicians reported that the high cost of co-pays, medications, and deductibles discourages patients from seeking care.

In this time of recession, many patients cannot afford expensive brand-name medications. We as physicians need to be sensitive to our patients' needs and go with less expensive generic medication.

These same challenges were echoed by members in the previous section of the report.

Difficulty finding time for appointments. Almost half of the physicians (45.8 percent) reported that patients' busy lives make it difficult or inconvenient to come in for an office visit. Physicians reported that it was difficult for patients to take time off from work to come in for a visit. Increasing unemployment may further lessen the likelihood that patients will take time off to schedule a visit.

Hypertension is a "silent" epidemic with few visible symptoms. Over one-third of physicians (37.5 percent) mentioned that a major barrier to seeking care or adhering to a treatment plan was that patients with HTN often do not feel sick. Because patients do not exhibit symptoms, physicians reported that patients may not think they are sick. Physicians reported that even when patients initially have symptoms, once they start taking medication and the symptoms abate, these patients lose motivation to seek care.

There is no motivation to take medicine for a "silent" ailment.

There is no willingness to follow up regularly for a diagnosis that doesn't cause [patients] to feel bad.

These physician perspectives aligned with members' suggestions about highlighting HTN as a "silent" epidemic.

Fear of new medications and concerns about side effects. Over one-third of the physicians (37.5 percent) mentioned that, beyond the cost of medication, patients were worried about side effects and complex treatment regimens. Physicians reported that patients found it challenging to manage multiple medications and to remember to take medications at multiple times during a single day. One physician remarked that for patients to be successful in adhering to their medication regimes, "We need inexpensive, once daily medications." Three physi-

cians (12.5 percent) reported that patients face difficulty overcoming their fear of or anxiety about taking new medications, which may present additional barriers to treatment compliance.

Varying levels of personal motivation. One physician reported that the major barrier was personal motivation and remarked that “indifferent patients need a lot of external motivation.” Although this barrier was mentioned by only one physician, we have included it because it closely mirrors the sentiment of the patients themselves.

Strategies Suggested by Physicians to Address Patient Barriers

We also asked physicians to identify strategies that would help address these barriers. Physicians identified two key strategies to encourage patients to follow through on recommendations from their physician or to adhere to an HTN or other chronic disease treatment plan. These strategies were closely aligned with physician suggestions for how to improve the CIGNA QI initiative and included strategies directed at physician offices and at CIGNA.

Reduce the cost of treatment. Not surprisingly, strategies to help reduce the cost of treatment were widely recommended by physicians. Increasing the availability of inexpensive medication, reducing premiums and co-payments, providing free blood pressure monitors, and offering cost breaks and incentives to compliant patients were strategies suggested by physicians. One physician advocated that CIGNA cover nongeneric medications for individuals with HTN.

Improve patient outreach and education. To help improve patient awareness of the importance of treating HTN, physicians also recommended improving patient education regarding blood pressure and the long-term effects of ignoring blood pressure control. This education could be provided at physician offices during routine visits, by nurses and nurse practitioners during an appointment reminder, or by CIGNA through email and letters (e.g., ones highlighting low-sodium foods).

Physicians did not provide any suggestions for how to address patients’ fears about new medications or medication side effects or patients’ difficulty finding time for appointments, even though they reported these factors as key patient barriers.

Suggestions for How to Include Physicians in Future Patient-Focused Quality Improvement Initiatives

Physicians were clearly divided with respect to how CIGNA can better include physicians in patient-focused QI initiatives. A minority (12.5 percent) reported that they were already overburdened and did not want to be actively involved.

We are already bombarded with requests and letters and have no time to participate.

However, the majority of physicians expressed interest in being more engaged in future patient-focused QI initiatives. Physicians offered two suggestions for how to include them in future initiatives.

Improve communication about the initiative. Two-thirds of the physicians (66.6 percent) reported that they would have liked to receive a list of patients enrolled in the interven-

tion, or copies of the patient letters for their patients' chart, to serve as a reminder to discuss the initiative with them at their next appointment.

It would be helpful to have a hard copy of each patient's letter (with of course the patient's name on the letter) which would be in the chart and could be discussed with the patient at the time of the office visit.

Two physicians recommended that CIGNA inform physicians about current initiatives, the outcomes/success of those initiatives, and future plans or initiatives.

One physician even suggested that CIGNA could help improve patient receipt of their materials by "getting permission from the physician to send the letter with [the physician's] name on it." Including physician names on the letters would require communication between CIGNA and physicians in advance of launching a patient-focused QI initiative.

Offset participation costs through financial incentives or streamlined authorization procedures. Three physicians suggested that offering financial reimbursement for participation in patient-focused QI initiative would help to offset some of the time physicians, nurses, or other office staff would need to provide patients with more education and monitoring of HTN during routine visits and via phone calls. Two other physicians suggested that streamlining prior authorizations, particularly for BP medications that frequently change because of a variety of side effects, would give physicians more time to participate. This recommendation would only be relevant if CIGNA added additional components that require physicians, nurses, or other office staff to participate in outreach to and education of CIGNA patients.

These findings have direct implications for how CIGNA should design and implement future patient-focused QI initiatives. Adjusting the incentives to be more aligned with HTN treatment and control, partnering with physicians' offices to provide more and improve education to patients, and improving processes for engaging physicians in patient-focused QI initiatives are all recommendations that CIGNA should consider applying to future QI initiatives. Chapter Five describes the implications of these findings for CIGNA and more generally for other large insurance companies considering a patient-focused QI initiative.

Similar to the member feedback, several of the key points summarized above also have relevance for patient incentive QI initiatives more broadly. Table 4.2 summarizes the major challenges to implementing patient incentive QI initiatives described by physicians and the solutions they suggested to address these challenges.

Table 4.2
Challenges and Solutions Identified by Physicians and Broadly Applicable to a Variety of Patient Incentive QI Initiatives

Major Challenges to Patient Incentive QI Initiatives	Solutions Suggested by Physicians
Some physicians felt the \$15 financial incentive would not encourage patients to schedule a visit.	Tie the incentive to compliance and/or improvements in the patient's condition. Tie the incentive more closely to tools needed to treat the patient's condition.
Many physicians were not aware of the initiative.	Improve communication about the initiative.
Physicians, nurses and office staff do not have the time to perform additional patient outreach and education.	Offset participation costs through financial incentives or streamlined authorization procedures.

CIGNA Leadership Feedback

Quality improvement or clinical initiatives are important components of any health plan looking to improve the health of its members. Many health plans, including CIGNA, have teams of people committed to the development, implementation, and evaluation of such initiatives. As such, QI initiatives such as this one focused on reducing HTN do not operate in isolation, and findings have implications for QI and clinical initiatives more broadly. To gain a better understanding of what organizational factors or policies facilitated or impeded implementation, we spoke to a small number of people in the CIGNA leadership familiar with this initiative. Given the specific market in which the initiative was implemented, we also sought insight into decisionmaking processes and considerations for replicating or scaling up this initiative or other QI initiatives.

Aspects of the Initiative That Make It Attractive for CIGNA

The initiative has a focus on improving health and provides an opportunity to drill down to further improvements in quality. CIGNA management reported that regardless of whether the initiative was differentially effective for individuals of certain races or ethnicities and helped to reduce disparities, it was an opportunity to learn how members respond to such an initiative. Beyond improving member outcomes and CIGNA's return on investment (ROI), management also highlighted the potential that this kind of initiative might have for engaging members through customized materials, resulting in improved HEDIS rates.

We are at a point in terms of maturity of quality programs and HEDIS results where it's becoming increasingly difficult to drive further improvements in our rates. So from an organization standpoint there is really a need for us to go beyond the more generic messaging to reach out to specific populations that may be underserved to move the needle on HEDIS rates.

The initiative helps CIGNA meet client expectations and demands. Many of CIGNA's current and potential clients are interested in how CIGNA is working to identify disparities and what approaches it is taking to address them. Many clients also have performance guarantees and want to ensure that CIGNA works to improve outcomes. As a result, CIGNA leadership reported that initiatives such as this one focused on HTN provide an opportunity to leverage data on race and ethnicity and hold promise for potential strategies to further meet client expectations around the reduction of disparities.

They [clients] select certain HEDIS measures (e.g., controlling high blood pressure, breast cancer screening) and ask that we demonstrate that we meet or exceed national quality results as reported by NCQA or, if we don't exceed [them], that we improve year to year (with specific goals built in).

Policies or Procedures That Supported Implementation

CIGNA's organizational culture recognizes the importance of addressing disparities. CIGNA staff with whom we spoke reported that one factor critical to the successful implementation of this initiative is CIGNA's organizational culture. For example, staff noted that CIGNA has a Health Disparities Council, which is made up of participants from multiple areas of the organization. It provides strategic direction to the organization for reducing disparities in health outcomes, compiles and disseminates information on best practices, and provides input on how to tailor messages or initiatives to specific populations. Staff also reported that this initiative was launched during a period of momentum within the organization at a time when CIGNA was conducting an assessment and forming a strategic plan around cultural competency.

I would also highlight CIGNA's fundamental roots. Our mission is "To improve the health, well-being and sense of security of people we serve" and we believe it and act on it. If our mission statement was to improve our return on investment, we probably would not have done the study.

CIGNA staff also reported having substantial high-level, national leadership involvement and support throughout the course of the project.

People take cues from leadership and the fact that they [leadership] are talking about it has made a real difference.

CIGNA'S organizational structure holds individuals accountable for improving quality of care. In addition to client expectations and demands, staff reported that CIGNA's organizational structure holds individuals accountable for improving quality of care. For example, CIGNA's governing board is responsible for ensuring the existence of programs to measure, manage, and improve the quality of care that members receive. Also, a team of staff is dedicated to the development and implementation of QI initiatives.

The initiative leveraged CIGNA data and resources. CIGNA leadership noted that the ability to leverage existing data and resources from within the organization made the development and implementation of the initiative more feasible than it would have been had these resources not existed. Leadership cited existing communication channels with physicians and members, relationships with external vendors (i.e., to mail gift cards), policies and procedures for partnering and data-sharing with an external organization and for obtaining access to medical records, and availability of or access to a range of relevant data, including indirectly estimated race/ethnicity data and claims data. CIGNA leadership also cited the availability of industry standards and guidelines, which can provide helpful benchmarks for interpreting data.

Barriers to Implementation or Sustainability

It was difficult to get data needed to assess impact. One of the challenges noted by CIGNA leadership was that one of the key outcomes, blood pressure, is not available through claims data but is available only in medical records. Obtaining these data through medical record review made this evaluation very resource intensive, which is not sustainable or even replicable on a large scale. Given the increased focus on evaluating the impact of QI initiatives, particularly among subpopulations of interest, one of the challenges is how to obtain needed data in a way that is less resource intensive. Electronic medical records (EMRs) were cited as a potential resource to tap in the future.

Where the industry is moving with EMRs will have a huge impact on our ability to implement these kinds of studies in the future. The ability to get data to evaluate whether a member receives the service and examine levels of health will be critical moving forward.

Communicating with physicians was challenging. At the start of this project, CIGNA staff notified physicians of the initiative. One challenge noted by CIGNA staff, not unique to this initiative, is that physicians are constantly bombarded with information via mail and email, including many requests from a range of sources. As a result, they must prioritize, and much of the information they receive is regarded as a waste of time and is not ultimately read.

Sometimes it is difficult to reach the physician due to the way their offices are managed or structured. We find that when we are able to break down that barrier and get to the physician we can have a really good relationship that is mutually supportive, but getting communication to them that they need to hear can be filtered by office staff.

The time line of the initiative did not align with budget cycles. Because it was funded in part by a grant from the RWJF, this two-year project spanned three calendar years (fall 2009–fall 2011). However, CIGNA follows annual budget cycles. CIGNA leadership noted that a potential challenge of this mismatch is that if something were to happen in the marketplace, for example, or if there were major changes within the organization, budgets for future years might be compromised, resulting in the inability to complete or evaluate a given initiative.

Because we have annual budgets, being able to plan for a longer-term initiative or study has some risks in terms of being able to follow through to the end. We are finding that we need to keep the intervention and assessment time short because of the drivers from the budget.

Sustainability, Replication, and Scaling

Decisions are made based on (1) population needs and priorities, (2) effectiveness, and (3) ROI. CIGNA leadership cited three pieces of information that are important for making decisions around the sustainability, replication, or scaling of quality initiatives. The first is an assessment of population needs and priorities. However, given that resources are limited, decisions would also include prioritization: determining whether the need is greater elsewhere and whether dollars should be committed to other more-pressing issues or interventions.

The second is an assessment of the effectiveness of the initiative in achieving the desired outcome(s). This effort also includes an assessment of the confidence in the estimate itself. As one leader stated, “We want to make sure we don’t go down a path where it may not be as successful as implied.” The time frame in which one would expect to see results is also considered (e.g., near-term, 1–2 years, longer).

Related to this issue is whether the observed results contribute to cost savings or quality of life improvements for members, resulting in a higher ROI.

Overall impact—which initiatives are going to have the biggest impact on wellness of individuals and financial bottom line of organizations.

Client interests also affect the practical translation of decisions around ROI data; some are looking for immediate increases in ROI, while others may be willing to wait to realize that ROI.

Clients who are interested in the obesity epidemic might be interested in program that lowers obesity rates and maybe improves biomarkers like blood pressure, cholesterol; but those things won’t improve total medical costs for 10 years. Clients who are less interested in the topic, on the other hand, want to see the ROI in the next year.

Sustaining financial incentives is challenging. Even if the financial incentive is effective in motivating HTN visits with physicians, CIGNA leadership was concerned that a financial incentive was not feasible or sustainable on a broad scale without client funding or cost sharing. Despite interest among clients in addressing health disparities, CIGNA leadership reported that it was potentially more difficult to have clients commit to payment or cost sharing of incentives.

Some employers will be willing to take a leap of faith and offer those [incentive] dollars up front, but others may be more difficult to convince. Even if we give an incentive and it increases physician visits and helps them control their blood pressure, what you’re avoiding is people having strokes and heart attacks—which takes a long time to occur so it’s a bit more of a delay in seeing the return on their investment. A small minority will never be persuaded without very strong (locked in proof) evidence.

Broad replication and sustainability are possible for education-only initiatives. Although CIGNA leadership reported that financial incentives were not sustainable, they reported that educational materials are sustainable without grant support. In fact, CIGNA has started to replicate the education-only arm of this initiative. Moving forward, CIGNA leadership noted their interest in leveraging and further refining data to ensure that CIGNA is optimizing outreach to the appropriate population with the appropriate messaging.

Patient-Focused Versus Physician-Focused Initiatives

Over the years, the role of insurance companies has changed dramatically, with these companies assuming a more active role in improving the health of their members.

Times have really changed . . . we're now seen as a health services company, our nurses do outreach, we do health coaching, we have really come all the way around from feeling like we just contract with physicians to really now being part of the health care model.

QI initiatives are central to this expanded role. Although these initiatives can focus on the physician or the patient, CIGNA leadership noted the inherent value in having a mix of both to improve health care quality and reduce disparities. This mix is becoming more feasible with the establishment of Medical Homes and Accountable Care Organizations, which are likely to be key partners in future quality initiatives.

In the end we are going to have to do the right balance of both. The big value of the customer driven intervention is that we have control, it's simple, and we can do it a standard way nationally so when we have national clients, customers in California get the same intervention as those in New York. On the other hand, we have done some studies that show that when the treating physician is involved, we get a better impact.

Another CIGNA leader suggested that it isn't simply the presence of both patient-centered and physician-centered initiatives, but that they align such that the patients and physicians are receiving the same information and education and have similar motivators (e.g., financial implications) for achieving a goal.

I think each strategy by itself can do some good, but the question is: If you align both, how far can you go?

External Influences on Quality Improvement Efforts

Despite a well-designed and strategic initiative, results may fall short of expectations. CIGNA staff noted several external influences specific to physicians that may influence the success of QI initiatives. The two that were most-often cited were the cultural, competency, and language barriers of physicians and office staff. Other influences included CIGNA's relationships with physicians and physician-patient feedback loops designed to ensure that the care physicians think they are delivering is actually being delivered.

Race/ethnicity and language do make a difference. Related to this is physician communication—speaking clearly. If we help educate physicians on clear language communication so the patients understand and follow the treatment plan and come back, that would help. They [physicians] should speak to patients like they would if they were having dinner together.

Summary and Implications for Quality Improvement Initiatives

Summary

Findings from this evaluation suggest that financial incentives were associated with a small increase in a physician visits by six months after the implementation of the initiative; there were no significant differences between any study arm at 12 months. The initiative did not have a significant effect on number of physician visits or on lowering blood pressure among the full sample. Racial/ethnic groups did not respond differently to the initiative, suggesting that the initiative did not contribute to a reduction in racial/ethnic disparities in HTN. Post-hoc analyses of patient subgroups suggested that individuals with SBP between 120 and 139 or DBP between 80 and 89 at baseline may have benefited from the educational materials, and this association should be the focus of future study. Findings from the summative and formative evaluation suggest a number of implications for future research as well as future QI initiatives within CIGNA and other health plans working toward reducing hypertension rates and racial and ethnic disparities.

Limitations

This evaluation had several limitations worth noting. First, as noted above, current blood pressure is not available in claims data, and as a result, we were not able to select those people most likely to benefit from this intervention (i.e., those with higher baseline blood pressure). Second, because individuals are enrolled in a variety of plans, each with its own payment structure (including the co-pay), we cannot fully understand the net impact of the \$15 incentive on patient finances. Third, although race/ethnicity was estimated using well-validated algorithms, it is not clear whether similar results would have been obtained based on self-reported race/ethnicity. Fourth, the incentives themselves were promised to individuals in exchange for making a physician visit. It is not clear whether direct incentives (e.g., mailed with the physician letter) would have resulted in a different outcome; these may be the subject of further exploration. Finally, a number of findings in this report were based on post-hoc analyses. While suggestive, additional hypothesis-driven research is warranted to formally test these associations. Despite these limitations, a number of implications for QI initiatives were gained from this project.

Implications for Quality Improvement Initiatives

Capitalize on future expansion of EMR for tailoring and evaluation. Ideally, QI initiatives such as this one could be tailored to individuals most likely to respond, such as those with higher blood pressure, while excluding those with well-controlled HTN. Yet this level of detail is not currently available in claims data: Although those with a history of HTN can be identified, current BP readings are not available. Future expansion of the EMR may facilitate more-targeted approaches to improving health.

A similar challenge exists for evaluating the success of initiatives such as this one. Again, not all outcomes are available in claims data. Some of the key outcomes are available only in the medical record, necessitating chart review. However, this process is very resource intensive, which poses a barrier for routine data collection and assessment of QI initiatives over time.

CIGNA should consider working with physicians to identify mutually beneficial fields within the EMR and to create systems of data sharing. Many physicians reported that including a copy of the letter sent to the patients in their medical charts would prompt them to spend time discussing HTN specifically. Having the ability to link initiative materials to the EMR would facilitate the desired patient-physician interaction. Having access to certain biomarkers, such as blood pressure, would also facilitate tailoring of messages to subpopulations based on stage of condition or trend over time (e.g., improvement in or control of blood pressure).

Tailor messaging based on stage of condition and changes over time. Although all individuals in this study had been diagnosed with HTN, their actual blood pressure at baseline varied significantly. Results from both the quantitative and qualitative aspects of this study suggest that a “one size fits all” approach may not be ideal or cost-effective. Results of our analyses suggested that educational materials, and in some cases a small extrinsic appointment-contingent motivator of \$15, were useful in encouraging individuals with a SBP between 120 and 139 or a DBP between 80 and 89 at baseline into care. However, individuals with well-controlled HTN at baseline were less likely to regard the materials as relevant and useful because they already were in routine care and addressing HTN. Another recommendation worthy of future consideration is strengthening the messages themselves by making them more candid.

Incentives should more closely align with the condition. Even though results from our evaluation do not present a compelling case for sustaining incentives, members reported that the incentive itself should more closely align with the condition. Suggestions were made for a blood pressure cuff or discount on HTN medication as an incentive that would not only be appreciated but would also reinforce CIGNA’s commitment to working with members to improve their health.

Tools to track health, while appreciated and valued, should be available in a form compatible with today’s technology. One component of this initiative, provided to both the incentive and education-only arms, was a pocket blood pressure record. Although members valued the idea, they rarely used the record, often explaining that they track their blood pressure electronically. Future tools developed to support individuals with their health care should be made available in a form compatible with today’s technology to maximize their impact and use.

Build in-house expertise around evaluation. For this project, CIGNA partnered with RAND, which has expertise in study design and evaluation. However, as CIGNA moves

toward a more sophisticated utilization of data and places a larger emphasis on process and outcomes evaluation, it would benefit from in-house expertise. As one CIGNA leader noted, “It’s a luxury within a health services company to have staff that is well versed and ready to go in terms of study design and statistical analysis—it would be nice to have.”

Informational Letters, Educational Materials, and Costs of Implementation

Incentive Arm

CIGNA
10490 Little Patuxent Parkway
Columbia, MD 21044

<Date>
Customer name
Customer Address
City, State Zip

Dear <Insert customer name>:

Taking care of your health begins with you! If you have high blood pressure, going to your doctor for a blood pressure checkup is important.

We want you to stay healthy so we will send you a \$15.00 American Express gift card, just for visiting your doctor to have your blood pressure checked.

It's simple to get your gift card:

- Visit your primary care doctor or heart doctor for a blood pressure checkup between October 1, 2009 and February 28, 2010.
- Tell your doctor that talking about your blood pressure is the reason for your visit.
- We'll mail your gift card to you within 90 days after your doctor sends us a bill for your blood pressure visit. You don't need to do anything else to receive your gift card.
- This offer is limited to one gift card, for the customer named in this letter.

Why should I worry about my blood pressure?

When your blood pressure is high, your heart has to work harder to pump blood to all parts of your body. Most people with high blood pressure feel healthy and don't even know that they have it. If your high blood pressure is not treated, it can cause stroke, heart attack, kidney problems or eye problems.

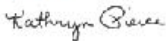
Keep track of your blood pressure:

We've also included a small booklet called *America's Health Record*. Each time you check your blood pressure, write down your results in this booklet. Bring it with you each time you visit your doctor, and talk with him or her about your blood pressure. Ask your doctor questions such as "What is my blood pressure?", "Is my blood pressure too high?", "What do I need to do about it?", and "Why is it important for me to do this?"

If you have questions about this letter, or about receiving your gift card, call us at our toll free number 1.866.817.8235.

Thank you for choosing CIGNA.

Sincerely,



Kathryn Pierce, RN, BSN
Director of Clinical Quality

Enclosures



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it's time to feel better®

High Blood Pressure

How does blood pressure work?

Blood pressure is a measure of how hard blood pushes against the walls of your blood vessels as it moves. If your blood pressure is high, it means your heart has to work extra hard to pump blood.

What do the blood pressure numbers mean?

A blood pressure reading has two numbers. The higher number measures the pressure when your heart beats, known as the *systolic* number. The lower number measures the pressure when your heart rests between beats, known as the *diastolic* number. If your reading is **120 over 80 or higher** you could be at risk for high blood pressure.



Blood Pressure Reading Levels

Category	Systolic blood pressure		Diastolic blood pressure
Normal blood pressure	Less than 120	AND	Less than 80
Borderline blood pressure (also called Prehypertension)	120-139	OR	80-89
High blood pressure (also called hypertension)	140 or higher	OR	90 or higher

GOOD NEWS! You can control your high blood pressure!

What can I do to help take control of my blood pressure?

- Eat low fat foods such as fruits, vegetables, low-fat dairy and lean cuts of meat.
- Avoid high-salt foods like potato chips, bacon and hot dogs and high-salt canned foods.
- Maintain a healthy weight and try to exercise for 30 minutes, at least 5 days a week.
- Drink less alcohol and do not smoke.
- Take your medicine as your doctor ordered.
- Ask your doctor how often you should check your blood pressure. Some people need to check their blood pressure daily.
- You can also get information from the American Heart Association (AHA) by calling them at 1.800.242.8721, or visiting their website at www.americanheart.org.

You can talk to a nurse or listen to an audiotape called High Blood Pressure (#1909) by calling CIGNA's 24-hour health information line at 1.800.564.9286.

You can get discounts and learn more about your health by visiting www.myCIGNA.com

- Learn about medication choices and costs.
- Take a health assessment.
- Get discounts on programs to help you exercise, stop smoking, or manage your weight through CIGNA Healthy RewardsSM, Weight WatchersSM and Jenny CraigSM are two of the available programs.

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Education-Only Arm

CIGNA

10490 Little Patuxent Parkway
Columbia, MD 21044

<Date>

Customer name
Customer Address
City, State Zip

Dear <Insert customer name>:

Taking care of your health begins with you! If you have high blood pressure, going to your doctor for a blood pressure checkup is important.

Why should I worry about my blood pressure?

When your blood pressure is high, your heart has to work harder to pump blood to all parts of your body. Most people with high blood pressure feel healthy and don't even know that they have it. If your high blood pressure is not treated, it can cause stroke, heart attack, kidney problems or eye problems.

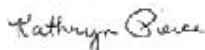
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- We've included a small booklet called *America's Health Record*.
- Each time you check your blood pressure, write down your results in this booklet.
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Sincerely,



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Implementation Costs

To assist other health plans or organizations looking to implement a similar initiative, we summarize the categories of implementation costs below. Dollar figures are not provided, as the actual costs will vary significantly depending on size of target population, internal resources, varying start-up costs, staffing models, and size of incentives. Note that these costs do not include resources related to data collection or evaluation. Costs are broken up below by staffing resources, outreach, and the financial incentive.

Staffing Resources

Although staffing resources will depend on the size of the target population, this initiative with a sample size of 18,000 included

- 0.5 full time equivalent (FTE) clinical staff to plan, develop, and execute the workplan
- 0.5 FTE data analyst to identify population and monitor claims for incentive
- Legal review of initiatives and materials prior to mailing.

Customer and Physician Outreach Mailings

- Printing of educational and mailing materials. Costs will vary not only by volume but by customization, graphics, and visual enhancements to the materials (e.g., color)
- Collating and preparation of mailing
- Postage. Physician letters were emailed, saving resources.
- Creative and translation services to assist with visual enhancement of materials and branding
- Pocket BP booklets (outside vendor)
- Toll-free phone line for customers to call for additional information about the initiative. Staff time to manage this phone line will again vary by size of target population.

Financial Incentive

- Gift card
- Handling fee
- Postage

Study Population and Randomization to Study Arm

Study Population

The study population was drawn from CIGNA's clinical reporting database in October 2009. To be eligible, members had to be enrolled in a network Health Maintenance Organization, Point of Service plan, Preferred Physician Organization plan, or an Open Access plan. None of the study population was uninsured or insured by Medicare or Medicaid.

We used NCQA's Controlling High BP HEDIS specifications to identify hypertensive members. Hypertensive members were defined as having at least one outpatient encounter with a diagnosis of HTN (ICD-9-CM = 401) between July 1, 2007, and June 30, 2009. An outpatient encounter was defined as an encounter billed with one of the following CPT-4 codes: 99201–99205, 99211–99215, 99241–99245, 99384–99387, and 99394–99397. This 24-month period was selected to ensure that we captured not only those considered hypertensive according to NCQA HEDIS specifications (high blood pressure within the past year; 0–12 months) but also hypertensive patients who have not seen a physician in over a year (13–24 months) because this population may be at particular risk for poor blood pressure control and may benefit most from a physician visit.

To be included in the analytic sample, individuals had to be enrolled continuously from January 1, 2009, through the beginning of the initiative. Members whose HTN management may be secondary to another primary diagnosis or treatment, such as end-stage renal disease, pregnancy, active cancer, organ transplant, or HIV/AIDS, were excluded.

Randomization to Study Arm

Given the project's main objective of understanding whether and how this initiative disproportionately affects individuals of varying racial and ethnic groups, we capitalized on CIGNA's diverse patient population and oversampled three minority groups: Blacks, Hispanics, and Asians/Pacific Islanders (PIs).

Because self-reported race/ethnicity was available for only a small proportion of the eligible population, we indirectly obtained race/ethnicity using the newest version of RAND algorithms (Elliott et al., 2008; Elliott et al., 2009). In short, the algorithm assigns six probabilities of race/ethnicity based on an individual's last name and address (mapped to Census block group). The six probabilities sum to 1 and are produced for the following groups: American Indian/Alaskan Native (AIAN), Asian/PI, Black, Hispanic, Two or More Races, and White. Validation studies have found the accuracy of the estimates to be very high (C-statistic >0.9)

when totaled within a population for Asian/PI, Black, Hispanic, and White race/ethnicities. The estimates are less accurate and not recommended for use when viewed for a single individual or when totaled for AIAN or Two or More Races. For that reason and because they tend to have low volume, the AIAN and Two or More Races were combined into an “Other” group.

The sample was balanced for both race/ethnicity and months since their most recent physician visit, resulting in eight categories. With a target total sample size of 18,000, the target subsample sizes were determined based on the inherent sizes of the categories in the population meeting the inclusion criteria (Table B.1).

In a perfect scenario, all eight categories would have been populated with an equal number of subjects. However, the population was more heavily weighted toward Black and White race/ethnicity and last visits that occurred within 12 months. To account for this, the size of the last visit categories was aligned with the proportion observed in the population (85 percent within 12 months, 15 percent within 13–24 months); within each category, individuals were assigned a priority weight for selection based on their race/ethnicity probabilities. The calculations were as follows:

Step 1: Determine global weight values.

Asian/PI = 1.0 (entire population, as many are naturally selected).

Hispanic = 1.0 (entire population, as many are naturally selected).

Black = ((Last visit group target sample size – (Asian/PI + Hispanic sample size)) / 2)/Black sample size.

White = ((Last visit group target sample size – (Asian/PI + Hispanic sample size)) / 2)/White sample size.

Step 2: Assign priority weights to individuals.

Priority weight for individuals with a visit within 0–12 months =
(Asian/PI probability × 1.0) + (Hispanic probability × 1.0) +
(Black probability × 0.7008805) + (White probability × 0.2951570).

Priority weight for individuals with a visit within 13–24 months =
(Asian/PI probability × 1.0) + (Hispanic probability × 1.0) +
(Black probability × 0.6111417) + (White probability × 0.2334105).

Table B.1
Study Population

Race/Ethnicity	Total Subjects	Last Visit Within 0–12 Months	Last Visit Within 13–24 Months
Asian/PI	1,824	1,503	321
Hispanic	1,309	1,058	251
Black	7,434	6,370	1,064
White	7,433	6,369	1,064
Total	18,000	15,300	2,700

Step 3: Calculate probability that the individual will be chosen in a single draw.

For each last visit category (0–12 months, 13–24 months):

$$R = \text{Priority Weight} / \text{Sum}(\text{all priority weights}).$$

After all individuals had been assigned weights within their respective last visit categories, the surveyselect procedure in the SAS[®] statistical software program was applied to perform the selection process. Below are the statements used in the surveyselect procedure: “data=” is the input dataset; “out=” is the output dataset; “method=pps” chooses probability proportional to size and without replacement as the selection method; “seed=” is the anchor value that allows the same selection to be made if the process is rerun; “sampsiz=” is the target sample size for the respective last visit category; and “size” is R, which is the value determined in Step 3 of the priority weighting process above.

For those with a visit within 12 months:

```
proc surveyselect data=rwjsampl.pool_0112mos
  out=rwjsampl.selected_sample_0112mos
  method=pps
  seed=100
  sampsiz=15300;
size R ;
run;
```

For those with a visit within 13–24 months:

```
proc surveyselect data=rwjsampl.pool_1324mos
  out=rwjsampl.selected_sample_1324mos
  method=pps
  seed=100
  sampsiz=2700;
size R ;
run;
```

The resulting samples of 15,300 and 2,700 for the respective last visit categories were then further divided into three study arms: Arm 1 would receive the educational material and the incentive, Arm 2 would receive the educational material only, and Arm 3 would serve as the control group during the study period and would receive the educational material after the conclusion of the study. The samples were divided evenly among the three arms by randomly assigning each individual to one of the three arms until the maximum number of individuals desired in each arm was reached. The race/ethnicity composition of the resulting arms is shown in Tables B.2–B.4 (with race/ethnicity probabilities rounded to one decimal place).

Although the White sample size exceeds all targets and the Asian/PI, Black, and Hispanic sample sizes fall a bit short, the overall race/ethnicity balance of the sample is as the study intended.

Table B.2
Racial/Ethnic Composition of Those Whose Last Visit Was Within 0–12 Months

Study Arm	Total	Asian/PI	Black	Hispanic	White	Other
Arm 1	5,100	342.7	1,472.5	240.7	2,965.7	78.4
Arm 2	5,100	330.6	1,467.5	244.8	2,979.7	77.4
Arm 3	5,100	337.4	1,479.2	216.9	2,986.8	79.8
Total	15,300	1,010.7	4,419.1	702.4	8,932.2	235.6

Table B.3
Racial/Ethnic Composition of Those Whose Last Visit Was Within 13–24 Months

Study Arm	Total	Asian/PI	Black	Hispanic	White	Other
Arm 1	900	76.6	253.1	56.1	500.4	13.9
Arm 2	900	73.2	247.3	58.2	508.1	13.2
Arm 3	900	74.2	252.7	59.9	500.1	13.2
Total	2,700	224.0	753.0	174.2	1508.5	40.3

Table B.4
Final Sample (Total of Tables B.1–B.3)

Study Arm	Total	Asian/PI	Black	Hispanic	White	Other
Arm 1	6,000	419.3	1,725.5	296.8	3,466.0	92.3
Arm 2	6,000	403.8	1,714.7	303.1	3,487.8	90.6
Arm 3	6,000	411.6	1,731.8	276.7	3,486.9	93.0
Total	18,000	1,234.6	5,172.1	876.6	10,440.7	275.9

Study Participant Interview Protocols

Group 1: Financial Incentive—Made Appointment

To start, we would like to hear a bit more about your initial thoughts and reactions when you first received the letter and blood pressure record from CIGNA.

Q1: Thoughts and Reactions to Letter

1. Did you find the informational letter useful?
 - 1a. Did you learn anything from it that you did not already know?
 - 1b. Did the letter provide enough information about your risks in terms of your gender, age, and race or ethnicity? Would you have liked more? Less?
 - 1c. What would you change about it, if anything?

Q2: Thoughts and Reactions to Blood Pressure Record

2. Did you find the pocket blood pressure record useful? Are you currently using it?

Q3: Thoughts and Reactions to Financial Incentive

3. What did you think about the financial incentive?
 - 3a. Would you have made a doctor appointment if less money or no money was offered to you?
 - 3b. Did the gift card come when you expected it to?

Q4: Reasons to See Doctor

4. What was the most important reason you decided to see the doctor? (It could be something we were just talking about like the money or the letter, or it could be something completely different—like you know someone who just had a heart attack.)

Q5: Experience with Doctor

5. Did the doctor spend enough time talking with you about your high blood pressure and did he or she answer your questions? Did you feel the visit was worth your time?
(May skip this question based on time and flow of focus group)

Q6: Improvements to Intervention

6. Now please think about the program overall (letter, blood pressure guide, incentive). How would you recommend changing it to make it most helpful for others like you, such as your friends or family, who may receive something like this in the future?

Final Thoughts/Comments

7. Do you have any final questions, comments, or thoughts that you think we should know about or that you would like to discuss before we conclude?

Group 2: Financial Incentive—Did Not Make Appointment

To start, we would like to hear a bit more about your initial thoughts and reactions when you first received the letter and blood pressure record from CIGNA.

Q1: Thoughts and Reactions to Letter

1. Did you find the informational letter useful?
 - 1a. Did you learn anything from it that you did not already know?
 - 1b. Did the letter provide enough information about your risks in terms of your gender, age, and race or ethnicity? Would you have liked more? Less?
 - 1c. What would you change about it, if anything?

Q2: Thoughts and Reactions to Blood Pressure Record

2. Did you find the pocket blood pressure record useful? Are you currently using it?

Q3: Thoughts and Reactions to Financial Incentive

3. What did you think about the incentive?
 - 3a. Was the amount too little? Would you have gone to the doctor if more money was offered? How much more?

Q4: Ways to Get Individuals to the Doctor

4. Was there something that CIGNA could have said in the letter or done differently to encourage you to go to the doctor?

Q5: Improvements to Intervention

5. Now please think about the program overall (letter, blood pressure guide, incentive). How would you recommend changing it to make it most helpful for others like you, such as your friends or family, who may receive something like this in the future?

Final Thoughts/Comments

6. Do you have any final questions, comments, or thoughts that you think we should know about or that you would like to discuss before we conclude?

Group 3: No Financial Incentive—Made Appointment

To start, we would like to hear a bit more about your initial thoughts and reactions when you first received the letter and blood pressure record from CIGNA.

Q1: Thoughts and Reactions to Letter

1. Did you find the informational letter useful?
 - 1a. Did you learn anything from it that you did not already know?
 - 1b. Did the letter provide enough information about your risks in terms of your gender, age, and race or ethnicity? Would you have liked more? Less?
 - 1c. What would you change about it, if anything?

Q2: Thoughts and Reactions to Blood Pressure Record

2. Did you find the pocket blood pressure record useful? Are you currently using it?

Q3: Reasons to See Doctor

3. What was the most important reason you decided to see the doctor? (It could be something we were just talking about like the letter, or it could be something completely different—like you know someone who just had a heart attack.)

Q4: Experience with Doctor

4. Did the doctor spend enough time talking with you about your high blood pressure and did he or she answer your questions? Did you feel the visit was worth your time? (*May skip this question depending on time and flow of focus group*)

Q5: Improvements to Intervention

5. Now please think about the program overall (letter, blood pressure guide). How would you recommend changing it to make it most helpful for others like you, such as your friends or family, who may receive something like this in the future?

Final Thoughts/Comments

6. Do you have any final questions, comments, or thoughts that you think we should know about or that you would like to discuss before we conclude?

Group 4: No Financial Incentive—Did Not Make Appointment

To start, we would like to hear a bit more about your initial thoughts and reactions when you first received the letter and blood pressure record from CIGNA.

Q1: Thoughts and Reactions to Letter

1. Did you find the informational letter useful?
 - 1a. Did you learn anything from it that you did not already know?
 - 1b. Did the letter provide enough information about your risks in terms of your gender, age, and race or ethnicity? Would you have liked more? Less?
 - 1c. What would you change about it, if anything?

Q2: Thoughts and Reactions to Blood Pressure Record

2. Did you find the pocket blood pressure record useful? Are you currently using it?

Q3: Improvements to the Letter

3. Was there something that CIGNA could have said in the letter or done differently to encourage you to go to the doctor?

Q4: Increases in Financial Incentive

4. Would you have gone to the doctor if you had been offered money or a financial incentive to do that? How much money?

Q5: Improvements to Intervention

5. Now please think about the program overall (letter, blood pressure guide). How would you recommend changing it to make it most helpful for others like you, such as your friends or family, who may receive something like this in the future?

Final Thoughts/Comments

6. Do you have any final questions, comments, or thoughts that you think we should know about or that you would like to discuss before we conclude?

Background Information Form

At the end of the interview, ask the participant the following questions.

1. How many years have you been a CIGNA member?

- Less than 1 year
- 1–2 years
- 3–4 years
- 5 or more years

2. Are you: Check one box.

- Male
- Female

3. Check the category that best describes your age. Check one box.

- 18–29
- 30–39
- 40–49
- 50–59
- 60 and over

4. Which of the following best describes your race or ethnicity? Check one box.
- Black (non-Hispanic)
 - Hispanic
 - Asian/Pacific Islander
 - Native American
 - White (non-Hispanic)
 - Other (please specify): _____
5. What is the highest level of education you have completed? Check one box.
- Less than high school
 - High school graduate/GED
 - Vocational school beyond HS
 - Some college
 - College graduate
 - Some graduate education
 - Graduate degree
6. Which of the following best describes your current employment status? Check one.
- Full-time
 - Part-time
 - Student
 - Unemployed, looking for work
 - Not in the labor force (homemaker, retired, disabled)
 - Other (please specify): _____
7. When was the last time you went to see your doctor to talk about your high blood pressure?
- In the past month
 - 1–3 months ago
 - 4–6 months ago
 - 7–12 months ago
 - Not in the past year
8. I just want to confirm your mailing address so we can send you your gift card.

[Confirm address]

Physician Survey

Dear Dr. [NAME],

Recently CIGNA implemented a quality improvement initiative targeting patients with hypertension and as a result, several of your patients made an appointment to see you to discuss their blood pressure.

We are interested in learning what you thought about the initiative, and what CIGNA could do in the future to make it better.

Please take 10 minutes to complete the survey below. In return, we will send you a \$100 American Express gift card. Your feedback is critical to improving care for your patients and all patients with hypertension. What was CIGNA's quality improvement initiative?

To encourage people to see their doctor about their high blood pressure CIGNA:

- Sent members a letter in the mail with information about the risks of high blood pressure
- Sent members a small booklet for members to track their blood pressure readings
- Offered some members a small financial incentive (\$15) if they made an appointment

A copy of these materials is enclosed for your convenience.

If you have any questions or problems connecting to the survey, please call the RAND Survey Director, Laurie Martin, at 703.413.1100 x5083.

Thank you in advance for helping to make the survey a complete success.

Sincerely,

Laurie Martin
Principal Investigator
RAND Corporation

Physician Survey

Please complete the questions below. The information you provide will be kept confidential and used for research purposes only.

1. Were you informed about CIGNA's quality improvement initiative for your patients with hypertension (i.e., did you know what it was about, who it was targeting, and when it was starting/ending)?

No

Yes

2. Did any of your patients mention or bring the letter or blood pressure record to their visit?

No

Yes

Did you find this useful for starting a conversation around hypertension? Why or why not?

3. Based on what you know about your patients and the materials that CIGNA sent (included in this packet), please indicate how strongly you agree or disagree with the following statements about the three components of CIGNA's quality improvement initiative (i.e., patient letter, blood pressure record, financial incentive).

	Strongly Agree	Agree	Disagree	Strongly Disagree
I think the patient letter from CIGNA will encourage my patients to schedule a visit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think the blood pressure record will help my patients keep better track of their blood pressure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think offering patients \$15 will encourage my patients to schedule a visit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 4. What do you think are the greatest barriers to getting your patients with hypertension to come in for a visit? Adhere to their treatment plan for hypertension?

- 5. The purpose of CIGNA's quality improvement initiative was to get patients to come in for a visit to discuss their hypertension with a physician. How would you improve the initiative (i.e., patient letter, blood pressure record, financial incentive)? Are there other strategies that would encourage your patients to get preventive care for hypertension and other chronic diseases (if yes, please describe)?

- 6. CIGNA is also interested in initiatives that encourage people to follow through on recommendations from their physician. What types of strategies do you think would help your patients adhere to a hypertension or other chronic disease treatment plan?

- 7. What suggestions do you have for CIGNA about how to better include physicians, like yourself, in patient focused quality improvement initiatives? For example, would it have been helpful for your office to receive a list of patients that were being included in the initiative or a hard copy version of the letter to hand out in your office?

Additional comments:

Thank you for completing the survey!

CIGNA Leadership Interview Protocol

Interview:

Date:

Duration:

1. Where does this initiative fall within the CIGNA organization? Where does this fit within CIGNA's other initiatives to improve health and reduce racial/ethnic disparities? Are there other ongoing initiatives similar to this one (e.g., offering information and a financial incentive to patients)?
2. Are there organizational factors that make this type of intervention particularly attractive or feasible for CIGNA? Or make it less attractive or challenging to implement at CIGNA?
3. Are there policies or procedures in place to support the implementation of this (and other quality improvement) initiatives? What are they?
4. What organizational, financial, or other supports could have facilitated or challenged the implementation of this hypertension intervention?
5. How has CIGNA leadership and management supported this initiative? Is the success of this and other quality improvement initiatives contingent on buy-in and support from CIGNA leadership?
6. If this initiative proves successful at reducing disparities in the mid-Atlantic region, what considerations will need to be made in the decision whether or not to sustain it? Do you think this intervention is sustainable without grant support from RWJF or another funding agency if it involves offering a financial incentive? Educational materials only?
- 6a. If financial incentives work, would you be willing to consider these incentives for other illnesses?
7. What additional considerations need to be made before deciding whether or not to scale it up within CIGNA?
8. What do you think makes patient-focused interventions (rather than physician-focused interventions) attractive or unattractive to insurance companies, like CIGNA? To large employers?
9. How do you think physician characteristics or capability and related environmental factors influence quality improvement efforts at CIGNA?
10. When CIGNA comes across new interventions—that they may have heard of from a meeting, for example, what do they want to know about it when considering to adopt/adapt it for CIGNA?

Analyses

This appendix describes the quantitative and qualitative analyses used in the evaluation.

Quantitative Analyses

For Aim 1, we calculated the proportion of individuals having a physician visit using proc means in SAS. Subanalyses were conducted by stratifying or subsetting the data on specific characteristics (i.e., primary diagnosis of HTN, baseline blood pressure, time since last physician visit). We used F-tests to assess differences across the three study arms overall; pairwise t-tests were conducted to assess differences between two study arms (e.g., incentive versus usual care). Absolute differences were calculated by subtracting the proportion of individuals with a visit in the usual care group from the proportion in the incentive or education-only arms. Relative differences were calculated by dividing that difference by the proportion of individuals with a visit in the usual care arm.

For Aim 2, we conducted a linear regression model predicting systolic blood pressure, controlling for baseline BP, number of months since measurement, age, race/ethnicity, and gender.

For Aim 3, we assessed whether there were differential effects of the intervention by race/ethnicity, using a logit model to assess the probability of having a visit. To examine our hypothesis that small financial incentives helped to reduce disparities in HTN outcomes, we assessed whether there was a statistically significant interaction between race and intervention arm. The differential effects of incentives on HTN outcomes by race/ethnicity correspond to the interactions in the models. Given that race/ethnicity was indirectly estimated, graphs were created by summing up individuals over time, weighting by the probability of each race. To assess whether the intervention was differentially effective for reducing blood pressure over time, we replicated the linear model described above for Aim 2, adding interactions between race and study arm. Analyses did not account for clustering of patients within practice because there were very few practices that we classified as “high volume”—those with 20 or more patients in the study. Only two physicians had more than 50 patients (n=51, n=52), which is about 0.3 percent of the sample. Most physicians had fewer than 10 patients in the sample. Future efforts, particularly if they are targeted to a smaller geographic area or a limited number of physicians, should assess the extent to which improvements in visits or blood pressure control are a result of practice efforts as opposed to patient efforts.

Qualitative Analyses

Below, we describe in detail the analyses we conducted using the member and physician feedback.

Member Feedback

The focus group and the interview transcripts were analyzed using a method known as constant comparative analysis, which is an analytic technique used for qualitative data (Lincoln and Guba, 1985). The steps we took to analyze the data are as follows:

We first read each after–focus group and interview transcript and noted potential themes, including specific answers to each of the six questions included in the interview protocol: Thoughts and reactions to the letter, thoughts and reactions to the blood pressure record, thoughts and reactions to the financial incentive, reasons members went to see their doctor, members' experience with their doctor, and members' suggestions about ways to improve the intervention.

Next, we listed the themes we most wanted to explore and conducted preliminary analysis to ensure that we could identify text in the transcripts that related to those themes. To ensure accuracy and consistency of the coding, we then conducted a calibration exercise to ensure that each person with responsibility for identifying and coding text would interpret and uniformly flag concepts (expressed in passages of text) within the reports. Then, two project staff read each report and flagged and coded text in each transcript. Finally, we sorted text according to themes and subject areas to facilitate our analysis. Table F.1 lists themes identified in focus group and interview transcripts.

Physician Feedback

The physician survey included both questions with fixed response options and open-ended questions. For questions with fixed response options (e.g., Yes or No, Strongly Disagree or Strongly Agree), we conducted basic descriptive analyses to calculate the frequency of responses or the number of physicians who responded to each fixed-choice response option, and the percentage of physicians who selected each response option (i.e., number of physicians who selected a response option divided by the total number of physicians).

For the open-ended questions, we used constant comparative analyses, as described above, to identify themes, including responses to the four open-ended questions that asked physicians to identify

- the greatest barriers to getting your patients with hypertension to come in for a visit or adhere to their treatment plan for hypertension
- suggestions to improve the CIGNA quality improvement initiative
- strategies to help patients adhere to a hypertension or other chronic disease treatment plan
- suggestions for CIGNA about how to include physicians in patient-focused QI initiatives.

Table F.1
Themes Identified in the Member Focus Group and Interview Transcripts

Question	Themes	Number of Members
Thoughts and reactions to the letter	Well written and laid out	5
	Learned new information	2
	Did not learn much new information	4
	Did not open it	2
Thoughts and reactions to the blood pressure record	Not useful	10
	Currently monitoring BP using a different tool	8
	Liked it, but not using it	4
	Do not remember it	1
Thoughts and reactions to the financial incentive	Was not enough and took too long	4
	Did not receive it	3
Reasons members went to see their doctor	Visit for another chronic condition	4
	Part of regular checkup	3
	Preserve length and quality of life	2
	Request a refill of medicine	1
Members' experience with their doctor	Would not have scheduled a separate visit for hypertension	5
	Did not spend adequate time	4
	Spent adequate time and attention	4
	Worth my time	2
Members' suggestions about ways to improve the intervention	Tailor more specifically to patient populations	6
	More personal contact	2
	Letter	
	Stronger wording	4
	Flashier envelope	3
	Sent via email	2
	BP record	
	Provide a BP cuff or provide a discount on one	5
	Financial incentive	
	Use with newly diagnosed people	2
	Use to supplement cost of care (e.g., medicine or co-pay)	4
	Use to cover things that promote a healthy lifestyle	5

Table F.2 lists themes identified in the physician survey.

Table F.2
Themes Identified in the Physician Survey

Question	Themes	Number of Physicians
Suggestions to improve the CIGNA quality improvement initiative	Tie the incentive to compliance and/or improvements in blood pressure	9
	Tie the incentive more closely to tools needed to treat hypertension	8
	Provide additional education via phone calls	6
	Launch QI initiatives in concert with national campaigns	1
	Develop an instructive interactive internet site for patients	1
Barriers to patient care	Cost of hypertension medication and co-pays for physician visits	13
	Difficulty finding time for appointment	11
	Hypertension is a “silent” epidemic with few visible symptoms	9
	Fear of new medications and concerns about side effects	9
	Varying levels of personal motivation	1
Strategies to improve patient adherence to a treatment plan	Reduce the cost of treatment	10
	Improve patient outreach and education	7
Suggestions for how to include physicians in patient-focused QI initiatives	Improve communication about the initiative	16
	Offset participation costs through financial incentives or streamlined authorization procedures	3
	Did not want to be actively involved	3

Continuity of Care Results

Implicit in the theoretical basis for this initiative is that individuals offered a financial incentive will not only be more likely to have a physician visit but will engage in regular physician visits (i.e. continuity of care), resulting in better HTN control.

Table G.1 shows that for the full sample, the initiative did not have a significant effect on continuity of care over the 12-month follow-up period ($\chi^2=6.1$, $p=0.64$). There were also no differences between the number of visits for the incentive or education-only groups when compared with usual care ($\chi^2=2.2$, $p=0.71$ and $\chi^2=4.1$, $p=0.39$ respectively). There were also no significant differences between the incentive and education-only groups ($\chi^2=2.9$, $p=0.57$).

Table G.1
Number of Physician Visits, by Study Arm

Number of Physician Visits	Total (%)	Incentive (%)	Education (%)	Usual Care (%)
0 (n=6,408)	35.6	35.6	35.0	36.2
1 (n=4,185)	23.3	22.8	23.8	23.2
2 (n=3,310)	18.4	18.7	18.0	18.5
3 (n=1,843)	10.2	10.5	10.4	9.8
4 (n=2,254)	12.5	12.4	12.9	12.3

HTN as the Primary Diagnosis

Given that over the course of a year individuals may see a provider for a range of medical concerns, we examined whether the initiative had an effect on the number of physician visits where HTN was listed as the primary diagnosis.

Overall, differences between the study groups by number of physician visits were not statistically significant ($\chi^2=11.5$, $p=0.17$; Table G.2). Differences between the incentive and education-only groups were minimal. Differences in number of physician visits with HTN as the primary diagnosis between those in the incentive group and usual care were also not significantly different ($\chi^2=6.2$, $p=0.18$). Differences between the education-only group and those in usual care were relatively small, but borderline significant ($\chi^2=8.9$, $p=0.06$).

Table G.2
Number of Physician Visits Within 12 Months Post-Initiative (Primary Visit for HTN)

Number of Physician Visits	Total (%)	Incentive (%)	Education (%)	Usual Care (%)
0 (n=10,314)	57.3	56.7	56.6	58.6
1 (n=4,117)	22.9	23.4	23.2	22.0
2 (n=2,074)	11.5	11.5	11.4	11.7
3 (n=823)	4.6	4.5	5.0	4.2
4+ (n=672)	3.7	3.9	3.7	3.6

Time Since Last Physician Visit

Given earlier findings that the initiative was successful in promoting HTN visits among those who had not seen a physician in the 12 months prior to the start of the initiative, we examined whether the initiative was associated with the number of physician visits, stratified by time since last physician visit.

As shown in Table G.3, there were no significant differences overall, or between any study groups (i.e., incentive versus usual care, education-only versus usual care, incentive versus education) in the number of physician visits over the 12-month follow-up period.

Table G.3
Number of Physician Visits, Stratified by Time Since Most-Recent Physician Visit Prior to the Start of the Initiative

Number of Physician Visits	Incentive (%)	Education (%)	Usual Care (%)
Most recent visit <6 months prior to initiative	n=3,520	n=3,476	n=3,438
0	26.0	23.7	26.4
1	22.4	23.4	22.6
2	21.4	21.3	20.9
3	13.2	13.6	12.8
4+	17.1	18.1	17.3
Most recent visit 6–12 months prior to initiative	n=1,475	n=1,479	n=1,536
0	41.5	43.8	42.1
1	26.4	26.4	25.8
2	17.1	16.3	18.4
3	7.6	7.0	6.9
4+	7.5	6.6	6.8

Table G.3—Continued

Number of Physician Visits	Incentive (%)	Education (%)	Usual Care (%)
Most recent visit 12+months prior to initiative	n=1,005	n=1,045	n=1,026
0	60.9	59.8	60.2
1	18.9	21.3	21.4
2	11.6	9.5	10.5
3	5.3	5.0	4.0
4+	3.3	4.4	3.9

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