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Title: A randomized, controlled trial of a shared panel management program for small practices

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Abstract

Objectives. To determine whether a shared panel management program was effective at improving quality of care for patients with uncontrolled chronic disease.

Data sources. Data were extracted from electronic health records.

Study Design. Randomized controlled trial of a panel management program initiated by New York City Department of Health and Mental Hygiene. Patients from 20 practices with an uncontrolled chronic disease and a lapse in care were assigned to the intervention (a phone call requesting that the patient schedule a physician appointment) or usual care. Outcomes were visits to physician practices, body mass index measurement, blood pressure measurement and control, use of antithrombotics, and low density lipoprotein measurement and control.

Principal findings. Panel managers were able to successfully speak with 1,676 patients (14.7% of the intervention group). There were no significant differences in outcomes between the intervention and usual care groups. Successfully contacted patients were more likely to have an office visit within 1 year of randomization (45.6% [95% CI 22.8, 26.9] vs. 38.1% [95% CI 36.8, 39.3]) and more likely to be on antithrombotics (24.4%, [95% CI 17.7, 31.0]) versus those in the usual care group (17.0%, [95% CI 13.9, 20.0]) but had no other difference in quality.

Conclusions. A shared, low intensity panel management program run by a city health department did not improve quality of care for patients with chronic illnesses and lapses in care.
Key Words: Chronic disease management, disparities in healthcare, public health, panel management, population management

Introduction

More than half of Americans have at least one chronic health condition.(2012; Centers for Disease Centers for Disease Control and Prevention ; Prevention. 2011) Chronic disease accounts for approximately 75% of healthcare spending and 70% of mortality in the United States.(Bodenheimer, Chen, and Bennett 2009; Centers for Disease Centers for Disease Control and Prevention) One possible reason for the high burden of uncontrolled chronic illnesses is the healthcare system's reactive approach to patients.(Bodenheimer 2008; Bodenheimer, Wagner, and Grumbach 2002a, 2002b; Wagner 1998; Wagner, Austin, and Von Korff 1996) Physicians treat patients who come to their offices but rarely identify and contact patients who miss recommended care; these patients may fall through the cracks.

Panel management is a proactive approach to identify patients who have health needs that are not being adequately addressed and to reach out to them.(Chen and Bodenheimer 2011; Neuwirth WB 2007) The purpose of panel management is to change care from reactive (i.e., providing care only when a patient is in the office) to proactive (i.e., anticipating care needs and reaching out to patients). To perform panel management, practices need to identify their population of patients, identify the specific care needs for this population, and reach out to them.

Outreach can range from case management, which focuses on personalized care for individual patients by highly trained staff, to low intensity interventions for larger groups of patients by non-clinical staff.(Case Management Society of America 2009) These low intensity interventions include telephone calls and other forms of reminders and education by non-clinical staff that can be applied to many patients with little personalization. Several studies have improved chronic disease and preventative care using a less intensive approach for larger groups of patients.(Loo et al. 2011; Neuwirth WB 2007)

In 2010, the New York City Department of Health and Mental Hygiene's (NYC DOHMH) Primary Care Information Project (PCIP) started a panel management program for small practices located in New York City. PCIP was founded in 2005 to help small practices adopt and optimize the use of electronic health records (EHRs). After the program started, PCIP

administrators noticed that although practices had the ability to create registries of patients through their EHRs, practices did not have sufficient staff to use these registries to drive proactive care, such as patient outreach. The PCIP panel management program employed panel managers who went to participating practices, identified patients with chronic diseases and lapses in care, and performed telephone outreach to schedule follow up appointments. The program was unique because it was run by a city health department, deployed panel managers who were shared by several small, private practices in underserved areas of New York City, and is an intervention that could be superimposed on existing practices. This particular low intensity intervention was chosen because PCIP wanted to reach more patients than possible with a more intense program without necessarily impacting the day-to-day functions of the practices. PCIP also anticipated that practices in the program would eventually be able to train non-clinical staff to perform the panel managers' activities in the future.

In this paper, we report findings from a randomized controlled pragmatic trial of PCIP's panel management program. By pragmatic, we mean that the trial measured the effectiveness of an intervention that was incorporated into the routine clinical processes of each practice.(Roland and Torgerson 1998) We specifically address the following research questions: 1) How effective was the program at contacting patients? 2) How effective was the program at improving process and outcome measures of chronic disease care for patients with gaps in care? 3) How effective was the program among patients who were successfully contacted?

Methods

Setting and Participants. Established in 2005, PCIP has facilitated the adoption of EHRs by primary care practices in underserved, ethnically diverse New York City neighborhoods. Most of these practices are small (i.e., less than 10 providers). The initial program targeted practices that served Medicaid and uninsured patients to receive a software subsidy and technical assistance.(Mostashari, Tripathi, and Kendall 2009) In 2010, PCIP established NYC REACH, the city's regional extension center and currently assists over 10,000 primary care providers in over 1,000 independent practices, making it the largest community-based EHR extension project in the U.S.(Mostashari et al. 2009) The assistance to practices focused on achievement of Meaningful Use standards as defined by the Centers for Medicaid and Medicaid Services, including facilitating the interpretation and incorporation of clinical preventive service guides,

such as blood pressure control, identifying smokers and cessation intervention, and diabetes management as part of the practice's routine clinic workflow.

In 2010, PCIP started a shared panel management program. To be eligible for this program, practices must have been using the EHR for at least six months, cared predominantly for adult patients, had adequate space and equipment for a panel management staff to use (computer and telephone), and could not be concurrently enrolled in PCIP's pay-for performance program.(Ryan et al. 2013) Practices included in this study were those that enrolled before October 31, 2012.

During the study period, 26 practices enrolled. Practices dropped out of the program because of technical issues with the EHR (n=1) or closure of the practice (n=3). We were unable to access data from practices because of technical problems (n=2) or because the practice refused (n=1). This analysis is based on data from the remaining 20 practices.

To be eligible for the study, patients in these practices must have been identified as having one of the target conditions (overweight and diabetes, heart disease, uncontrolled hypertension, and hyperlipidemia) and also had lapses in care at that practice. Lapses in care were defined separately for the different target conditions (Table 1). Study eligibility was determined by queries that were executed within each practice's EHR.

Intervention. Six panel managers were hired by the NYC DOHMH. All of the panel managers had bachelor's degrees but none had formal health care training or higher level degrees. The panel managers underwent at least 2 weeks of training before going into practices and met with program leadership weekly for additional training and troubleshooting. Topics included using the EHR, chronic disease care, and telephone training. The panel managers' only responsibility was to try to get patients with lapses in care to schedule an appointment, not to perform care management functions such as discussing medications or self-care.

Panel managers were integrated into the practices, working in each practice one day a week or every other week, depending on the practice size. Each time they were in an office, they called patients who were randomized to the intervention group. If the panel manager was able to reach the patient, he or she used a standard script to encourage each patient to make an appointment. The panel managers were trained on the reasons why patients needed follow up for their chronic medical conditions but were expected to only help patients make follow-up appointments without providing the patient with a specific reason why follow-up was necessary.

The panel managers were able to immediately schedule appointments. If a patient could not be reached by phone, the panel manager left a voicemail message asking the patient to schedule an appointment but, to ensure patient privacy, did not state the specific reason why an appointment was necessary. If a patient had not scheduled an appointment after three voicemails, the panel manager mailed the patient a letter suggesting they schedule an appointment and did not attempt additional phone calls. Panel managers logged telephone calls to patients in the EHR; however, the specific gap in care was not included in the EHR telephone encounter note. The telephone encounter simply stated that an outreach call had been made. Office staff were able to view this information in the EHR.

Study arm assignment. Panel managers in every practice accessed new lists of patients who were eligible for assignment every 6 to 8 weeks, depending on the patient volume (longer intervals were used for practices with more patients). Each time the panel manager generated a list, the list was securely transmitted to Sharepoint (Microsoft Corp.) to perform automated randomization of patients to the intervention and usual care groups. Two-thirds of the patients were randomized to the intervention group and one-third to usual care.

Patients who were randomized to the intervention group were then prioritized so that patients who had more conditions were at the top of the call list and patients who had only one condition were at the bottom. Practices were able to remove names of patients who they believed were no longer part of the practice or should not be called for other reasons.

Usual care differed by practice. For example, some practices did not track patients or reach out to patients with lapses in care. Some practices had staff review appointment books to reschedule patients who missed visits. None of the practices regularly used the EHR's registry function to track patients for follow-up.

Variables. The outcome variables were classified as operational measures, clinical process measures, or intermediate outcome measures. Operational measures were whether a patient had an office visit within 3 months or 1 year of randomization (Table 1).

Process measures included body mass index (BMI) documentation for overweight patients with diabetes, documentation of antithrombotic therapy for patients with heart disease, blood pressure measurement in patients with hypertension, and LDL measurement for patients with hyperlipidemia. Intermediate outcome measures were blood pressure control for patients with hypertension (i.e., systolic blood pressure (sBP) <140 and diastolic blood pressure (dBP)

<90 in non-diabetics; sBP<130 and dBP<80 in diabetics) and LDL control for patients with hyperlipidemia (i.e., LDL <130 in non-diabetics; LDL <100 in diabetics). We considered a process measure to be achieved if the process was documented at least once during the 1 year post randomization and an intermediate outcome measure to be met if the patient achieved that outcome at least once during the 1 year post randomization. We dichotomized all measures as either achieved or not achieved.

Data on attempts to call patients that were assigned to the intervention, as well as the result of these calls, were obtained from program records.

Analysis. We performed an intention-to-treat analysis with patients analyzed in the group to which they were randomized. We used the Pearson chi-squared test to test for unadjusted differences between the usual care and intervention groups and multivariable logistic regression to test for differences between the usual care and intervention groups while controlling for patient age, gender, and clustering at the practice level. We considered a p-value of <0.05 to be significant. Because panel managers were able to speak with only a small percentage of patients, we performed a subgroup analysis comparing patients in the intervention group who were successfully contacted within 1 year (i.e., the panel manager spoke with the patient) versus patients in the usual care group.

All analysis was performed using Stata 12.0 (Stata Corp, College Station, TX).

Results

Patient characteristics. Of the 17,598 patients eligible for panel management, patients were excluded because there was an error in the randomization (n=273), call information was not available (n=437), gender was not available (n=1), or eligibility criteria was not available (n=1, Figure 1).

Among the 16,886 patients who had complete data, the mean age was 53.5 (SD 16.4) and 49.2% were male. Most patients were eligible because of hyperlipidemia (72.1%) and most met the eligibility criteria for only one condition (86.3%). Of the eligible patients, 11,409 were assigned to the intervention group and 5,477 were assigned to the usual care group. There were no significant demographic differences between patients in the two study arms (Table 2).

Among patients in the intervention group, the mean number of call attempts per patient

was 1.4 (SD1.3). Panel managers did not call 4,058 patients (36.5% of the intervention group). Among these patients, the most often cited reasons for not calling were 1) that the patient had an appointment scheduled by the time the panel manager planned to call (19.8 % of patients not called), 2) the physician requested not to call (12.9% of patients not called), and 3) the patient did not meet clinical criteria after the panel manager reviewed the chart (8.7% of patients not called). For the remainder of patients who were not called, there was no documented reason. Among patients in the intervention group who were called at least once, the mean number of call attempts per patient was 2.1 (SD 1.2). Panel managers called but were unable to speak with or leave a voicemail for 1,992 patients (17.5% of the intervention group). They were able to leave a voicemail message or speak with a family member for 3,683 patients (32.3% of the intervention group). They were able to successfully speak with 1,676 patients (14.7% of the intervention group).

Quality Measures. Among patients in the usual care group, 20.7% (95% CI 19.7, 21.8) had an office visit within 3 months of randomization compared with 21.0% (95% CI 20.2, 21.7) in the intervention group (p=0.72, Table 3). The percentage of patients with office visits within 1 year of randomization was also similar in the usual care and intervention groups (38.1% [95% CI 36.8, 39.3] versus 38.6% [95% CI 36.8, 39.3], p=0.53).

There were no differences in scores on process measures in the intervention group versus the usual care group. Among patients with obesity and diabetes, 10.9% (95% CI 8.2,13.5) had their BMI measured within 1 year of randomization in the usual care group compared with 9.1% (95% CI 7.5,10.8) in the intervention group (p=0.26). Among patients with heart disease who were not on antithrombotic therapy, 17.0% (95% CI 13.9, 20.0) went on antithrombotic therapy in the usual care group versus 17.3% (95% CI 15.2, 19.4) in the intervention group (p=0.88). Among patients with uncontrolled hypertension, 21.3% (95% CI 19.0, 23.5) had their blood pressure measured within 1 year of randomization in the usual care group compared with 20.7% (95% CI 19.1, 20.7) in the intervention care group (p=0.67). Among patients with uncontrolled hyperlipidemia, 23.9% (95% CI 22.6, 25.3) had their LDL measured within 1 year of randomization in the usual care group compared with 24.2% (95% CI 23.3, 25.2) in the usual care group (p=0.72).

There were no significant differences in attainment of the intermediate outcome measures between the usual care and intervention groups. Among patients with uncontrolled hypertension,

12.9% (95% CI 11.1, 14.8) had blood pressure control within 1 year of randomization in the usual care group compared with 13.2% (95% CI 11.9, 14.6) in the intervention group (p=0.92). Among patients with uncontrolled hyperlipidemia, 5.0% (95% CI 4.4, 5.7) had LDL control within the usual care group versus 5.0% (95% CI 4.5, 5.4) in the intervention group (p=0.86). Among patients in the intervention group, 1,676 (14.7%) were successfully contacted within 1 year of randomization (Table 4).

Patients who were successfully contacted were more likely to have an office visit within 3 months of randomization than patients in the usual care group (24.8% [95% CI 22.8, 26.9] vs. 20.7% [95% CI 19.7, 21.8], p<0.001) and were more likely to have an office visit within 1 year of randomization (45.6% [95% CI 22.8, 26.9] vs. 38.1% [95% CI 36.8, 39.3], p<0.001, Table 5). Among patients with heart disease, patients who were successfully contacted were more likely to be on antithrombotic therapy within 1 year of randomization (24.4%, [95% CI 17.7, 31.0]) versus those in the usual care group (17.0%, [95% CI 13.9, 20.0], p=0.03). We found no other significant differences in quality measures between the group of patients who were successfully contacted and those in the usual care group.

Discussion

In this randomized trial of a shared panel management program for small practices, we found that patients who were assigned to treatment were no more likely to achieve any of the study's quality outcomes than patients who received usual care. Among patients who were successfully contracted in the program, we observed positive and significant effects for 3 of the 8 study outcomes. The low rate at which panel managers were able to successfully contact patients may, in part, explain these results.

Our findings differ from a controlled trial of panel management in an academic geriatrics practice which found that panel management significantly improved rates of preventive care and health care proxy designation.(Loo et al. 2011) They also differ from a non-controlled study of four Kaiser Permanente practices which demonstrated improved quality of care after implementation of panel management.(Neuwirth WB 2007)

These different findings may stem from the fact that the practices enrolled in PCIP's panel management study were a broad group of small practices in disadvantaged neighborhoods rather than practices under an umbrella system. The findings may also stem from the fact that it

was difficult to contact patients - the panel managers were able to contact less than a third of the patients in the intervention group. This low contact rate may be because patients did not have telephones or frequently changed their phone number (pre-paid cellular plans) which makes it difficult for the practices to maintain the most current number.

The difference may also stem from the fact that the panel management intervention was likely quite different from the interventions described in other panel management studies. The PCIP panel management intervention may have been problematic. For example, panel managers in this study only helped patients make follow-up appointments without providing the patient with a specific reason why follow-up was necessary. This differs from the role that panel managers have played in the previous panel management programs.(Chen and Bodenheimer 2011; Loo et al. 2011; Neuwirth WB 2007) In these programs, panel managers provided patients with concrete recommendations and often helped with care coordination. Patients may be less likely to follow up if they are not given a specific recommendation or rationale. In addition, the lack of clear specification of the care gap in the telephone encounter note could have had several repercussions: if a patient called back when the panel management was not present, others could not explain the reason for the call and the primary care provider who saw a patient in a resulting visit may not have actually known the driving reason for the visit, and thus may not have closed the care gaps that the research team had in mind.

Second, many patients may have had relatively weak ties with a given practice. This may have led to a large number of calls to patients who possibly changed their primary care physician or had never identified the physician as their primary care physician. Data from an accompanying qualitative evaluation of the panel management program suggest that this may be the case - many patients who were contacted stated that they had switched physicians and were no longer part of the practice.

Third, physicians were able to remove eligible patients from the call list. Thirteen percent of patients in the intervention group were not called because of physician choice. Physicians cited that patients were no longer part of the practice, were in long-term care facilities, and in some instances had passed away. Although physician engagement was an essential part of this pragmatic clinical trial and this engagement could be viewed a positive

aspect of the intervention, their requests not to call patients may have diluted the impact of the intervention.

Fourth, there was a lag time from when lists were generated by the panel managers and when patients were called. A fifth of patients in the intervention arm were not contacted because they scheduled an appointment in the interval between being added to a call list and being called.

Finally, panel managers' lack of coordination with the practice may have undermined the program's impact. Although they physically went to the practices to make telephone calls, there was no systematic communication between the panel managers and the practices staff or physicians. As a result, communication between panel managers and practice staff and physicians varied substantially across practices.

There are some limitations. First, our findings may not generalize broadly to physician practices in the U.S. The practices in PCIP care for poorer patients who may not have access to phones compared with other populations. This may have decreased the effectiveness of the program. Second, we did not assess patient use of emergency departments, patient satisfaction or personal barriers to re-engagement in care. Future studies should address the patient perspective, particularly in poorer populations. Finally, our results from the subsample of patients that were successfully contacted may be biased by unobserved differences between these patients and the patients assigned to usual care.

In summary, we found that a shared panel management program run by a city health department did not improve quality of care for patients with chronic illnesses who had lapses in care. Our findings suggest that even with support from a well-established assistance program, a shared panel management model may not improve quality of chronic disease care. Organizations considering similar programs of telephone outreach for patients in community settings should consider other ways to engage patients such as the use of multiple modes of outreach (e.g., phone, email, mail, in-person), patient-specific recommendations tailored to the specific gap in care, or other motivational techniques and should do rigorous pilot testing to see if patients are reachable and respond to new programs. Organizations may also consider doing tiered interventions as a "one size fits all" approach as in this trial may not be effective. In addition, a call without context, coaching, or counseling likely will not lead to behavior change.
Finally, the findings may reflect the fact that patients who have lapses in care may need more than a telephone reminder to incentivize them to re-engage in care. Interventions that use

motivational techniques such as economic incentives and non-economic incentives, may be necessary to engage these patients.(Halpern, Asch, and Volpp 2012; John et al. 2011; Kimmel et al. 2012; Kullgren et al. 2013; Long et al. 2012; Troxel and Volpp 2012; Volpp et al. 2011; Volpp et al. 2008a; Volpp et al. 2008b; Volpp et al. 2009)

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Table 1. Clinical Measures

Quality Measure	Eligible Population	Achievement Criteria	Time Frame
Process Measures			
BMI documentation	Overweight and diabetes not seen in past 3 months	BMI documented in EHR	At least once within 1 year of randomization
Antithrombic therapy	Heart disease not seen in past 6 months and with no documentation of aspirin or another antithrombotic drug	Documented use of aspirin or another antithrombic drug in their current medications	At least once within 1 year of randomization
Blood Pressure Monitoring	Uncontrolled hypertension (BP>140/90 in non-diabetics or BP>130/80 in diabetics) not seen in past 3 months	Blood pressure checked	At least once within 1 year of randomization
LDL Monitoring	Hyperlipidemia not seen in past 6 months	LDL Measured	At least once within 1 year of randomization
Intermediate Outcome Measures			
Blood pressure control	Uncontrolled hypertension (BP>140/90 in non-diabetics or BP>130/80 in diabetics) not seen in past 3 months	sBP<140 and dBP<90 in non-diabetics; sBP<130 and dBP<80 in diabetics	Controlled at least once during 1 year after randomization
LDL control	Hyperlipidemia not seen in past 6 months	LDL <130	LDL at goal at least once during 1 year after randomization

Abbreviations: BMI – body mass index, LDL – low density lipoprotein, sBP – systolic blood pressure, dBP – diastolic blood pressure

Table 2. Characteristics of the usual care and intervention groups

		Usual Care	Intervention	p-value
No. of practices		20	20	-
No. of patients		5,477	11,409	-
Age, y (mean)		53.7	54.4	0.59
Male sex, (%)		50.3	48.7	0.06
Reason for eligibility (%)				
	Overweight and diabetes	9.9	10.6	0.20
	Heart disease	10.6	10.9	0.60
	Uncontrolled hypertension	23.0	22.4	0.34
	Hyperlipidemia	71.6	72.4	0.28
No. of reasons for eligibility(%)				
	1	86.7	86.0	0.50
	>1	13.3	14.0	

Note: 66.7% of patients within each practice were assigned to treatment and 33.3% were assigned to usual care

Table 3. Effect of panel management on performance measures

	Usual Care (n=5,477)		Intervention (n=11,409)			
Measure	No. Eligible Patients	Met measure, % (95% CI)	No. Patients	Met measure, % (95% CI)	Unadjusted p-value	Adjusted OR* (95% CI)
Operational Process Measures						
Office visit within 3 months of randomization	5,477	20.7 (19.7, 21.8)	11,409	21.0 (20.2, 21.7)	0.72	1.01 (0.95,1.09)
Office visit within 1 year of randomization	5,477	38.1 (36.8, 39.3)	11,409	38.6 (36.8, 39.3)	0.53	
Process Measures						
BMI measured within 1 year of randomization in patients with diabetes	543	10.9 (8.2,13.5)	1205	9.1 (7.5,10.8)	0.26	0.82 (0.60,1.13)
Antithrombic therapy documented within 1 year of randomization in patients with heart disease	583	17.0 (13.9,20.0)	1,245	17.3 (15.2,19.4)	0.88	1.03 (0.75,1.41)
Blood pressure measured within 1 year of randomization in patients with hypertension	1,261	21.3 (19.0,23.5)	2,552	20.7 (19.1,22.2)	0.67	0.97 (0.80,1.18)
LDL measured within 1 year of randomization in patients with hyperlipidemia	3,919	23.9 (22.6,25.3)	8,254	24.2 (23.3,25.2)	0.72	1.02 (0.93,1.11)
Intermediate Outcome Measures						
Blood pressure controlled within 1 year of randomization**	1,261	12.9 (11.1,14.8)	2,552	13.2 (11.9,14.6)	0.78	1.03 (0.76 ,1.40)
LDL controlled within 1 year of randomization**	3,919	5.0 (4.4,5.7)	8,254	5.0 (4.5,5.4)	0.86	0.98 (0.84,1.15)

Abbreviations: OR-odds ratio, BMI – body mass index, LDL – low density lipoprotein

*Adjusted OR is adjusted for patient age, gender, and clustering at the practice-level.

Table 4. Characteristics of patients who were successfully contacted versus the usual care group

		Usual Care (n= 5,477)	Successfully contacted in Intervention (n= 1,676)	p-value
Age, y (mean)		53.7	52.1	**<0.001**
Male sex, no. (%)		50.3	51.7	0.29
Reason for eligibility (%)				
	Overweight and diabetes	9.9	12.1	0.01
	Heart disease	10.6	9.8	0.31
	Uncontrolled hypertension	23.0	24.6	0.19
	Hyperlipidemia	71.6	73.6	0.11
No. of eligible categories* (%)				
	1	86.7	82.9	**<0.001**
	>1	13.1	17.1	

*Abbreviations: BMI – body mass index, BP – blood pressure, LDL – low density lipoprotein

Table 5. Effect of panel management on performance measures between patients who were successfully contacted versus the usual care group

	Usual Care (n= 5,477)		Successfully contacted in Intervention (n= 1,676)			
Measure	No. Eligible Patients	Met measure, % (95% CI)	No. Patients	Met measure, % (95% CI)	Unadjusted p-value	Adjusted OR* (95% CI)
Operational Measures						
Office visit within 3 months of randomization	5,477	20.7 (19.7, 21.8)	1,676	24.8 (22.8, 26.9)	**<0.001**	1.23 (0.96, 1.68)
Office visit within 1 year of randomization	5,477	38.1 (36.8, 39.3)	1,676	45.6 (43.3, 48.0)	**<0.001**	1.36 (1.00, 1.85)
Process Measures						
BMI measured within 1 year of randomization in patients with diabetes	543	10.9 (8.2, 13.5)	202	12.4 (7.8, 17.0)	0.56	1.16 (0.60, 2.25)
Antithrombic therapy documented within 1 year of randomization in patients with heart disease	583	17.0 (13.9, 20.0)	164	24.4 (17.7, 31.0)	**0.03**	**1.70 (1.04, 2.78)**
Blood pressure measured within 1 year of randomization in patients with hypertension	1,261	21.3 (19.0, 23.5)	412	20.9 (16.9, 24.8)	0.87	0.97 (0.68, 1.38)
LDL measured within 1 year of randomization in patients with hyperlipidemia	3,919	23.9 (22.6, 25.3)	1,233	25.5 (23.0, 27.9)	0.27	1.06 (0.75, 1.50)
Intermediate Outcome Measures						
Blood pressure controlled within 1 year of randomization**	1,261	12.9 (11.1, 14.8)	412	13.1 (9.8, 16.4)	0.78	1.00 (0.66, 1.50)
LDL controlled within 1 year of randomization**	3,919	5.0 (4.4, 5.7)	1,233	4.1 (3.0, 5.2)	0.19	

Abbreviations: OR-odds ratio, BMI – body mass index, LDL – low density lipoprotein

*Adjusted OR is adjusted for patient age, gender, and clustering at the practice-level.

Figure 1. Patient study arm assignment