

Practice Facilitation and Clinical Performance Feedback Using the Electronic Health Record Improved Blood Pressure and Cholesterol Management in Small Primary Care Practices in New York City

Bahman P. Tabaei, MPH; Samantha De Leon, PhD; Lily Glenn, MPH; Hang Pham-Singer, PharmD

ABSTRACT

Cardiovascular disease (CVD) disproportionately affects people of color and those with lower household income. Improving blood pressure (BP) and cholesterol management for those with or at risk for CVD can improve health outcomes. The New York City Department of Health implemented clinical performance feedback with practice facilitation (PF) in 134 small primary care practices serving on average over 84% persons of color. Facilitators reviewed BP and cholesterol management data on performance dashboards and guided practices to identify and outreach to patients with suboptimal BP and cholesterol management. Despite disruptions from the COVID-19 pandemic, practices demonstrated significant improvements in BP (68%-75%, $P < .001$) and cholesterol management (72%-78%, $P = .01$). Prioritizing high-need neighborhoods for impactful resource investment, such as PF and data sharing, may be a promising approach to reducing CVD and hypertension inequities in areas heavily impacted by structural racism.

KEY WORDS: blood pressure management, cardiovascular disease, cholesterol management, clinical performance feedback, electronic health record, hypertension, practice facilitation

Cardiovascular disease (CVD) remains the leading cause of mortality in New York City (NYC) and nationally.^{1,2} Over 1.1 million (7%) adults across New York State report having CVD. Moreover, about 2.1 million adults in NYC have hypertension (HTN)³ and 2 million report having elevated cholesterol,⁴ which are leading causes of CVD.

Furthermore, structural racism leads to a complex interaction of race, social factors, and health with inequitable CVD outcomes for marginalized populations, especially Black Americans.⁵⁻⁷ For example,

HTN prevalence is higher among adults with household incomes less than 200% of the Federal Poverty Line (FPL) (32%) than among adults with household income $\geq 400\%$ of FPL (26%).⁸ However, regardless of socioeconomic status, Black individuals consistently bear significant disparities in CVD morbidity and mortality.⁹ In NYC, Black (44%) and Latino/a (31%) adults have higher HTN prevalence than White (23%) and Asian/Pacific Islander (22%) adults.⁸

Local health departments like the NYC Health Department can help address these inequities by supporting primary care practices (PCP) that serve

Author Affiliations: New York City Department of Health and Mental Hygiene, Center for Health Equity and Community Wellness, Queens, New York.

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The study protocol has been reviewed and approved by the DOHMH institution review board (IRB # 20-052).

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Correspondence: Bahman P. Tabaei, MPH, New York City Department of Health and Mental Hygiene, 42-09 28th St, Queens, NY 11101 (btabaei@health.nyc.gov).

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marginalized communities. Two potential approaches are practice facilitation (PF) and clinical performance feedback. Practice facilitation, or quality improvement (QI) coaching, helps PCPs enhance the quality of clinical practice.^{10,11} With the guidance of a practice facilitator, primary care providers are nearly 3 times as likely to apply evidence-based guidelines.¹² In addition, some studies have found that clinical performance feedback, or reports showing a clinical team's performance on quality measures, can improve care delivery.¹³

Cardiovascular disease can be prevented and managed by lowering elevated blood pressure (BP) and cholesterol. However, only one-third of NYC residents with HTN have BP levels at goal,⁸ and nationally, only 28% of people who have or are at risk for CVD are on a statin, a cholesterol-lowering drug.¹⁴ To our knowledge, little is known about the use of PF with clinical performance feedback to help practices in structurally marginalized communities improve BP and cholesterol management. Our results and lessons learned in this context will inform health care practices, local health departments, and other organizations that support health care practices to improve the quality of care in high-need communities.

Methods

The NYC Health Department's Bureau of Equitable Health Systems operates NYC REACH. Since 2010, NYC REACH has provided supportive services to more than 1800 health care practices, including independent practices, community health centers, and hospitals, many located in structurally marginalized and racially diverse neighborhoods.

Study population

NYC REACH recruited PCPs (generally 1-2 providers) primarily caring for adults, already using an electronic health record (EHR), and situated in one of 24 neighborhoods chosen due to their disproportionate and higher-than-citywide-average burden of chronic disease, poverty, socioeconomic inequality, and longstanding exposure to structural racism (Supplemental Digital Content 1, Table, available at <http://links.lww.com/JPHMP/B319>). We recruited practices in each of the 4 years of the intervention. Of the 302 practices that met the eligibility criteria, 168 practices were approached to enroll, and 134 practices enrolled (Supplemental Digital Content 2, Figure, available at <http://links.lww.com/JPHMP/B320>).

Measures and data sources

We used 2 measures to assess BP and cholesterol management from baseline to follow-up. The BP

management quality measure was the percentage of patients aged 18 to 85 years with HTN who achieved the treatment goal (BP < 140/90). The cholesterol management quality measure was the percentage of patients aged 21 to 100 years (40-75 years with diagnosis of diabetes) with or at risk for atherosclerotic CVD (ASCVD) who received statin therapy in accordance with evidence-based guidelines.¹⁵ Pregnant women and patients with end-stage renal disease were excluded. Quality measures were derived from structured data queries of the practices' EHR on a monthly and program year basis. To assess PF support, we analyzed data reported by facilitators in a customer relationship management system. Facilitators recorded visit types (in-person or virtual) and completed post-visit assessments detailing support provided (eg, reviewed performance dashboard and EHR training).

During the intervention, our automated system¹⁶ for extracting quality measures data from the EHR experienced a disruption. Due to staffing and other resource constraints, we could not restore the system's operation. Instead, facilitators manually extracted the data using EHR reporting tools. This process was time intensive as each data stratification must be queried separately. Therefore, we focused on collecting the outcomes data without stratifications. Consequently, while we had race/ethnicity data at pre-baseline from our automated system, we were not able to collect these data for the duration of the intervention.

Intervention

The intervention was conducted from February 2019 to September 2022. Participating practices were assigned a facilitator, who had been trained on EHR utilization, CVD, and QI concepts (eg, the Chronic Care Model). Facilitators used a structured assessment to identify practice needs and capacities, which informed tailored PF plans. Practice facilitation consisted of monthly on-site visits, which mostly shifted to virtual visits from Spring 2021 through early 2022 due to the COVID-19 pandemic and remote support (eg, virtual visits, phone calls, and emails) between visits as needed. Facilitators reviewed performance dashboards displaying provider- and practice-level BP and cholesterol management clinical data and taught staff to generate registry reports identifying patients with clinically suboptimal measures. Dashboards were generated using structured queries of practices' EHR data on a monthly and program year basis.

Study design and statistical analyses

We conducted quasi-experimental pre- and posttest mixed effect modeling to assess BP and cholesterol

management from baseline to follow-up. We used generalized estimating equation models for count data with negative binomial distribution and log link function to account for the random cluster effect across practices. We developed models that included the number of patients with BP or cholesterol management (ie, numerator) as the outcome variable, the time variable (intervention year) as the main effect, and the natural logarithm of the number of patients diagnosed with HTN or eligible for statin therapy (ie, denominator) as a fixed-effect offset variable. Covariates included pre-baseline practice characteristics (practice-level composition of patient age, gender, race, practice size, and patient-centered medical home participation). Results were presented as the average percent \pm standard error. We also conducted an implementation fidelity evaluation, using the frequency and average number of assessments completed by facilitators to evaluate their adherence to the planned monthly visits. We conducted all analyses in SAS software version 9.4 (SAS Institute, Inc, Cary, North Carolina). The Health Department's Institutional Review Board reviewed and approved the study protocol (IRB # 20-052).

Results

Practice characteristics

At pre-baseline, 2017, participating practices served, on average, ~2000 patients during ~9000 encounters where most patients (~70%) were 25 to 64 years old, Hispanic (~37%) or Black (~26%), and a substantial proportion spoke Spanish (~28%) or a language other than English or Spanish (~8%) (Supplemental Digital Content 3, Table, available at <http://links.lww.com/JPHMP/B321>).

Implementation fidelity

Facilitators recorded 5875 total assessments during 5693 completed visits (4479 in-person; 1214 virtual) with a monthly average of 128 assessments. Average assessments per practice rose from 9.8 in year 1 to 12.9 in year 4 (Supplemental Digital Content 4, Figure, available at <http://links.lww.com/JPHMP/B322>).

Changes in BP and cholesterol management

Among patients with HTN, BP management significantly increased from 68% to 75% ($P < .001$). Among patients with or at risk of ASCVD, cholesterol management significantly increased from 72% to 78% ($P < .01$) (Table 1).

Discussion and Conclusion

Our results suggest that PF and clinical performance feedback tailored to practice context can be effective in improving BP and cholesterol management in small independent practices operating in communities impacted by structural racism. Several studies have demonstrated the effectiveness of PF and its role in improving primary health care processes and outcomes. However, most studies involving clinical performance feedback have come from large academic medical centers and thus are not generalizable to smaller independent practices that often serve low-income, ethnically and linguistically diverse populations with multiple chronic conditions.¹⁷⁻¹⁹

Facilitators in this study described several contextual factors that created challenges and key lessons learned. First, addressing competing priorities is a critical strategy for maintaining practice engagement. For example, early in the pandemic, facilitators helped practices implement and bill for telemedicine, which few of the practices had done before. Second, it is critical to equip practices with adaption skills. When our ability to produce performance dashboards slowed due to technical difficulties, facilitators taught practices to use the registry function built into their individual EHRs to generate reports for monitoring QI progress. Third, PF can be successfully delivered using a combination of in-person and virtual visits. Despite the shift to virtual PF delivery during the pandemic, facilitators were able to maintain relationships with practices and continue services. In fact, the increased number of interactions with practices during the pandemic suggests that virtual delivery may be a less resource-intensive strategy for ongoing PF.

TABLE 1
Comparison of Change in Blood Pressure and Cholesterol Management From Baseline to 4-Year Follow-Up

Health Indicator	Average Percent \pm Standard Error					Change (%)	P-value
	Baseline	Year 1	Year 2	Year 3	Year 4		
Blood pressure management	67.9 \pm 1.5	70.1 \pm 1.5	70.2 \pm 1.7	70.8 \pm 1.4	74.8 \pm 1.4	+6.9	<.001
Cholesterol management	71.8 \pm 1.6	73.4 \pm 1.5	71.1 \pm 2.7	74.4 \pm 1.7	78.1 \pm 1.9	+6.3	<.01

Results were presented as the average percent \pm standard error across practices; covariates included pre-baseline practice characteristics (practice-level composition of patient age, gender, race, practice size, and patient-centered medical home participation).

A limitation was the absence of a comparison group, restricting our ability to conclusively attribute observed changes to our intervention rather than other external influences or effects. Another limitation was our inability to conduct stratified analyses based on patient-level race, ethnicity, and language. Analyzing such data is crucial for customizing PF in structurally disadvantaged communities to address the distinct requirements of diverse racial, cultural, and linguistic groups. Continued investment in enhancements is crucial for enabling PCPs and EHR systems to precisely and automatically collect/report quality measures by race/ethnicity to health information exchange systems. This is essential for comprehending and addressing population-level racial health inequities.

Implications for Policy & Practice

- Investing resources in marginalized communities facing current and historical structural racism, which hinders social, economic, and financial advancement, can contribute to improving health outcomes and potentially mitigating health inequities.
- Local health departments can feasibly implement PF. To decrease the resources needed for PF, organizations can leverage virtual visits in conjunction with in-person visits.
- PF tailored to the practice context, in conjunction with data sharing, can help primary care practices identify patients who require additional support and ultimately improve health outcomes such as BP and cholesterol management.
- The key to successful QI is maintaining relationships with practices through regular interactions. Such interactions do not have to occur in person. We found that facilitators were able to effectively engage practices virtually during the COVID-19 pandemic.
- Quality improvement workflows can potentially be sustained in the absence of ongoing PF by helping practices develop infrastructure using their available resources, such as practice staff and tools already available in their EHRs to identify high-risk patients and conduct targeted outreach.

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