HHS Public Access

Author manuscript

J Public Health Manag Pract. Author manuscript; available in PMC 2025 June 12.

Published in final edited form as:

J Public Health Manag Pract. 2024 ; 30: S96–S99. doi:10.1097/PHH.0000000000001895.

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

New York City Department of Health and Mental Hygiene, Center for Health Equity and Community Wellness

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 blood pressure and cholesterol management. Despite disruptions from the COVID-19 pandemic, practices demonstrated significant improvements in BP (68% to 75%, $p<0.001$) and cholesterol management (72% to 78%, $p=0.01$). Prioritizing high-need neighborhoods for impactful resource investment, such as PF and data sharing, may be a promising approach to reducing CVD and HTN inequities in areas heavily impacted by structural racism.

Keywords

Electronic health record; practice facilitation; clinical performance feedback; hypertension; cardiovascular disease; blood pressure management; cholesterol management

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

Conflicts of Interest: The authors have indicated that they have no potential conflicts of interest to disclose.

Financial Disclosure: The authors have indicated that they have no relevant financial interest to disclose.

Human Participant Compliance Statement: The study protocol has been reviewed and approved by the DOHMH institution review board (IRB # 20–052).

Introduction

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.

Further, 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 equal to or greater than 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 marginalized communities. Two potential approaches are practice facilitation (PF) and clinical performance feedback. PF, 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 three times as likely to apply evidence-based guidelines.[12] Additionally, some studies have found that clinical performance feedback, or reports showing a clinical team's performance on quality measures, can improve care delivery.[13]

CVD 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 healthcare practices, local health departments and other organizations that support healthcare practices to improve 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 1,800 healthcare 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 (Table,

Supplemental Digital Content 1). We recruited practices in each of the four years of the intervention. Of the 302 practices that met the eligibility criteria, 168 practices were approached to enroll, and 134 practices enrolled (Figure, Supplemental Digital Content 2).

Measures and data sources

We used two measures to assess BP and cholesterol management from baseline to follow-up. The BP management quality measure was the percentage of patients aged 18–85 years with HTN who achieved the treatment goal (BP <140/90). The cholesterol management quality measure was the percentage of patients aged 21–100 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 (e.g., reviewed performance dashboard, EHR training).

During the intervention, our automated system[16] 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 (e.g., the Chronic Care Model). Facilitators used a structured assessment to identify practice needs and capacities, which informed tailored PF plans. PF 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 (e.g., 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-test and post-test 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 (i.e., 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 (i.e., 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 ± 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, NC). 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, ~2,000 patients during ~9,000 encounters where most patients (~70%) were 25–64 years old, Hispanic (~37%) or Black (~26%), and a substantial proportion spoke Spanish (~28%) or a language other than English or Spanish (~8%) (Table, Supplemental Digital Content 3).

Implementation fidelity

Facilitators recorded 5,875 total assessments during 5,693 completed visits (4,479 in-person; 1,214 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 (Figure, Supplemental Digital Content 4).

Changes in BP and cholesterol management

Among patients with HTN, BP management significantly increased from 68% to 75% ($p<0.001$). Among patients with or at risk of ASCVD, cholesterol management significantly increased from 72% to 78% ($p<0.01$). (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 to 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. Secondly, 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.

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.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

The authors acknowledge and thank Didier Chaloub, Eleanor Rogowski, Ernesto Fana, eClinicalWorks, and Practice Facilitators on the quality improvement team at NYC REACH who worked with the team and provided support and assistance throughout the grant.

Funding:

The Centers for Disease Control and Prevention Innovative State and Local Public Health Strategies to Prevent and Manage Diabetes, Heart Disease, and Stroke Grant #DP18-1817.

References

1. Li W OC, Huynh M, Castro A, et al. Summary of vital statistics, 2019. New York, NY: Bureau of Vital Statistics, New York City Department of Health and Mental Hygiene.
2. Virani SS, Alonso A, Benjamin EJ, et al. Heart disease and stroke statistics 2020 update: A Report From the American Heart Association. Circulation. 2020;141(9):e139–e596. [PubMed: 31992061]
3. Fei K, Rodriguez-Lopez JS, Ramos M, Islam N, Trinh-Shevrin C, Yi SS, Chernov C, Perlman SE, Thorpe LE. Racial and Ethnic Subgroup Disparities in Hypertension Prevalence, New York City Health and Nutrition Examination Survey, 2013–2014. Prev Chronic Dis. 2017 Apr 20;14:E33. doi: 10.5888/pcd14.160478. [PubMed: 28427484]
4. New York Expanded Behavioral Risk Factor Surveillance System (eBRFSS) Survey 2013–2014 Health Indicators: New York City. Albany, NY: New York State Department of Health, Division of Chronic Disease Prevention, Bureau of Chronic Disease Evaluation and Research. https://www.health.ny.gov/statistics/brfss/expanded/2013/county/docs/newyorkcityregion.pdf
5. National Center for Health Statistics. Racial and ethnic disparities in heart disease 2019. Accessed September 1, 2021. Available at: https://www.cdc.gov/nchs/hus/spotlight/HeartDiseaseSpotlight_2019_0404.pdf
6. US Department of Health and Human Services Office of Minority Health. Heart disease and Hispanic Americans - The Office of Minority Health.2021. Available at: https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=64.

7. Flack JM, Ference BA, Levy P. Should African Americans with hypertension be treated differently than non-African Americans? Curr Hypertens Rep. 2014;16(1):409 [PubMed: 24370966]
8. Dominianni C, Seltzer B. Hypertension prevalence, awareness, treatment, and control in New York City. New York City Department of Health and Mental Hygiene: Epi Data Brief (135); January 2023. https://www.nyc.gov/assets/doh/downloads/pdf/epi/databrief135.pdf
9. Min YI, Anugu P, Butler KR, Hartley TA, Mwasongwe S, Norwood AF, Sims M, Wang W, Winters KP, Correa A. Cardiovascular disease burden and socioeconomic correlates: findings from the Jackson Heart Study. J Am Heart Assoc. 2017; 6:e004416. doi: 10.1161/JAHA.116.004416 [PubMed: 28778943]
10. Wang A, Pollack T, Kadziel LA, Ross SM, McHugh M, Jordan N, Kho AN: Impact of practice facilitation in primary care on chronic disease care processes and outcomes: a systematic review. J Gen Intern Med 2018, 33(11):1968–1977.
11. Ritchie MJ, Parker LE, Edlund CN, Kirchner JE: Using implementation facilitation to foster clinical practice quality and adherence to evidence in challenged settings: a qualitative study. BMC Health Services Research 2017, 17(1):294. 7 [PubMed: 28424052]
12. Baskerville NB. Systematic review of practice facilitation and evaluation of a chronic illness care management tailored outreach facilitation intervention for rural primary care physicians [dissertation]. Waterloo, Ontario: University of Waterloo; 2009.
13. Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD. Audit and feedback: effects on professional practice and health care outcomes. Cochrane Database Syst Rev. 2006 Apr 19; (2):CD000259. doi: 10.1002/14651858.CD000259.pub2. Update in: Cochrane Database Syst Rev. 2012;6:CD000259. [PubMed: 16625533]
14. Salami JA, Warraich H, Valero-Elizondo J, et al. National trends in statin use and expenditures in the US adult population from 2002 to 2013: Insights from the Medical Expenditure Panel Survey. JAMA Cardiol 2017;2(1):56–65. doi:10.1001/jamacardio.2016.4700 [PubMed: 27842171]
15. Lopez-Jimenez F, Simha V, Thomas RJ, Allison TG, Basu A, Fernandes R, Hurst RT, Kopecky SL, Kullo IJ, Mulvagh SL, Thompson WG, Trejo-Gutierrez JF, Wright RS. A summary and critical assessment of the 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular disease risk in adults: filling the gaps. Mayo Clin Proc. 2014 Sep;89(9):1257–78. doi: 10.1016/j.mayocp.2014.06.016. Epub 2014 Aug 12. [PubMed: 25131697]
16. Buck MD, Anane S, Taverna J, Amirfar S, Stubbs-Dame R, Singer J. The Hub Population Health System: distributed ad hoc queries and alerts. J Am Med Inform Assoc. 2012 Jun;19(e1):e46–50. doi: 10.1136/amiajnl-2011-000322. Epub 2011 Nov 9. [PubMed: 22071531]
17. Michtalik HJ, Carolan HT, Haut ER, Lau BD, Streiff MB, Finkelstein J, … & Brotman DJ. (2015). Use of provider-level dashboards and pay-for-performance in venous thromboembolism prophylaxis. Journal of hospital medicine, 10(3), 172–178. [PubMed: 25545690]
18. Thomas KG, Thomas MR, Stroebel RJ, McDonald FS, Hanson GJ, Naessens JM, … & Kolars JC. (2007). Use of a registry-generated audit, feedback, and patient reminder intervention in an internal medicine resident clinic—a randomized trial. Journal of general internal medicine, 22(12), 1740–1744. [PubMed: 17973175]
19. Liaw WR, Jetty A, Petterson SM, Peterson LE, & Bazemore AW (2016). Solo and small practices: a vital, diverse part of primary care. The Annals of Family Medicine, 14(1), 8–15. [PubMed: 26755778]

Implications for Policy and 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.
- QI 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.

Table 1.

Comparison of change in blood pressure and cholesterol management from baseline to 4-year follow-up

Health indicator	Average percent ± Standard error						
	Baseline	Year 1	Year 2	Year 3	Year 4	Change (%)	P-value
Blood pressure management	67.9 ± 1.5	70.1 ± 1.5	70.2 ± 1.7	70.8 ± 1.4	74.8 ± 1.4	+6.9	<0.001
Cholesterol management	71.8 ± 1.6	73.4 ± 1.5	71.1 ± 2.7	74.4 ± 1.7	78.1 ± 1.9	+6.3	<0.01

Results were presented as the average percent ± 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).