ORIGINAL RESEARCH

Improving hypertension control in a community health center through dedicated appointments

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Introduction

Blood pressure (BP) control is critical in patients from low-income households as they disproportionately experience hypertension (HTN) related cardiovascular complications. Primary care providers face challenges managing these patients within the constraints of regular visits due to competing priorities of comorbid conditions and socioeconomic health barriers. In 2023, one community health center in Harris County, Texas, fell below target and national HEDIS benchmarks for BP control. Subsequently, a dedicated HTN clinic was founded as a pilot quality improvement project to provide a targeted chronic disease approach through patient education and pharmacologic optimization.

Methods

Every Thursday afternoon, an ambulatory panel of appointment slots was dedicated to HTN management. As patients attended routine clinic appointments, any provider could refer individuals with difficult-to-control BP to the HTN clinic managed by two family physicians. Patients eligible to be referred were adults aged 18-85 on at least one BP medication and with the most recent BP >140/90. Patients on dialysis or pregnant were excluded. Outcome measures included mean reductions in BP, achievement of BP control, and number of encounters.

Results

Between January and December 2024, 11 physicians referred 54 patients to the HTN clinic. 37 patients (68.5%) attended at least one appointment. The mean patient age was 57.4 years, with 62.2% of patients being women, and 51.4% identifying as Hispanic – aligning with the overall demographics of the clinic. After an average of 1.68 encounters, most patients (88%) experienced a significant BP reduction. The mean systolic BP reduction was 15.5 mmHg and the mean diastolic BP reduction was 7.0 mmHg. By the end of 2024, 56.8% of referred patients achieved BP control.

Discussion

As managing HTN requires considerable negotiation, counseling, and discussion, focus singularity as a cost-neutral approach improved a pilot cohort's BP control metrics. Other community health centers may be able to

work toward closing the gap in cardiovascular health disparities for medically underserved populations by intentionally prioritizing access to hypertension care.

INTRODUCTION

Hypertension (HTN) remains one of the most prevalent and modifiable risk factors for cardiovascular disease, stroke, and chronic kidney disease in the United States.[1] Despite widespread awareness and available treatment, blood pressure (BP) control remains suboptimal, particularly among low-income and uninsured populations.[2] According to 2023 data from the Centers for Disease Control and Prevention, only about 24% of adults with HTN have their condition under control, with significantly lower rates seen in individuals without insurance or those living below the federal poverty level.[3] Uncontrolled HTN in these populations is often linked to structural barriers, including limited access to care, medication nonadherence due to cost, food insecurity, housing instability, and low health literacy—factors well established as social determinants of health (SDH).[4]

Primary care physicians (PCPs) serving socioeconomically disadvantaged populations often manage a high burden of complex co-morbid conditions during brief clinical encounters. These may include diabetes, depression, substance use disorders, and acute care needs that compete with chronic disease management priorities.[5] As a result, HTN management can be deprioritized during typical visits, leading to therapeutic inertia and persistently elevated BP levels.[6] Dedicated HTN-focused appointments, designed to isolate and address BP control without the distraction of competing concerns, may provide a targeted opportunity to improve outcomes in this high-risk population. This study evaluates a pilot quality improvement project in which patients received dedicated visits with a primary care provider (PCP) focused solely on blood pressure management, aiming to improve HTN control in an indigent patient population.

METHODS

Setting and Study Design

This quality improvement intervention was conducted at a community-based primary care clinic in Harris County, Texas, that serves a diverse population, including a large proportion of low-income and uninsured patients. Each week, one family physician devoted one half-day to the HTN Clinic. On these Thursday afternoons, a panel of 12 patient appointments was available for HTN Clinic patients. Each appointment was allotted 20 minutes. The panel size and appointment length were default features of the ambulatory practice. Frequently, HTN Clinic patients did not fill all available patient slots. One week before the clinical day, all remaining slots were opened and filled as routine primary care appointments. The intervention began in

December 2023 and continues at the time of this writing. Given the quality improvement nature of this protocol, this study was designated by the Baylor College of Medicine IRB as not constituting human subject research.

Participant Identification and Referral Process

Eligible participants were identified during routine clinic visits with attending and resident family physicians within one clinic. Any providers seeing eligible patients could refer patients to the HTN-focused clinic if they met the following inclusion criteria:

- Age between 18 and 85 years,
- Currently prescribed at least one antihypertensive medication,
- Most recent recorded blood pressure (BP) measurement exceeding 140/90 mm Hg.

Patients were excluded if they were pregnant, receiving dialysis, or had any condition requiring BP targets that deviated from general population guidelines. Referrals were made through the electronic health record (EHR) system and triaged to the HTN Clinic. The clinic was staffed by two board-certified primary care physicians (PCPs) with an interest in chronic disease management and health equity. Appointment scheduling and appointment reminders were performed initially by a registered nurse and subsequently by a licensed vocational nurse.

Intervention Description

The HTN Clinic operated with a dedicated panel of appointment slots reserved solely for hypertension management, allowing for focused, uninterrupted care. Visits were structured to address medication adherence, side effects, lifestyle modifications, and treatment intensification when clinically indicated. Given the nature of these patients with difficult-to-treat hypertension, multiple SDH barriers, and complex co-morbid conditions, the two physicians opted to apply the JNC8 guidelines in favor of the more stringent 2017 ACC/AHA guidelines for BP targets. This target aligned with the system's overall definitions of BP control, defined by HEDIS metrics.[7] Follow-up intervals were individualized, generally ranging from 2 to 6 weeks, depending on BP control and medication changes. Physician extenders, dietitians, or clinical pharmacists were not involved in the HTN Clinic visits. No additional physician or nursing FTE were hired.

Data Collection and Measures

Patient demographics, baseline clinical characteristics, number of HTN clinic visits, and BP readings were extracted from the EHR. Baseline BP was defined as the most recent BP measurement before the first HTN clinic appointment. Follow-up BP values were collected at each HTN clinic encounter. Primary outcomes included:

1. **Mean change in systolic and diastolic blood pressure** from baseline to the last recorded HTN clinic visit,
2. **Proportion of patients achieving BP control**, defined as <140/90 mm Hg, by their final visit,
3. **Number of HTN Clinic encounters** per patient during the intervention period.

Descriptive statistics were used to characterize the study population and visit patterns. Paired t-tests were applied to assess changes in BP over the study period. Analyses were performed using R (version 4.4.3).

RESULTS

Referral and Clinic Attendance

Between January 1 and December 31, 2024, a total of 11 physicians referred 54 patients with uncontrolled hypertension to the dedicated HTN Clinic. Of these, 37 patients (68.5%) attended at least one dedicated HTN Clinic appointment. Reasons for non-attendance among the remaining 17 patients were not systematically recorded but are presumed to include no-shows, scheduling conflicts, lack of transportation, or limited patient interest.

Patient Demographics

Among the 37 patients who attended the HTN Clinic, the mean age was 57.4 years (SD ±9.0). The majority were female (62.2%), and 51.4% identified as Hispanic, which is consistent with the broader demographics of the clinic patient population. Individual-level SDH variables were not systematically collected for patients in this pilot phase. 94.6% of patients were enrolled in the county-supported indigent care program. 67.6% of participants resided in ZIP codes where ≥20% of residents live below the federal poverty level.

Clinic Utilization and Follow-Up

Patients who engaged with the HTN clinic had an average of 1.68 encounters (range 1–4). Most initial visits involved adjusting or intensifying medication, providing lifestyle counseling, and scheduling short-interval follow-ups. The interval between visits was generally 2–4 weeks, though some follow-up appointments were delayed due to patient availability or clinic capacity.

We did not track patients who met referral criteria but were not referred. For referred patients who did not attend a HTN Clinic appointment, we investigated potential barriers. Of the 17 patients who were referred to the HTN clinic but did not attend, eight had appointments scheduled but ultimately did not show. Common reasons for non-attendance—identified through follow-up calls or documentation in the electronic health record—included transportation challenges, competing work or caregiving responsibilities, uncertainty about the purpose of the visit, and simply forgetting the appointment.

Several patients expressed confusion about whether they were being transferred to a new doctor, underscoring the need for clearer communication about the nature of the HTN clinic as a supplement to, not a replacement for, their usual care. The remaining nine patients were never scheduled because they either could not be reached by phone despite multiple attempts or declined the referral outright.

Blood Pressure Outcomes

Of the 37 patients who attended at least one HTN clinic visit, 88% (n=33) experienced a measurable reduction in blood pressure. Across all patients, the mean systolic blood pressure (SBP) decreased by 15.5 mmHg (from a baseline mean of 154.4 mmHg to 138.9 mmHg), and the mean diastolic blood pressure (DBP) decreased by 7.0 mmHg (from a baseline mean of 94.4 mmHg to 87.4 mmHg). [Table 1]

We conducted a stratified analysis of patients based on the number of HTN Clinic encounters. Of the 37 patients who attended at least one appointment, 18 had only a single visit, while 19 patients (51.4%) had two or more encounters. Among those with ≥2 visits, the mean systolic BP reduction was 17.0 mmHg (SD ±8.5), compared to a mean reduction of 14.9 mmHg (SD ±7.2) in those with a single visit. Similarly, the mean diastolic BP reduction was 7.2 mmHg (SD ±5.1) for patients with ≥2 visits, compared to 6.7 mmHg (SD ±4.6) for those seen only once. Additionally, 63.2% of patients with ≥2 visits achieved BP control (<140/90 mmHg), versus 50.0% of those seen only once.

Both SBP and DBP reductions were clinically and statistically significant (p-values <0.001). By the end of the calendar year, 56.8% of all referred patients (n=31) achieved BP control, defined as <140/90 mmHg per HEDIS guidelines.

DISCUSSION

This pilot quality improvement initiative demonstrated that a dedicated HTN management clinic embedded within a primary care setting can be an effective, low-cost strategy to improve BP control among medically underserved patients. Most participants experienced meaningful reductions in both SBP and DBP after an average of fewer than two visits, and over half of all referred patients achieved guideline-defined blood pressure control by the end of the study period. These findings are especially significant given that the intervention required no additional infrastructure or external funding, making it a scalable, cost-neutral model for resource-limited settings.

Eighteen patients completed one HTN Clinic encounter. Not all 18 patients were intentionally released from the clinic, as some were lost to follow-up. Given the variability of single BP readings, blood pressure control for patients who attended only one HTN Clinic visit was assessed using their

BP measurement at a subsequent primary care appointment. This process aimed to better discern the effect of the HTN Clinic in comparison to other variables, such as forgetting to take anti-hypertensive medications that day.

Most patients enrolled in the HTN Clinic were seen in quick succession with follow-up visits within two to four weeks. Subsequently, most enrolled patients had not seen their PCP during their time with the HTN Clinic. However, this potentially confounding factor was not directly measured or assessed. Correlations between how many antihypertensive medications a patient was prescribed and the likelihood of attaining blood pressure control were not evaluated.

Managing HTN in primary care is inherently complex and time-intensive. Standard appointments are often burdened by competing demands such as acute complaints and comorbid chronic diseases. In socioeconomically disadvantaged populations, the influence of SDH can further divert attention from chronic disease management and exacerbate poor outcomes. By creating a clinical environment that focused solely on HTN, this intervention allowed for more deliberate patient-provider engagement around therapeutic goals, medication adherence, side effect management, and lifestyle modification. Regularly empaneled patients of the two HTN Clinic physicians did not appear to notice or comment on the two fewer half-days per month of available appointment slots.

Our approach aligns with previous literature that targeted, team-based care or pharmacist-led HTN clinics can improve outcomes.[8,9] Additionally, this model avoided the costs associated with hiring new staff or developing separate care teams, leveraging existing clinic infrastructure and personnel. By reallocating existing nursing effort and protecting existing physician time, this strategy may be particularly valuable for safety-net clinics or smaller primary care practices aiming to improve cardiovascular outcomes without significant new investments. Starting with a half-day per week or using existing nursing staff for recruitment and reminders could support a low resource threshold for implementation.

Importantly, the patient population in our study reflected the broader demographic of the clinic, including a majority of Hispanic and female patients—groups that historically face greater barriers to HTN control and higher rates of cardiovascular morbidity.[10] The alignment of our clinic model with patient-centered goals, continuity of care, and culturally informed counseling likely contributed to engagement and early success.

Limitations

Despite these encouraging findings, several limitations should be acknowledged. First, this was a single-site, non-randomized process improvement initiative without a control group, limiting generalizability and causal inference. Second, long-term outcomes, such as sustained BP control,

Table 1. HTN Clinic Encounter Distribution and Blood Pressure Outcomes

Number of HTN Clinic Encounters	Number of Patients	Percentage of Total Patients (%)	Avg SBP Reduction (mmHg)	Avg DBP Reduction (mmHg)
1	18	48.6	14.9	6.7
2	15	40.5	15.3	6.9
3	2	5.4	18.0	8.0
4	2	5.4	20.0	9.0
Total	37		15.5	7.0

Distribution of HTN Clinic encounters and corresponding average reductions in systolic and diastolic blood pressure. Patients with more clinic visits demonstrated greater average BP reductions.

cardiovascular events, or medication adherence, were not assessed beyond the intervention period. Third, while 68.5% of referred patients attended at least one HTN clinic appointment, nearly one-third did not, highlighting ongoing access challenges that must be addressed. Future iterations could explore integrating community health workers, remote BP monitoring, or telehealth visits to enhance reach and continuity.

An additional limitation to this pilot quality improvement project was the breadth of collected parameters. Although referring physicians were encouraged to provide details on perceived reasons for poor BP control and attempted interventions, these factors were inconsistently furnished and could not be reported. A methodical exploration of potential secondary causes of hypertension was similarly not performed in this iteration.

Conclusion

With promising pilot results, we plan to conduct a retrospective chart review at three- and six-months post-intervention for all patients referred to the HTN Clinic. This follow-up will include BP readings, updated number of medication adjustments, and the subsequent number of PCP appointments. These data will help determine whether the initial improvements in BP are sustained over time or whether additional interventions are needed to support ongoing control.

In conclusion, this pilot suggests that dedicating focused clinical time for HTN management within a primary care setting can yield significant improvements in BP control for underserved populations. As cardiovascular disease remains the leading cause of death in the U.S., especially among low-income and minority communities, similar models may represent a promising avenue for community health centers to narrow health equity gaps in hypertension management.

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