




BRIEF COMMUNICATION

# Improving Efficiency of the Barbershop Model of Hypertension Care for Black Men With Virtual Visits

Ciantel A. Blyler, PharmD; Joseph Ebinger, MD, MS; Mohamad Rashid , MChB; Norma P. Moy, BA; Susan Cheng , MD; Christine M. Albert, MD, MPH; Florian Rader , MD, MS

**BACKGROUND:** The LABBPS (Los Angeles Barbershop Blood Pressure Study) developed a new model of hypertension care for non-Hispanic Black men that links health promotion by barbers to medication management by pharmacists. Barriers to scaling the model include inefficiencies that contribute to the cost of the intervention, most notably, pharmacist travel time. To address this, we tested whether virtual visits could be substituted for in-person visits after blood pressure (BP) control was achieved.

**METHODS AND RESULTS:** We enrolled 10 Black male patrons with systolic BP  $\geq 140$  mm Hg into a proof-of-concept study in which barbers promoted follow-up with pharmacists who initially met each patron in the barbershop, where they prescribed BP medication under a collaborative practice agreement with the patrons' physician. Medications were titrated during bi-monthly in-person visits to achieve a BP goal of  $\leq 130/80$  mm Hg. Once BP goal was reached, visits were done by videoconference. Final BP and safety outcomes were assessed at 12 months. Nine patients completed the intervention. Baseline BP of  $155 \pm 14/83.9 \pm 11$  mm Hg decreased by  $-28.7 \pm 13/-8.9 \pm 15$  mm Hg ( $P < 0.0001$ ). These data are statistically indistinguishable from prior LABBPS data ( $P = 0.8$  for change in systolic BP and diastolic BP). Hypertension control ( $\leq 130/80$  mm Hg) was 67% (6 of 9), numerically greater than the 63% observed in LABBPS ( $P =$  not significant). As intended, the mean number of in-person visits decreased from 11 in LABBPS to 6.6 visits over 12 months. No treatment-related serious adverse events occurred.

**CONCLUSIONS:** Virtual visits represent a viable substitute for in-person visits, both improving pharmacist efficiency and reducing cost while preserving intervention potency.

**REGISTRATION:** URL: <https://www.clinicaltrials.gov>; Unique identifier: NCT 03726710.

**Key Words:** ethnic groups ■ hypertension ■ telemedicine

The LABBPS (Los Angeles Barbershop Blood Pressure Study) demonstrated both efficacy and sustainability<sup>1</sup> of a new model of hypertension care for non-Hispanic Black men that links health promotion by barbers to medication management by specialty-trained pharmacists. Although cost-effective, inefficiencies, such as the significant time spent by pharmacists commuting between barbershops, are barriers to scaling the model for broad implementation. To address this, we tested whether virtual visits (ie,

patient-provider interaction using remote video/audio technology) could successfully replace in-person visits after blood pressure (BP) control was achieved.

We enrolled self-identified non-Hispanic Black men, aged 35 to 79 years ( $n = 10$ ), into a single-arm, proof-of-concept pilot study. All men were regular patrons of participating barbershops ( $\geq 1$  haircut every 6 weeks for  $\geq 6$  months) and had systolic BP  $\geq 140$  mm Hg on 2 screening days at baseline. Men who planned to relocate or were on dialysis or

Correspondence to: Florian Rader, MD, MS, Smidt Heart Institute, Cedars-Sinai Medical Center, 127 San Vicente Blvd, Advanced Health Science Pavillion A3408, Los Angeles, CA 90048. E-mail: [florian.rader@cshs.org](mailto:florian.rader@cshs.org)

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**Table. Baseline Characteristics of Study Participants**

| Characteristics  | Virtual Visit-Assisted Program (n=10) | LABBPS, Intervention Arm (n=139) |
|--|---------------------------------------|----------------------------------|
| Age, mean±SD, y  | 57.3±5.9                              | 54.4±10.2                        |
| Body mass index, mean±SD, kg/m <sup>2</sup> *                        | 29.4±5.1                              | 30.7±5.5                         |
| Married or living with a partner, n (%)                              | 4 (40)                                | 64 (46.4)                        |
| Highest education, n (%)   |                                       |                                  |
| Less than high school  | 1 (10)                                | 6 (4.5)                          |
| High school graduate (includes equivalency)                          | 2 (20)                                | 30 (22.6)                        |
| Some college, or associate's degree                                  | 5 (50)                                | 68 (51.1)                        |
| Bachelor's degree  | 2 (20)                                | 22 (16.5)                        |
| Graduate or professional degree                                      | 0 (0)                                 | 7 (5.3)                          |
| Household income, % of the federal poverty level, n (%) <sup>†</sup> |                                       |                                  |
| <100% of federal poverty limit                                       | 2 (20)                                | 41 (31.8)                        |
| 100%–300% of federal poverty limit                                   | 4 (40)                                | 36 (27.9)                        |
| 301%–500% of federal poverty limit                                   | 1 (10)                                | 26 (20.2)                        |
| >500% of federal poverty limit                                       | 2 (20)                                | 26 (20.2)                        |
| Regular medical care provider, n (%)                                 | 10 (100)                              | 106 (76.8)                       |
| Any health insurance, n (%)  | 10 (100)                              | 118 (84.9)                       |
| Barbershop patronage   |                                       |                                  |
| Duration of patronage, mean±SD, y                                    | 13.4±9.6                              | 10.4±9.9                         |
| Time between visits, mean±SD, wk                                     | 2.4±1.8                               | 2.0±0.9                          |
| Cardiac risk factors, n (%)  |                                       |                                  |
| Current smoker   | 2 (20)                                | 43 (31.4)                        |
| Diabetes mellitus  | 5 (50)                                | 31 (22.3)                        |
| High cholesterol   | 7 (70)                                | 49 (35.3)                        |
| <b>Blood Pressure Data<sup>‡</sup></b>                               |                                       |                                  |
| <b>Virtual Visit-Assisted Program (n=9)<sup>§</sup></b>              |                                       |                                  |
| <b>LABBPS, Intervention Arm (n=139)</b>                              |                                       |                                  |
| Systolic blood pressure, mean±SD, mm Hg                              |                                       |                                  |
| Baseline   | 157.4±15                              | 152.4±10.1                       |
| 12 mo  | 126.4±5.2                             | 123.8±8.8                        |
| Change   | −28.7±13.4                            | −28.6±12.7                       |
| Diastolic blood pressure, mean±SD, mm Hg                             |                                       |                                  |
| Baseline   | 85.2±11                               | 91.9±11.3                        |
| 12 mo  | 75.0±7.2                              | 74.1±8.2                         |
| Change   | −8.9±14.7                             | −17.8±11.9*                      |
| Hypertension control rate after 12 mo, n (%)                         |                                       |                                  |
| Blood pressure <140/90 mm Hg   | 9 (100)                               | 118 (94)                         |
| Blood pressure <135/85 mm Hg   | 9 (100)                               | 110 (88)                         |
| Blood pressure <130/80 mm Hg   | 6 (67)                                | 85 (68)                          |

LABBPS indicates Los Angeles Barbershop Blood Pressure Study.

\*The body mass index components (height and weight) were self-reported.

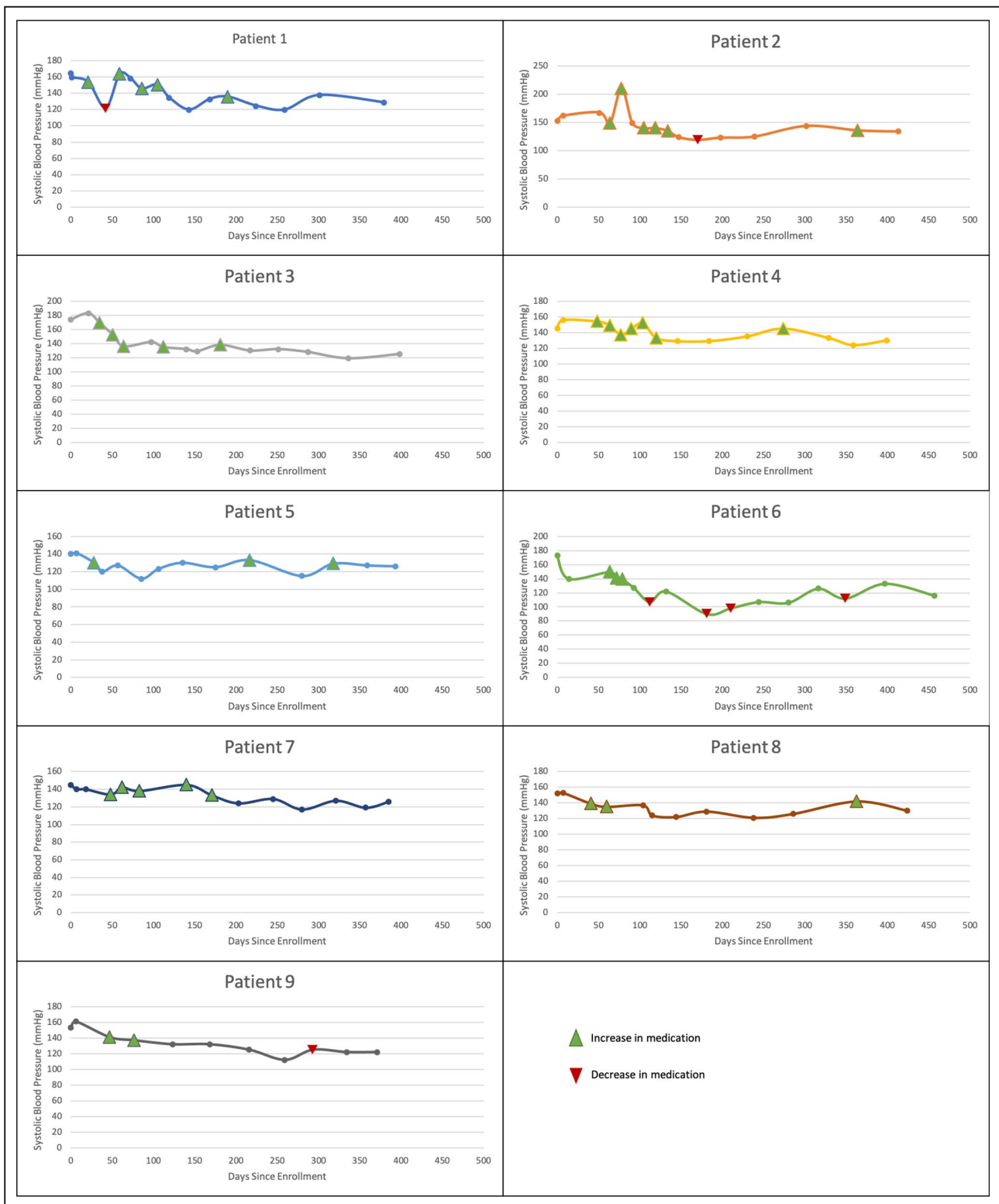
<sup>†</sup>One participant declined to answer. The 2015 US federal poverty guidelines are based on the total household income and family size; in 2015, the federal poverty threshold was \$11 770 for a single person and \$4160 for each additional person.

<sup>‡</sup>P values for all comparisons between telemedicine and LABBPS were >0.05, except where indicated \*.

<sup>§</sup>One participant was excluded from analysis because of noncompliance to the protocol.

chemotherapy were excluded. The study was approved by the institutional review board at Cedars-Sinai, and all participants provided informed written consent. The data, analytical methods, and study materials will not be made available to other researchers for the purposes of reproducing the results or replicating the procedure.

Participants' barbers promoted follow-up with a specialty-trained pharmacist who initially met each patron in the barbershop for bimonthly in-person visits, where they measured BP, encouraged lifestyle modifications, and prescribed BP medication under a collaborative practice agreement with the patrons' primary care provider. BP was measured using a validated



**Figure.** Individual patient systolic blood pressure data from enrollment to study conclusion. Green triangles indicate medication intensification, red triangles indicate medication de-escalation, and absence of both indicates no medication change was made during the visit.

oscillometric monitor, and the same automated protocol from LABBPS, which required 5 sequential readings; the average of the last 3 of 5 sequential readings

was used for analyses.<sup>1</sup> Plasma electrolytes and creatinine were monitored with a point-of-care device. Medications were titrated (according to the same

algorithm used in LABBPS)<sup>1</sup> to achieve a BP goal of  $\leq 130/80$  mm Hg. Once achieved, participants were transitioned to monthly virtual visits, connecting with the pharmacist via WebEx-enabled computers linked to BP monitors, or through commercially available video-phone platforms (ie, FaceTime) and stand-alone BP monitors housed in the barbershops. Because the pharmacist was not present, barbers were trained in BP measurement technique and performed BP checks for virtual visits. During remote visits, pharmacists continued to promote lifestyle modifications and titrate medications, as necessary. Participants unable to reach goal BP within 6 months were transitioned back to usual care. The primary end point was the change in systolic BP from baseline to 12 months. Secondary end points included change in diastolic BP, BP control rate (at  $<140/90$  and  $<130/80$  mm Hg), and adverse events.

As shown in the Table, baseline characteristics of study participants and those in the original LABBPS were similar. After exclusion of one participant who declined to adhere to the study protocol, 9 participants completed the intervention. At 12 months, systolic BP decreased from  $155\pm 14$  to  $126\pm 4$  mm Hg (mean change,  $-28.7\pm 13$  mm Hg;  $P<0.0001$ ), and diastolic BP decreased from  $83.9\pm 11$  to  $75\pm 7.2$  mm Hg (mean change,  $-8.9\pm 15$  mm Hg;  $P<0.0001$ ). These new data are statistically indistinguishable from our previous LABBPS data for both the change in systolic BP and BP control rates. The change in diastolic BP at 12 months was less pronounced in our current study and may be attributable to a lower baseline diastolic BP. All participants achieved BP control at  $<140/90$  and  $<135/85$  mm Hg. Six participants (67%) achieved the guideline-recommended BP goal of  $<130/80$  mm Hg (see the Figure for individual patient data). The number of in-person pharmacist visits per patron decreased from 11 in LABBPS to just 6.6 in the current study. No treatment-related serious adverse events occurred. Cohort retention was 90%, which mirrors LABBPS' impressive retention rate.

Despite steady gains in hypertension awareness and treatment, traditional clinic-based models of hypertension management continue to deliver unsatisfactory overall BP control rates,<sup>2</sup> particularly among Black individuals, who are disproportionately burdened by hypertension-related morbidity and mortality.<sup>3</sup> The community-based model of hypertension care for Black men developed in LABBPS represents a novel approach to address this disparity, but widespread adoption of such a program is limited by intervention cost and logistical inefficiencies. Telemedicine has proven successful in pharmacist-led trials involving both Black and non-Black individuals with hypertension<sup>4</sup> and has been widely adopted in the COVID-19 era to protect both patients and providers.<sup>5</sup>

The rapidly evolving technology also helps address barriers to care that have traditionally contributed to healthcare disparities (ie, access to care attributable to distance, cost of travel, lost wages, and childcare). Herein, we demonstrate that virtual visits represent a viable substitute for in-person visits, improving pharmacists' efficiency and reducing costs, while preserving intervention efficacy. These findings provide promising feasibility data for future broad-scale implementation efforts and the development of cost-effective barbershop and other community-based hypertension management programs. Ongoing research is required to determine which aspects of the LABBPS were considered most essential by both participants and providers to further tailor the model into the most cost-effective and scalable version for broad implementation. Future research directed at the development and implementation of community-based programs is needed to address persistent health disparities among medically underserved populations.

## ARTICLE INFORMATION

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### Affiliation

Department of Cardiology, Smidt Heart Institute, Cedars-Sinai Medical Center, Los Angeles, CA.

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