A Telehealth Intervention for Cardiovascular Risks in Veterans With HIV: A Randomized Trial

648

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BACKGROUND

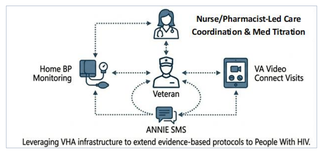
- **The Problem:** Despite viral suppression with antiretroviral therapy (ART), people with HIV (PWH) face a 1.5–2-fold higher risk of atherosclerotic cardiovascular disease than their uninfected peers.
- **Gaps in Care:** Management of modifiable risk factors, like blood pressure and lipids remains suboptimal due to care fragmentation and therapeutic inertia.
- **Potential Solution:** Nurse-led telehealth has shown efficacy in general populations, but its impact on Veterans with HIV is less established.
- **V-EXTRA-CVD study** evaluated such an intervention in PWH, leveraging Veterans Health Administration's (VHA) integrated care model and telehealth infrastructure.

OBJECTIVE

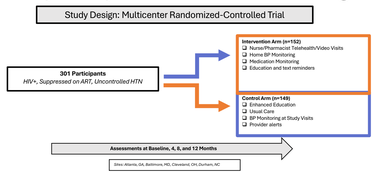
To evaluate the effectiveness of a nurse or pharmacist-led telehealth intervention compared to active control in reducing systolic blood pressure (SBP) and non-HDL cholesterol among PWH on suppressive antiretroviral therapy with hypertension.

METHODS

- **Study Design:** A multicenter, randomized-controlled trial conducted at four VHA sites from 2020–2024.



- **Participants:** PWH who were on suppressive ART, with hypertension defined as SBP ≥130 mmHg or actively prescribed antihypertensive medication.
- **Outcomes:** Primary outcome was the 12-month change in SBP; Secondary was the 12-month change in non-HDL cholesterol. Data were collected at baseline, 4, 8, and 12 months and analyzed using general linear models with repeated measures. Subgroup analyses examined potential moderators, and sensitivity analyses addressed missing data.



A telehealth intervention for PWH did not significantly reduce blood pressure but achieved modest cholesterol improvements with promising signals of benefit in those with higher baseline blood pressure.

RESULTS

- **Baseline:** 92.4% male, 77.4% Black, mean age 61.8 years, and 112 (37.2%) with uncontrolled SBP (≥140 mmHg and DBP ≥90 mmHg). There were no differences between groups at baseline (Table 1).
- **Primary Outcome (SBP):** At 4 months, both groups had an approximate 4.3 mmHg reduction in SBP, which plateaued through the 12-month mark. No significant difference between arms at 12 months: 0.29 mmHg; 95% CI, -3.30, 3.87; p=0.876 (Figure1).
- **Secondary Outcome (Non-HDL):** Modest, non-significant differences between arms at 12 months: -3.79 mg/dL; 95% CI, -11.48, 3.90; p=0.333 (Figure 1).
- **Subgroup Trends:** A clinically meaningful SBP reduction was observed in participants with uncontrolled baseline SBP compared with those who were controlled: -7.52 mmHg; 95% CI, -15.17, 0.13; p=0.054 (Figure 2).
- **Implementation:** Enrolled Veterans had a high participation rate at 78% and intervention fidelity was high, with 85% of telehealth visits completed.

Table 1: Baseline characteristics of study participants stratified by study arm.

Variable	Treatment Arms		Total (N=301)
	Education Control (N=149)	V-EXTRA-CVD Intervention (N=152)	
Hyperlipidemia			
No Hyperlipidemia	30 (20.1%)	33 (21.7%)	63 (20.9%)
Hyperlipidemia	119 (79.9%)	119 (78.3%)	238 (79.1%)
Sex			
Male	138 (92.6%)	140 (92.1%)	278 (92.4%)
Female	11 (7.4%)	12 (7.9%)	23 (7.6%)
Race			
White	21 (14.1%)	17 (11.2%)	38 (12.6%)
Black or African American	115 (77.2%)	118 (77.6%)	233 (77.4%)
Other	13 (8.7%)	17 (11.2%)	30 (10.0%)
Ethnicity			
Hispanic or Latino	10 (6.7%)	8 (5.3%)	18 (6.0%)
Not Hispanic or Latino	136 (91.3%)	139 (91.4%)	275 (91.4%)
Don't Know	3 (2.0%)	5 (3.3%)	8 (2.7%)
Age, Mean (SD)	61.4 (9.4)	62.1 (9.6)	61.8 (9.5)

Figure 1: Model-estimated outcome values and associated 95% CIs, by study arm and visit.

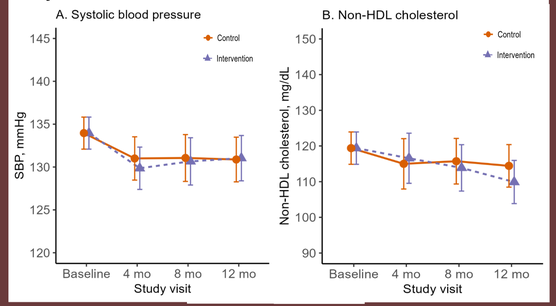
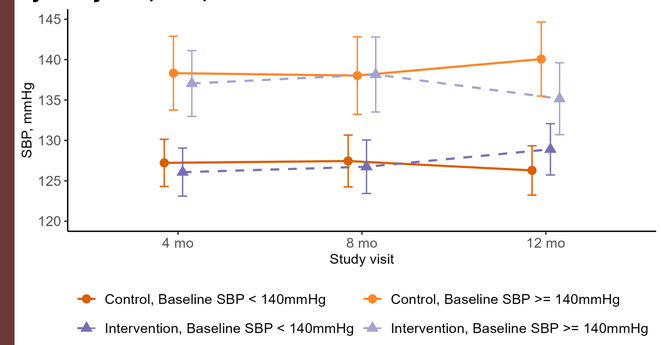


Table 2: Intervention effects on primary and secondary outcomes.

Outcomes	4 Months		8 Months		12 Months	
	Mean Difference (95% CI)	P-value	Mean Difference (95% CI)	P-value	Mean Difference (95% CI)	P-value
Primary Outcome						
SBP, mmHg	-1.09 (-4.47, 2.30)	0.529	-0.30 (-4.04, 3.45)	0.877	0.29 (-3.30, 3.87)	0.876
Secondary Outcome						
Non-HDL cholesterol, mg/dL	1.84 (-7.39, 11.07)	0.695	-1.24 (-9.54, 7.07)	0.770	-3.79 (-11.48, 3.90)	0.333

Figure 2. Model-estimated SBP values and associated 95% CIs by study arm, visit, and baseline SBP control status.



CONCLUSIONS

- The intervention is feasible and highly acceptable among Veterans with HIV, though it did not significantly reduce SBP compared with an active control in the overall sample.
- Lack of difference in the primary outcome between intervention and control arms suggests a "ceiling effect," as the mean baseline SBP (134 mmHg) left less room for reductions compared to historical cohorts.
- Subgroup benefits suggest that telehealth risk reduction models may be most effective when tailored to high-risk groups, specifically those with uncontrolled hypertension.
- While not statistically significant, the reduction in non-HDL cholesterol in the intervention arm suggests successful statin intensification in this group.

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PLAIN LANGUAGE SUMMARY

A non-physician-led telehealth program did not significantly lower blood pressure in Veterans with HIV but did modestly improve cholesterol levels and results suggest that focusing on higher-risk patients with uncontrolled blood pressure may provide the greatest benefit.