Co-Designing a Health Technology Intervention through Patient-Centered Collaboration: A Community-Informed Approach

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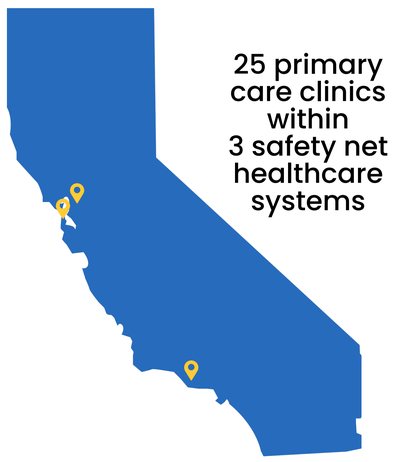
Introduction

With nearly 48% of U.S. adults living with hypertension, effective management remains a leading concern for healthcare providers. Home monitoring can help people lower and control blood pressure, but few systems have been tested and widely adopted to support diverse patients and clinics. [1,2]

We aimed to provide a framework for leveraging the Technology Acceptance Model for patient-centered, collaborative design of an effective self-measured blood pressure (SMBP) system within safety-net primary care settings.

CHARMED Study Design

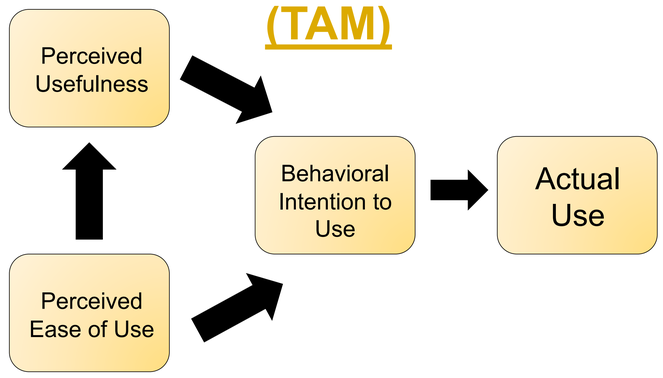


- Championing Hypertension Remote Monitoring for Equity and Dissemination Study; PIs: Courtney Lyles (UCD), Urmimala Sarkar (UCSF)
- 5-year factorial randomized trial of patient- and clinic-level interventions to improve hypertension control and related outcomes
- **Patient arm**: Standard care (automatic text message reminders to check BP at home) vs. high-intensity care (receive text messages with personalized feedback)

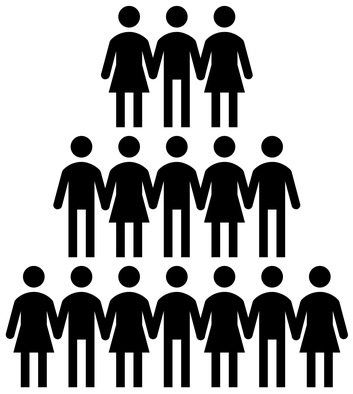
Self-Measured Blood Pressure (SMBP)

- Remote blood pressure measurement by patient outside of clinical setting
- Shown to be effective in improving diagnosis and control of hypertension
- In our study, patients receive a digital blood pressure cuff that connects to an app on their cell phone

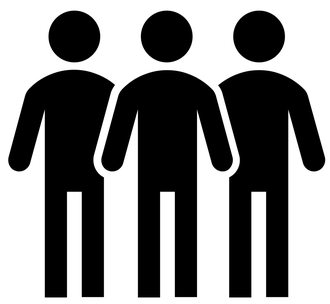
Technology Acceptance Model (TAM)



KEY INFORMANTS

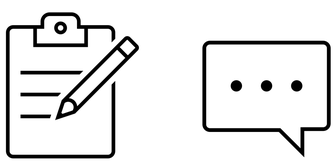


Patient Focus Groups (n=10)
- Single session (English & Spanish)
- Broad, Exploratory

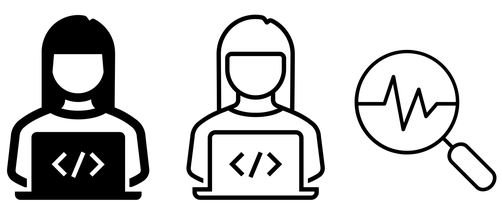


Patient Consultants (n=9)
- Ongoing
- Hired collaborative team members/advisers

Methods



Data Collection
- **Meetings**
- **Audio Transcripts**
- **Stakeholder Notes**
- **Bilingual**



Thematic Analysis
- **Inductive Analysis utilizing Dedoose Software**

Results

Data Source	N	Goal	Main Findings
Focus Groups (Round 1-English)	6	Assess patient level feedback on study-related material - English	• Patients provided varying feedback centered around themes of ***Aesthetic, Cultural Factors, Viewability, Usefulness, Ease of Use, Data Security, Facilitation*** • Significant barriers (e.g., lack of trust in SMBP validity, need for education, reliance on providers for SMBP processes) need to be addressed to promote SMBP
Focus Groups (Round 2-Spanish)	3	Assess patient-level feedback on study-related material - Spanish	• Patients in Spanish-speaking group shared similar feedback as English-speaking group • Notable differences included ***Motivations for use*** and an emphasis on ***Cultural Factors***
4 Patient Consultant Meetings (January – October 2024)	5-8	Assess patient-level feedback on study-related material- English & Spanish	• Patients reported feedback on various aspects of ***communication,*** including Welcome packet readability, personalizing BP goal messages, balancing motivational and neutral language, and ensuring clear follow-up in safety alerts, and enrollment flexibility and clarity

Conclusions/Further Study

- **Improving Design & Communication** – Enhance message clarity, personalization, and usability for better engagement
- **Flexible Enrollment Strategies** – Support both remote and in-person options while considering patient needs and device access
- **Patient-Centered Implementation** – Active patient involvement improves adoption, effectiveness, and real-world impact in theory

References

1. "Products - Data Briefs - Number 511 -October 2024." *Centers for Disease Control and Prevention*, 23 Oct. 2024, www.cdc.gov/nchs/products/databriefs/Hypertension.
2. Weinfeld, Jeffrey M., et al. "Home Blood Pressure Monitoring." *American Family Physician*, American Academy of Family Physicians, 15 Sept. 2021, www.aafp.org/pubs/afp/issues/2021/0900/%20hypertension.

Acknowledgements

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