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Acceptability of a Novel Smartphone Application for Rhythm Evaluation in Patients with Atrial Fibrillation

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Et al.

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Acceptability of a Novel Smartphone Application for Rhythm Evaluation in Patients with Atrial Fibrillation

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Background/Aims

Atrial fibrillation (AF) is the world's most common, serious health rhythm problem. In its early stages, most cases of AF are paroxysmal (pAF), making timely detection of the disease difficult. Long-term, home cardiac monitoring can be clinically impactful but existing technologies have cost or methodological limitations. Smartphone use is increasing and may provide an inexpensive and user-friendly means to diagnose AF.

Our aim was to examine patient acceptability of using PULSESMART, a novel smartphone application co-developed by investigators at UMass Medical School and WPI to detect AF.

Methods

52 adults with pAF presenting to the University of Massachusetts Medical Center for electrical cardioversion underwent rhythm assessment using a novel iPhone 4S application before and after electrical cardioversion and answered a brief survey.

To examine patient acceptability, we looked at responses to 3 specific questions: 1) How easy was it to use? 2) How important could it be for you? and 3) To what extent does it fit into your daily life?

An iPhone Application for AF Detection

Baseline Characteristics of Participants

Demographic Characteristics	
Age, years, M (SD)	68.5(10.7)
Sex, male, n (%)	31 (59.6)
White Race, n (%)	48 (92.3)
Medical Characteristics, n (%)	
Hypertension	44 (86.3)
Hyperlipidemia	36 (70.6)
Coronary artery disease	14 (27.5)
Diabetes mellitus	19 (37.3)
Congestive heart failure	26 (51.0)
Body Mass Index, kg/m^2, M (SD)	30.4 (7.6)

Patient Acceptability Feedback

Conclusions

In a prospective cohort study of 52 adults with AF, we found that patients are receptive to using smartphone applications as a supplement to more intensive and expensive diagnostic tools.

Since it requires no additional hardware, is real-time realizable, and generally acceptable to the patient population, our smartphone application may be useful to improve AF detection in the general population.

Further data are needed to explore the feasibility and efficacy of using smartphone-based applications for AF detection in older, at-risk populations and out-of-hospital settings.
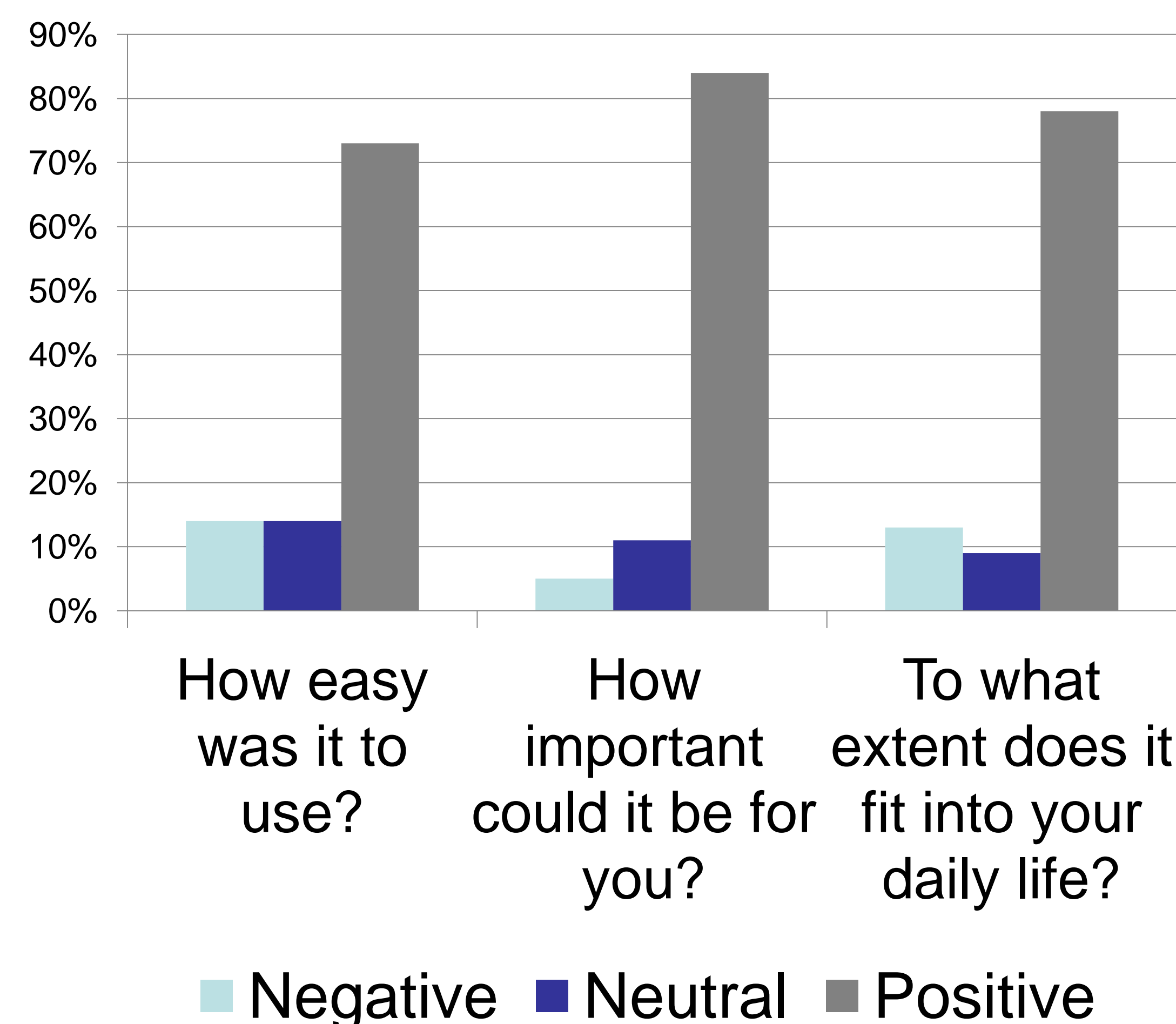
Future Steps

•Qualitative Work: To complement the initial survey results, focus groups and semi-structured interview should be conducted to obtain enriched data on patient and provider perspectives on the acceptability and usefulness of the technology.
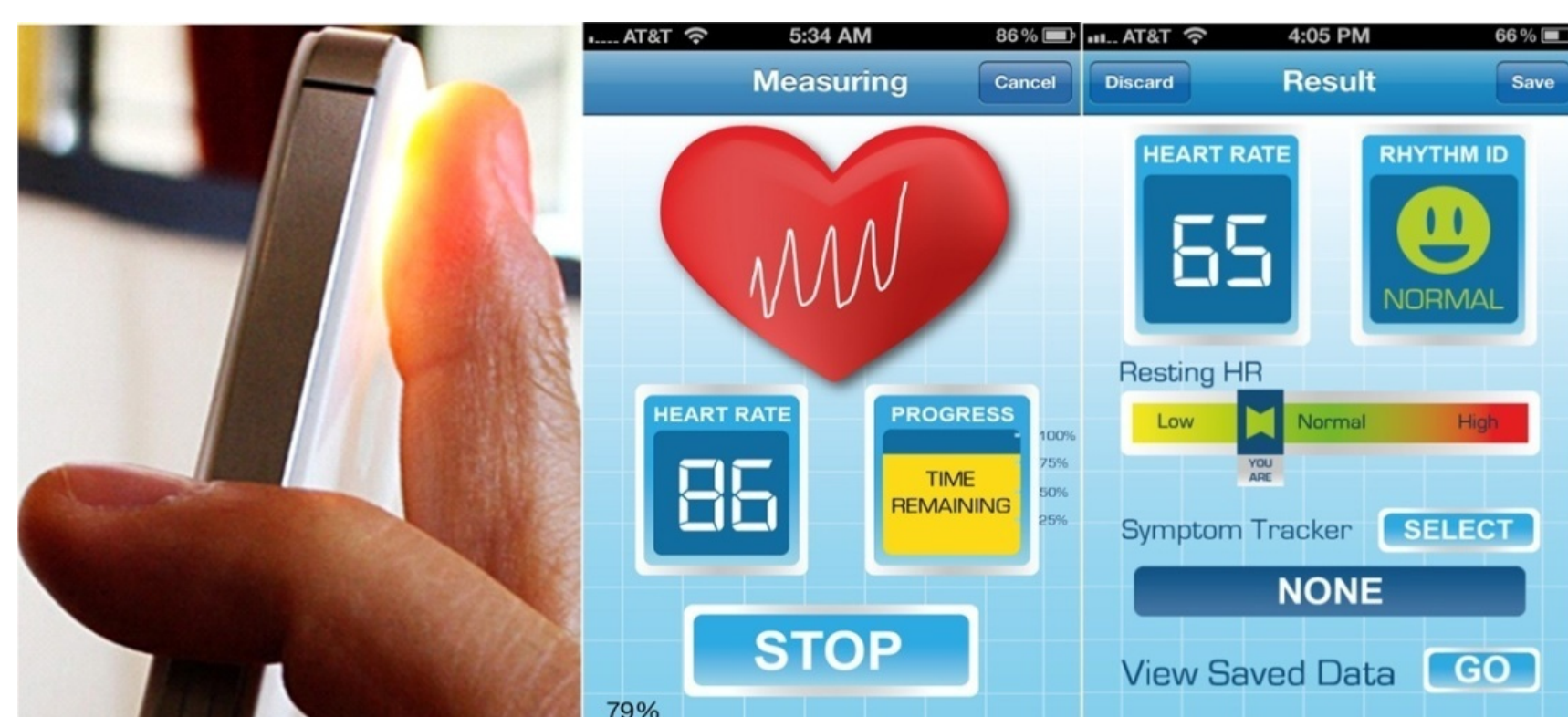
•Larger study: Study findings that patients are receptive to the technology should be replicated in a larger cohort consisting of more sustained use.

•Clinically relevant testing situations: The technology should be applied to areas of clinical practice which it may be particularly beneficial. One such area is to detect heart arrhythmias in patients experiencing cryptogenic strokes.

Collaborative Work

We are actively looking for collaborations in the fields of health information technology, mhealth, and patient-facing technologies.

If you are an engineer, qualitative researcher, clinician, or biostatistician and are interested in collaborating in related Health IT research, please contact us.