



# The Intersection Between Medication Tablets and Electronic Tablets: Determining the Usability and Acceptability of a Patient-Centered Cardiovascular Risk Assessment (PCCRA) iOS App

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*The new patient-centered movement in healthcare and both patient and provider sample populations deem self-directed methods of cardiovascular risk assessment and communication both acceptable and usable in a large, urban primary care practice.*

## Background

One American dies from cardiovascular disease (CVD) every 40 seconds. Risk factor awareness, assessment, and communication has been shown to improve efficacy of patient treatment and also decline overall risk in the population over time. Traditional cardiac risk assessment tools (e.g. Framingham risk assessment, FRA) generate a risk score in a format that may not be appreciated or easily understood by all patients. A new patient-centered approach, in which the patient becomes an active participant in the decision-making process, has shown significant increase in patient-provider communication and diagnosis/management.

## Objective

Our goal is to develop and test a new patient-centered cardiac risk-communication tool for use in primary care. In Phase 1 of this pilot project, patient and provider attitudes and behaviors regarding current risk assessment tools and risk communication were assessed. In Phase 2, we will test a risk assessment tool in a large urban practice to determine feasibility and measure preliminary outcomes.

## Methods

### 1) Focus Group Studies

The aim of this study was to assess physician attitudes about cardiovascular risk assessment in general and about a novel patient-centered cardiac risk assessment tool. We recruited 10 providers in this Phase who participated in two focus groups.

The focus groups were led by the investigators (GDM and MDL), using an open-ended question format. Each focus group lasted about 40 minutes. Focus groups were verbatim transcribed for qualitative coding. A coding panel (AC, ML, and NP) was convened to organize these transcripts into an outline of prominent themes according to the number of utterances.

### 2) Development of Educational Modules

A PowerPoint presentation, as a preliminary model for the PCCRA iPad app, was shown to ten patients in the waiting room of the Jefferson Department of Family and Community Medicine. Two presentations were available for patients to choose from: hypertension and diabetes.

The ten patients were surveyed with questions on usability and acceptance. The survey included a Likert scale and open-ended questions for feedback.

## Results: Provider Focus Groups

### Coding Framework:

Focus Group Studies: Most Common Themes	
	Coding Frequency
<b>Determinants of RA</b>	
Patient Factors	31
Risk Factors	(14/31)
Other: Visit Agenda, Long-term Goals, Literacy/Numeracy, Attitudes regarding risk information, Behavior change readiness, Relationship with patient	
Provider Factors	8
Visit/treatment priorities	(5/8)
Time	
Frequency of RA	Varied (never → once/twice per week)
<b>Methods of RA</b>	
Self-directed	33
Formal (FRA)	(23/33)
Other	
<b>Determinants of RC</b>	
Patient Factors	52
Attitudes regarding risk information	(18/52)
Other: Same as patient factors determining RA, includes "mental assessment" of patient	
Provider Factors	13
Time	(6/13)
Other: Same as provider factors determining RA, includes RC skills	
<b>Methods of RC</b>	
Other (Alternative to traditional methods)	31
Traditional methods: Formal (FRA), visual, relative risk	(16/31)
Outcomes	Varied (but most involved shared decision-making)

### Selected Quotes from Provider Focus Groups:

Facilitators of RA and RC:  
"Anything that can engage them **outside of that office visit** is probably going to be useful."

"There's a lot of benefit with, uh, you know, **patient autonomy** rather than kind of imposed on them."

"You have to put in some in broad sentences or **broader more understandable terms** for them like you will not be able to see your grandchildren."

Barriers:  
"Patient education and literacy makes a huge difference on how often I choose to use the formal tools of assessment."

"I think it's sometimes **our priorities are not their priorities.**"

## Results: Educational Modules Feedback

### Usability of Educational Modules:

- Flesch-Kincaid readability: 6.6 reading level (NIH recommends between 6-8)
- Survey results:
  - Lowest category (score of 4.3) in "selection of action plans"
    - Patients interested in learning more options for lifestyle modification
  - Average score of 5 for "ease of use"
  - Average of 4.8 for "ease of language"

### Acceptability of Educational Modules:

- 9/10 would use in the waiting room
- 9/10 would recommend to a friend

### Selected Quotes from Patient Surveys

Positive Feedback:  
"Language was understandable."

"Personalizing helps", "tells you **WHY** you want to be healthy."

Negative Feedback:  
"Add more pictures and details."

"Already seeing heart doctor and know these things."

## Discussion

The focus group coding revealed interest in self-directed methods of RA (23/33 utterances). The survey of educational modules revealed that the app is acceptable and usable in a large, urban primary care practice.

Limitations to the study include sample sizes, which were a maximum of ten for both the focus groups and the survey. The educational modules presented to patients may not exactly correspond with acceptability and usability scores of the actual iPad app, since it was much less interactive and did not include patient-determined outcomes. The surveys were also led by the researcher, which may have led to positive bias when patients responded to the survey.

## Next Steps

Phase 2 of this study involves concept-mapping in order to define and prioritize patient-determined outcomes (PDOs) for CVD. These will be non-medical outcomes such as pain, disability or medical burden that may have more relevance to patients' everyday lives than clinical outcomes such as heart attack or stroke.

Once PDOs are determined, the PCCRA app can be developed. This pilot app will include an interactive element that the PowerPoint educational modules lacked. The modular software program will include 1) an individualized risk assessment, 2) educational modules about CVD and individual risk factors, 3) the ability to select from PDO choices, and 4) a behavioral module for action planning. A second round of surveys will then be performed to refine the software and determine its usability and acceptability.

Finally, a monitored kiosk with the software program will be set up for use of mid-life adults in the DFCM waiting room. We hope to measure outcomes as a function of change in patient health beliefs and intention to engage in preventative health behaviors. These outcomes are derived from the preventative health model.

## Conclusions

There are many determinants to RA and RC, including both patient and physician factors. Facilitators to RA and RC include patient autonomy and the ability of the patient to understand the information. Barriers include health literacy, time, and competing visit agenda. Providers were accepting of a self-directed, pre-visit RA facilitator of communication.

Development of the educational modules showed that patients also had a great interest in learning their CVD risk in a personalized way. The presentation was usable and acceptable according to an objective readability scale and subjective patient surveys.

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