

AHRQ National Webinar on Digital Healthcare Innovations to Engage and Empower Patients in Their Care

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[The CoolCraig App: Promoting Health by Improving Self-Regulation in Adolescents with ADHD](#)

QUESTION: What are the ages of children who have participated in co-design workshops, and was it difficult to engage them?

ANSWER: We have worked with children as young as ten years of age and up through fourteen or fifteen, our focus has been middle school. We find that they are actually very eager to engage in the co-design and to share their ideas and their preferences. In terms of the co-design, I think it has been a really valuable process for them. They like having a voice and like having input into how things get applied, and how their treatment goals and their preferences might be integrated into the system.

QUESTION: What kind of feedback do children provide during co-design and how did that differ from what was provided by caregivers?

ANSWER: One of the interesting discussions was the value of using a smartwatch versus a smartphone application for the youth. There are advantages and disadvantages to each and for this particular age group, the smartwatch was especially valuable because it is right there. They are able to wear it and do not have to remember to take it with them. Also, in school settings and in some other settings, they may not be allowed to have a smartphone available or near them, so it had that benefit. It also had the benefit of being very discreet and in the design workshops they give recommendations for how to make it even more discreet. For example, there was a preference for the notifications to be like a rumble in the smartwatch, rather than something visual that might pop up and someone else might see. In terms of other differences between caregivers and children, their preferences for how they would visualize progress over time, what would be meaningful to them, and how they would interpret that was very different. As well as their concerns about privacy, with caregivers often wanting to have as much access to as much data as possible. And for children, sometimes wanting to not have their parents be able to see everything, to be able to have even some of their mood, reflection, or some of their other self-regulation work, not be as visible to others and to have more privacy over that.

QUESTION: From an equity perspective, how have you engaged or accounted for people who do not own a phone that can download an app, or who do not have reliable internet at home?

ANSWER: We were anticipating that it could be a problem and budgeted for data plans. We also had some older model refurbished phones available to provide, but we have rarely had to do that.

QUESTION: Did you have to get IRB approval for your studies?

ANSWER: Yes.

David H. Gustafson, Ph.D.
University of Wisconsin-Madison

[Using Smart Devices to Implement an Evidence-based eHealth System for Older Adults](#)

QUESTION: What are the benefits of laptops versus smart displays?

ANSWER: Some of the benefits are surprising. We had thought that the smart display would be more mobile than the laptop. It turns out that the laptops are more mobile, you can carry them around and move them. The smart displays tend to be a little bit heavier and a little bit more cumbersome. The laptops benefit most from the ability to speak to them, though the downside is that when you do speak to them, sometimes the system takes a while to respond. You have to be patient with the systems, as they do not work as smoothly and effortlessly as you might think.

QUESTION: What are meetups and how do they differ from asynchronous discussion groups?

ANSWER: The key way in which they differ is one is asynchronous, which means you can leave a message for somebody but there is not an immediate response; you have to wait until somebody is there. Ideally, it would be nice if someone were looking at the screen at the same time that you were looking at it, but that is not typically the case. You may have to wait for hours to get a response back, and sometimes you even forget why you asked the question in the first place. Whereas with meetups, you are able to ask the question and immediately get a response; that can make them much more effective as a communication vehicle. Meetups have really served as a way of pulling everybody together and are the glue that holds the system together.

QUESTION: How many elders are in the meetups?

ANSWER: The maximum right now is typically around fifty older adults at any one time. When we carry them out, we place them into subgroups of around fifteen elderly people during the first part of the study. We talk about how things are going with them, what positive things have happened to them in the last week, and what negative kind of things. We go through those things in a subgroup of around fifteen people each, and then we come together for the end lecture and for the general discussion with fifty people.

QUESTION: What advice do you have for teams using user-centered design methods in a medical school context? For example, how do you involve user-centered design experts and practitioners on your team, and where is their primary academic home?

ANSWER: Our university is housed in one central campus with a large computer science program and a usability design lab. We have worked with graduate students from the computer science program as we created this smart speaker/smart screen device. Our own team has a group of around ten different programmers and designers that work on the project and both groups work closely together. It is really important to get the users involved in the design process. We start out with a small team of about eight potential users and use paper prototypes to show them the material and the users give us feedback. We become more sophisticated over time and eventually conduct pilot tests that allow us to test the operating system. It really is a combination of the eventual users, our study team, and the people with a computer science background. When we have finally installed the technology, we do not use experts. We use people with no expertise in that area, so they can ask “dumb” questions and behave more like human beings than computer scientists.

QUESTION: From an equity perspective, how have you engaged or accounted for people who do not own a phone that can download an app, or who do not have reliable internet at home?

Many solutions today would not work for these people.

ANSWER: It is becoming less of a problem than it has been over time, as you do not run into many people without access to these kinds of technologies. With the infrastructure funding that recently came out of Congress about two years ago, there was a big buildup and the amount of internet access in rural areas has helped an awful lot. We also have a pot of money in our research funds that pay for the cost of internet and for the cost of smartphones, but it is rarely used these days. This is much less of a problem than we might think.

QUESTION: Did you have to get IRB approval for your studies?

ANSWER: Yes.

Sunit P. Jariwala, M.D., FAAAAI
Albert Einstein College of Medicine and Montefiore Medical Center

[Adapting, Scaling, and Spreading an Algorithmic Asthma Mobile Intervention to Promote Patient-Reported Outcomes Within Primary Care Settings](#)

QUESTION: Can you please speak about the implementation of voice biomarkers within the ASTHMAXcel mobile platform?

ANSWER: Our initial approach had a lot of active inputs, for example surveys, and could be tedious for patients. Now we have vocal biomarkers, which are machine learning and artificial intelligence-based. A six-second voice utterance, such as just saying father for six seconds, could be linked to asthma control. These have been clinically validated, making it really easy for the patients to submit voice samples, engage with the platform, and just help manage their conditions.

QUESTION: How might social determinants of health be incorporated within the ASTHMAXcel mobile platform?

ANSWER: It is very relevant to our patient population in the Bronx. We incorporate social determinants within several aspects of the app. For example, with uptake, upfront screening where patients list their concerns, and based on these responses, patients receive a tailored notification. After that, we have a warm handoff to our community health workers and a list of resources that are geographically organized.

QUESTION: To become more involved in app development and implementation initiatives, does one require a technical background?

ANSWER: Here it is all about multi-stakeholders weighing into every part of the process, even before development. You have the key feedback, the key pain points, and potential champions for adoption later. And then once you develop the app, there are quarterly feedback sessions and what we call the CLOFT model: clinical, operational, financial, and tech. Legal is also involved to make sure that data privacy is optimized, and of course, the patients are so important. In terms of a tech background, I had none whatsoever and fell into informatics. I am a clinician at heart, and it is all about leveraging tech to solve unique patient pain points.

QUESTION: How do you account for the different age cohorts when developing the apps? For example, a 75-year-old asthma patient may have a different approach to smartphone tools versus a 35-year-old patient.

ANSWER: Much of it comes down to user-centered design. For example, the upfront

development focus groups, the pre-development focus groups for overall feasibility. That was one of the first questions that we asked back in 2013. Do you have access to a smartphone? Would you ever use such an app, and if so, which features? These focus group sessions should be well-represented, generalizable, large enough, but not too large. Hold a series of these sessions until you reach concept saturation/thematic saturation, and themes emerge from different stakeholders.

QUESTION: From an equity perspective, how have you engaged or accounted for people who do not own a phone that can download an app, or who do not have reliable internet at home? Many solutions today would not work for these people.

ANSWER: We did a study with a MACS/WIHS cohort in the Bronx, so a lot of patients in the shelter system. We offered free phones to these patients, but many times just were not used. This just was not such a problem.

QUESTION: Are any of you familiar with the Apple Research Suite, and if so, do you recommend using the research suite for initial app development?

ANSWER: We did look into Apple Research Kit, maybe eight-nine years ago and it was a very nice platform. For our prototype, the issue was there are customized features, so our vision was not aligned but it is a great resource.

QUESTION: Did you have to get IRB approval for your studies?

ANSWER: Yes.