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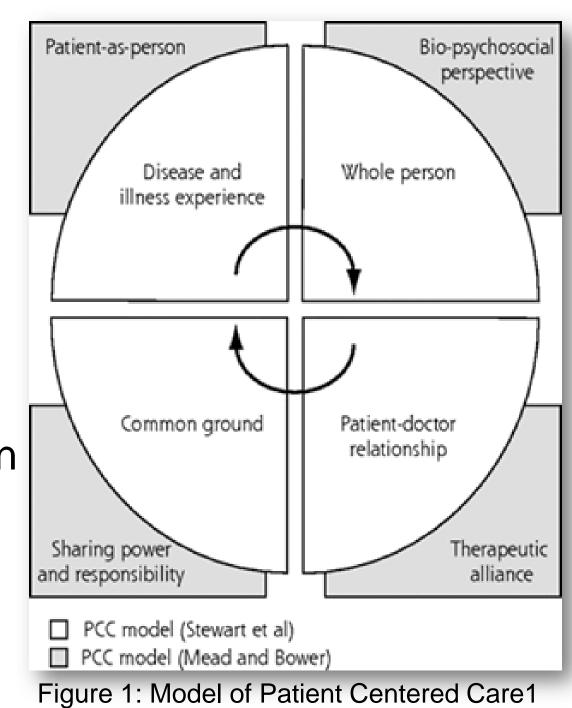
FAMILY & COMMUNITY MEDICINE

Background

The electronic health record (EHR) and use of computers in today's exam rooms is a dramatic change in medicine from decades past. There are concerns about how the computer and EHR might adversely affect patient-provider interaction and that it may be detrimental to PCC.[1] Patient-centered care (PCC) (Figure 1) promotes active involvement of the patient in their medical care.[2] Several positive outcomes have been associated with PCC, including: better emotional health, improved symptom burden, improved recovery, and fewer diagnostic tests and referrals both at the time of the visit and in the subsequent 2 months.[3,4] PCC can therefore help to decrease medical expenditures while improving patient outcomes and satisfaction. It has been proposed that certain exam room and computer configurations combined with uses of the EHR may enhance PCC.[1]

If we can better determine how different types of computers affect this interaction, it would help suggest improvements for increasing PCC, thus gaining the aforementioned benefits of decreased cost and improved health outcomes.
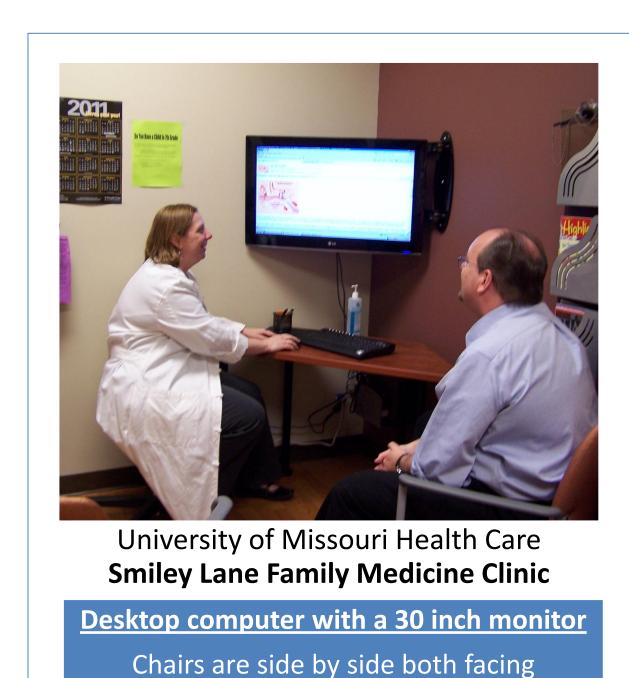

Figure 1: Model of Patient Centered Care1
□ PCC model (Stewart et al)
□ PCC model (Mead and Bower)

Research Question

How does type of computer monitor and room configuration affect how physicians provide patient-centered care, contrasting users of laptops with 30-inch monitors?

University of Missouri Health Care
Green Meadows Clinic – Gold Team
Laptop computer
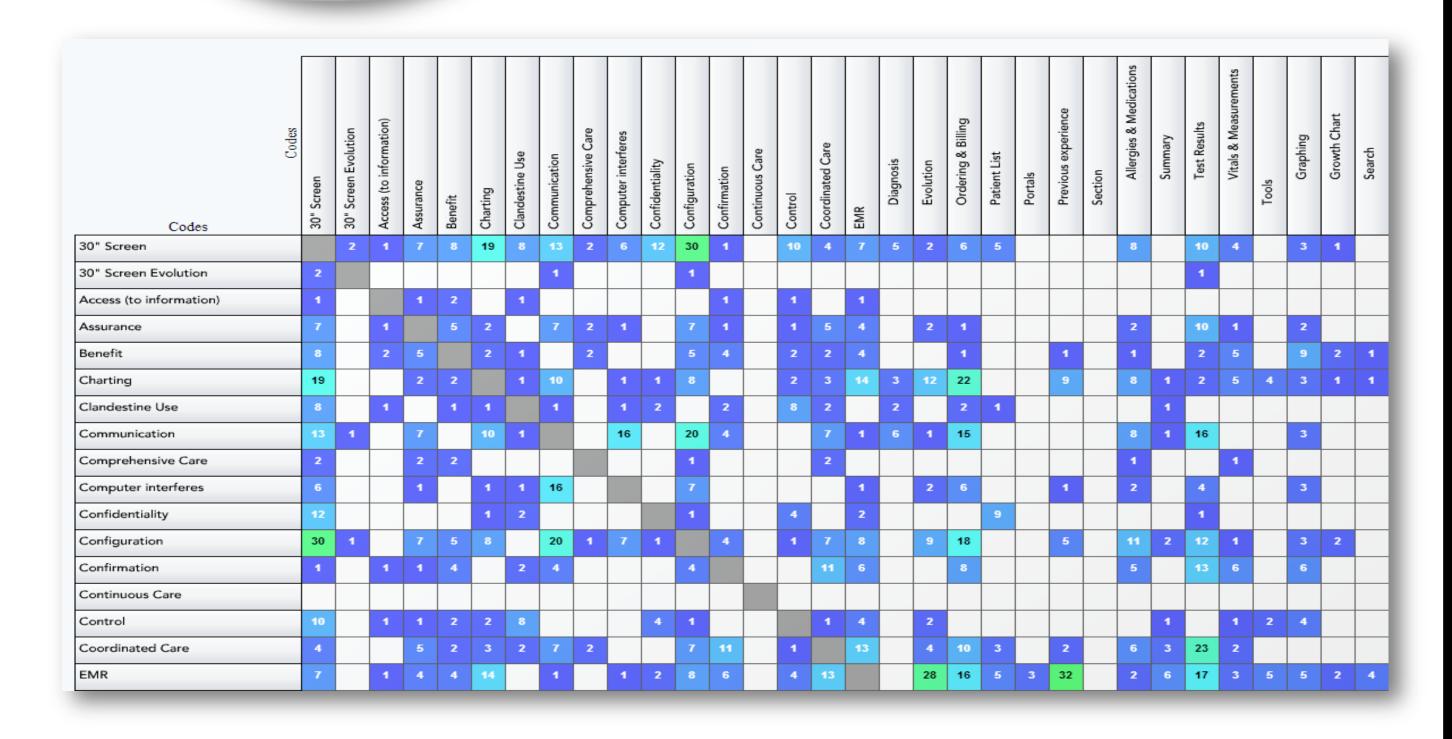Chairs are facing each other with computer in between

University of Missouri Health Care
Smiley Lane Family Medicine Clinic
Desktop computer with a 30 inch monitor
Chairs are side by side both facing computer

Sample & Data Collection

Setting	Participants (M.D.)
Green Meadows Gold Team	5
Smiley Lane Family Medicine	7
Clinical Director	1
TOTAL	13

- Qualitative semi-structured interviews
- Approximately 45 minutes in length
- Audiotaped and professionally transcribed

Data Analysis

- Dedoose® qualitative web application used to organize, code, and analyze the interview data
- Data was coded using grounded hermeneutic editing methodology
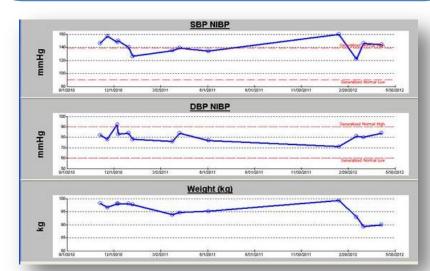- 2 researchers reached agreement, double coded all transcripts, and defined themes.

Results

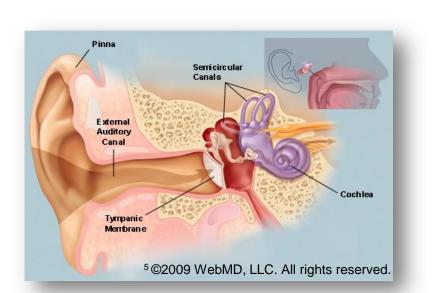**Potentially beneficial** themes emerged:

Transparency
- "…they're sitting there watching and I don't think they perceive it as a waste of time. I think they perceive it as being involved."- Smiley Physician
- "I think giving patients access to their own EMR, I mean, that is a better way to build transparency than to have them watch me take notes while I do their orders" - Smiley Physician

Displaying Information
- "You know, visual information displays things a lot faster than text. I was doing that before but [the 30" screen] reinforced that behavior. If I'm able to present a picture to try to discuss a concept with a patient I think it helps make it easier for them in terms of health literacy and, and having the computer in the room certainly gives you lots of opportunities to do that." -Smiley Physician

Physician Workflow
- "They get to see me clicking through and seeing what I'm doing compared to if you have a laptop and you're sitting here and it looks like you're on email. So they know that I'm, I'm actually doing medical stuff as they watch." -Smiley Physician
- "The laptop was a hindrance to being patient centered. "All that person did was type the whole time I talked." - Gold Physician
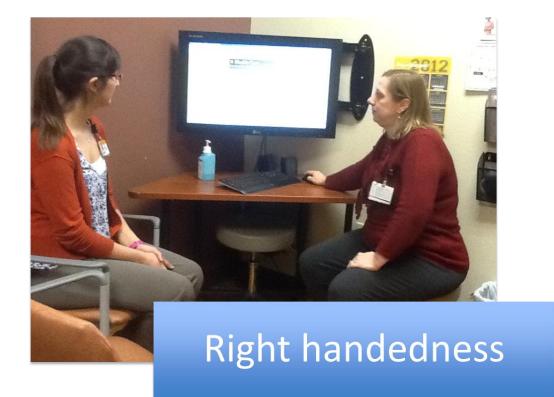
Patient Centeredness
- Definitely helps because we're both facing the screen and the two of us sort of make a triangle and so we're both interacting with the record so that sort of makes us a team a little bit. It gives, and it gives a lot of power to be able to see their own record and their own data. - Smiley Physician

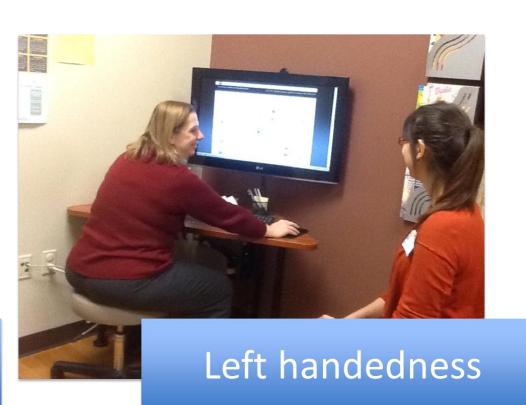## Results (continued)

Themes involving **potential harms** or **areas for improvement** emerged:

Room Configuration
- "Yeah. It's just right there. I mean, I don't have to do anything extra to have them be involved. They're involved because of the way the room is set up. They are looking at the giant 30-inch screen. It's just a matter of how am I going to involve them, not whether I'm going to involve them." - Smiley Physician
- Handedness of computer relative to room setup

Right handedness

Left handedness

Adoption
- "When I first started at Smiley I didn't know how I was going to use the, the big screen. I mean, I didn't, I know why they put them in there and I, I didn't exactly realize what purpose I was going to use the large display piece with patients. I hadn't come up with any ideas and nobody had talked about it." - Smiley Physician
- "Like we need some on the job training." - Gold Team Physician

Harms associated with Viewing
- "She's an obese, bipolar woman who doesn't think she's obese or bipolar." It's [the 30" screen that] generated that conversation." - Smiley Physician
- "I'm not gonna slow down, this isn't all for you… I'm not gonna, normally in my day flow don't have time to explain all that to you. This is just me working in your chart." - Green Meadows Physician

Technology and Personal Space
- "So I guess if I only had a 30-inch monitor in the room, I also don't have an office at Green Meadows. We're not, we're not that kind of practice. It's not like I'm gonna be sitting in my fancy doctor office with my fancy like desktop computer looking up stuff. Like I'm homeless mostly. So my laptop's really important to me." - Gold Team Physician

Discussion

- Modern exam rooms should aim to include the patient using technology **and** appropriate room configuration
- Design and arrangement within the clinic room should take into account ergonomics and usability by physicians
  - Some arrangements force physician to have back to patient
- Physicians need to be trained to maximize the potential of the room design and EHR features
  - Exemplars: visual display of graphs, orders, and images; videos for children; educational videos while patients wait; self-check in

Conclusion

- Collaborative viewing of the EHR on the 30-inch screens may invite the patient into physician workflow, as opposed to the disengagement that occurs with laptop use.
- Collaborative viewing may make the patient an active participant in their care, which can potentially increase engagement and shared decision making.

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