

# Designing for Complexity: A user-centred design approach to developing the electronic Patient Reported Outcome (ePRO) tool

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Bridgepoint Family Health Team



Bridgepoint Collaboratory for Research and Innovation

# Team

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## **Research Team:**

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## **Technology company:**

QoC Health Inc.

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# Faculty/Presenter Disclosure

- **Faculty:** Carolyn Steele Gray & Lora Cruise
- **Relationships with commercial interests:**
  - **Grants/Research Support:** Health System Performance Research Network, Funded by the Ontario Ministry of Health and Long-term Care
  - **Speakers Bureau/Honoraria:** N/A
  - **Consulting Fees:** N/A
  - **Other:** N/A

# Disclosure of Commercial Support

- This program has received financial support from **Health System Performance Research Network** in the form of **research funding**.
- This program has received in-kind support from **research team members, the Bridgepoint Family Health Team, and QoC Health Inc.** in the form of **time and access to licensed software platform**.
- **Potential for conflict(s) of interest:**
  - **None to be disclosed**

# Mitigating Potential Bias

- Nothing to mitigate the product is owned by the research team.

## Overview

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- Understanding complex patient and their primary health care provider needs
  - Adopting User-centred Design Evaluation Approach
  - Introducing the HSPRN-Bridgepoint ePRO tool
  - Preliminary findings from our usability pilot
  - Lessons learned
  - What's next
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## Challenges in Providing Primary Health Care

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- At the FHT we experience:
  - 15 minutes to address all issues
    - Multiple clinical guidelines
    - Multiple medications
    - Patient agenda and provider agenda
    - Social needs (i.e. forms)
  - Even with time to do goal-setting follow-up is challenging
  - Because the cycle continues **establishing and monitoring** care plans becomes very difficult



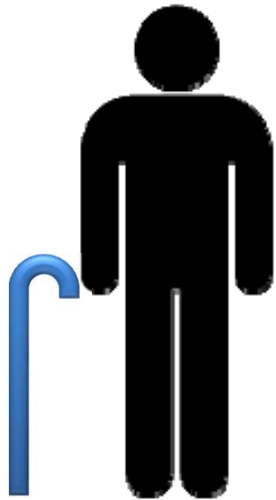
# Current Goal-Oriented Care Planning

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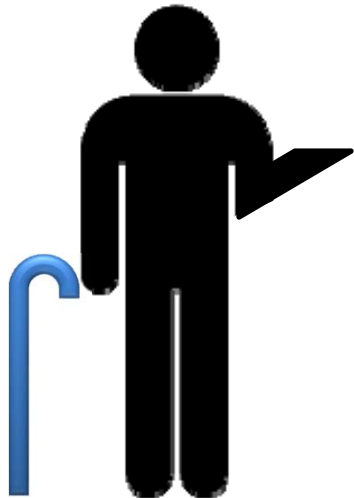
# Current Goal-Oriented Care Monitoring

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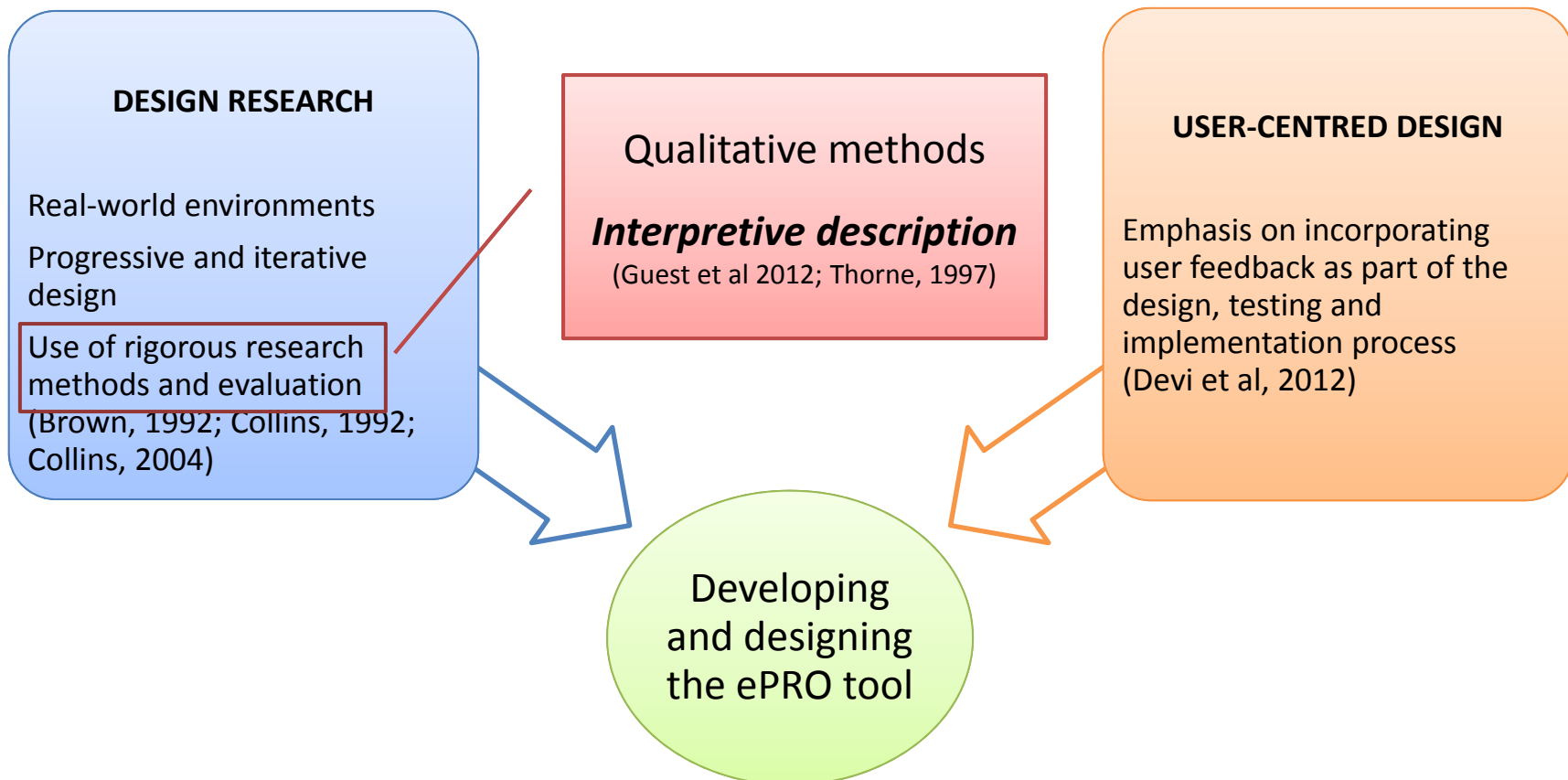


# Current Goal-Oriented Care Monitoring

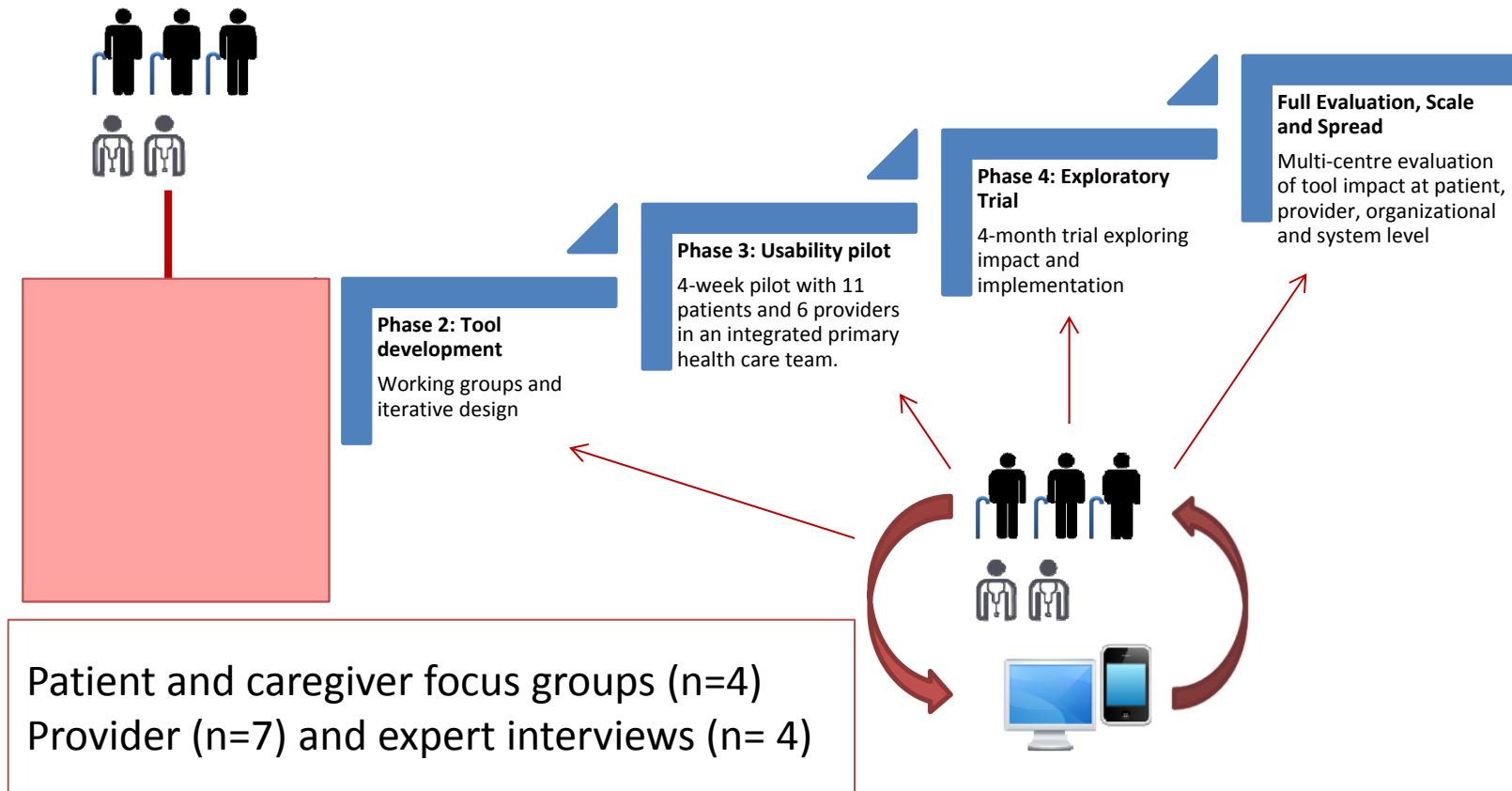
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# User-centred Design Evaluation Approach



# User-centred Design Evaluation Approach



# Phase 1: Needs informing design

JMIR RESEARCH PROTOCOLS Steele Gray et al

Original Paper

**Tying eHealth Tools to Patient Needs: Exploring the Use of eHealth for Community-Dwelling Patients With Complex Chronic Disease and Disability**

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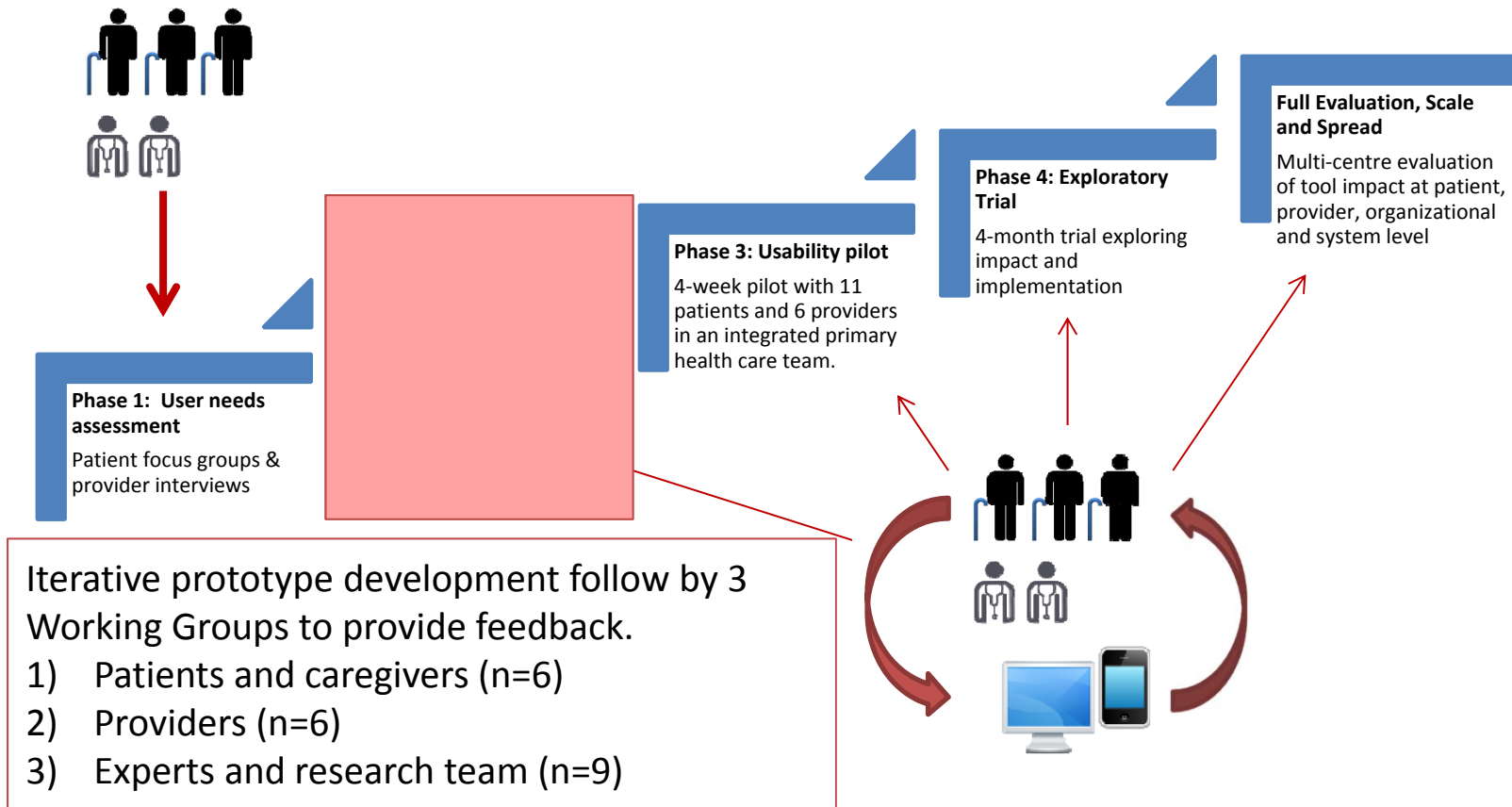
Phase 1: User assessment  
Patient focus group  
provider interviews

- Patient Focus Groups**  
Requested Features:
- Symptom monitoring
  - Medication management
  - Educational materials

- Provider & Expert Interviews**  
Requested Features:
- Symptom Monitoring through validated scales and standardized measures of ADL's
  - Medication management
  - Educational materials

- Research Team Working Group**  
Prototype #1 Features:
- Symptom monitoring through 3 standardized tools
  - Hospital access notification

# User-centred Design Evaluation Approach



## mHealth Enabled Goal-Oriented Care using ePRO tool

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# The Portal: Setting Goals



https://localhost:8443/secure/providers/dashboard/careplan/current

Most Visited Getting Started localhost:8080

Dashboard Care Plan Hospital Visits Account -

patient-b patient-b

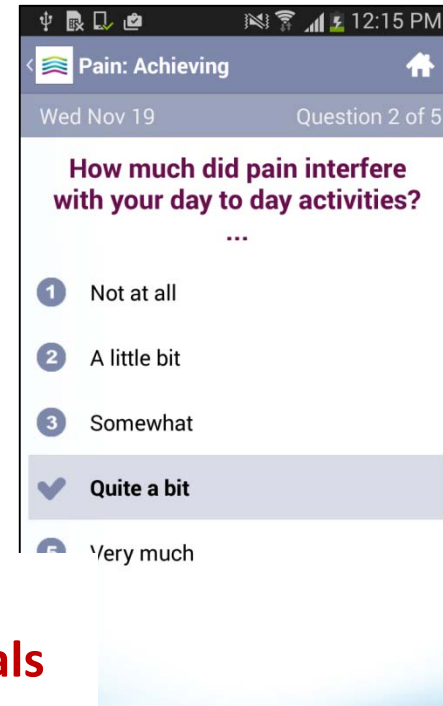
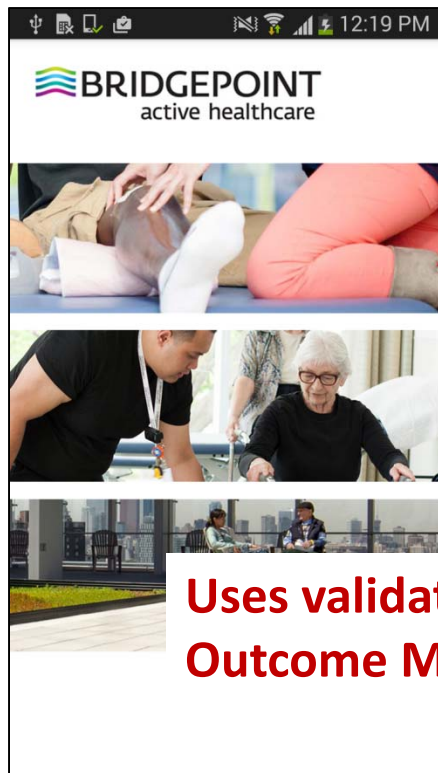
Physical Health Mood and Memory Social Activities Mobility Pain Blood Pressure

Diet

**Patients and providers collaboratively identify care plan goals**

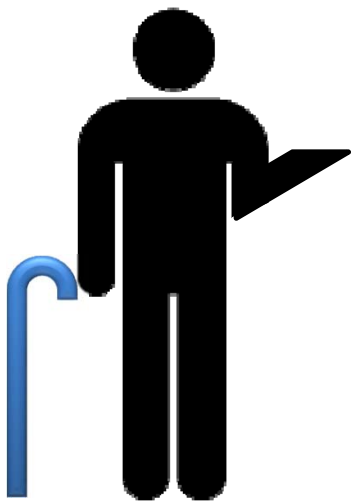
**Goal-attainment scaling techniques used to support goal creation**

# The Device: Monitoring Goals



**Patients can include comments at each monitoring point to provide context and help self-management**

# Monitoring and Self-Management



The screenshot shows a patient's dashboard with the following content:

- Monitoring: Physical Health: Achieving** (with a **Close Results** button)
- In general, would you say your health is:...**
  - Line graph showing health ratings from Oct 26 to Nov 17. The y-axis ranges from Poor (1) to Excellent (5). The data points are: Oct 26 (Fair, 2), Oct 28 (Excellent, 5), Oct 30 (Fair, 2), Nov 1 (Excellent, 5), Nov 3 (Fair, 2), Nov 5 (Excellent, 5), Nov 7 (Excellent, 5), Nov 9 (Excellent, 5), Nov 11 (Excellent, 5), Nov 13 (Excellent, 5), Nov 15 (Excellent, 5), Nov 17 (Excellent, 5).
- In general, how would you rate your physical health?...**
  - Line graph showing health ratings from Oct 26 to Oct 30. The y-axis ranges from Poor (1) to Excellent (5). The data points are: Oct 26 (Excellent, 5), Oct 28 (Fair, 2), Oct 30 (Fair, 2).
- To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?**

**Patients can view data to help with self-management**

**Providers get data on how the patient has been doing in relation to goals in-between visits**

# Hospital Visit Monitoring



Dashboard Care Plan **Hospital Visits** Account ▾

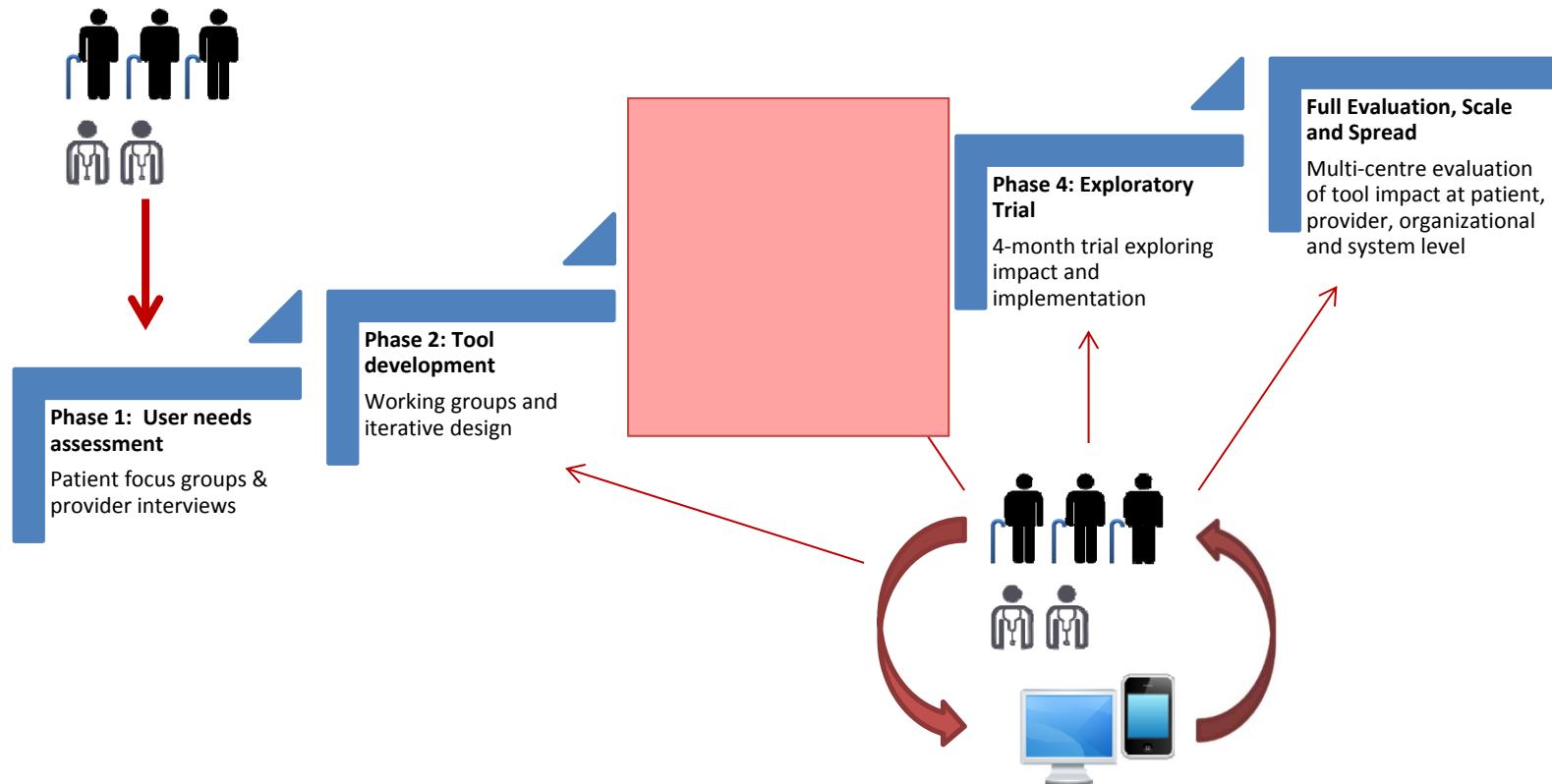
patient-b patient-b

### Patient Reported Hospital Visits

Response Date	Hospital	Comment
Wednesday October 29th 2014	Bridgepoint Health	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut pharetra pretium enim sed accumsan.
Wednesday October 29th 2014	Toronto General	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut pharetra pretium enim sed accumsan.

**Patients can also report when they've been to a hospital so providers can reach out to get discharge reports**

# User-centred Design Evaluation Approach



# Usability Pilot

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- Aim: Determine utility, functionality, usability
- Ran from November 3<sup>rd</sup> to December 12<sup>th</sup> 2014 at Bridgepoint FHT
  - Some post-intervention data gathering occurred in January 2015
- Six care providers
  - Physician, social worker, three registered nurses
- 11 patients with two or more chronic conditions with complex care needs (as identified by providers).
- Tool training:
  - Providers trained in two sessions prior to pilot start date
  - Patient trained just prior to first visit with provider to set up goal monitoring
- Patients set-up goal plans with providers, **monitored for 4-weeks**, then came in for at least one follow-up visit
  - Some patients see their providers weekly as so had multiple follow-ups over the course of the pilot
- Post-intervention qualitative data gathering
  - Focus group with patients (n=5) and interviews (n=3) with those who could not attend
  - Focus group with providers

# Participants

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- Patient participants
    - 11 patients recruited
    - Average age 58
    - 5 Male
    - All reported multiple-chronic conditions, 4 including mental health conditions
  - Attrition rate 27%: 3 drop-outs
    - 2 immediate drop-outs due to health issues (one male, one female, 35)
    - 1 drop-out after 2-weeks due to anxiety, partially related to use of the tool (female, 70)
  - Tracked
    - Mood and memory (3 patients)
    - Physical health (6 patients)
    - Pain (2 patients)
    - Diet (2 patients)
    - Mobility (1 patient)
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## System Use: Portal

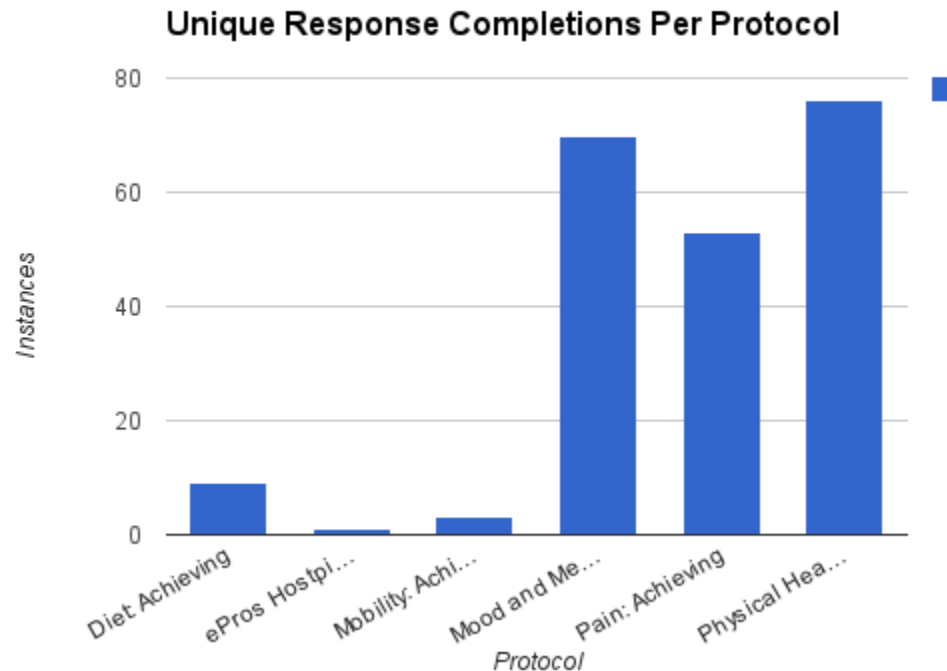
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- Providers portal access
  - Average 10.2 (min 4, max 15)
  - Not viewed by physician
  
- Patient portal access
  - Average 1.74 (min 0, max 3)
  - Only viewed by 4 patients



## System Use: Mobile device

- 1315 responses (questions answered)
- 212 unique completions (surveys completed)
- Typically took patients 1-5 minutes to complete surveys
- Preferred times of day to complete surveys was typically early morning and afternoon



## Patient Feedback

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- Identified an early impact on self-management  
*“I knew why I felt better one week and why I didn't feel better the next week.”* (P011, Patient)
- Identified improved patient-centredness at point-of-care  
*“ [we] were able to see ...that it was not moving really, and to try to change it better...”* (P005, Patient)
- Saw potential for tool to catalyze a sense of responsibility over care and improve interactions with providers, but changes needed
  - Individually tailored questions
  - Getting feedback through device
  - Integrating with other apps that they use (i.e. FitBit, Jawbone)

## Provider Feedback

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- Tool mainly used at the point of care
- Identified that having the tool helped to focus discussion around goals
- Need to better align with workflow
  
- But, potential to improve efficiency

*“... maybe it saves time, especially on certain patients where you get that snapshot just before they come in. You have a whole lot of data that is very efficient.”*

# Lessons Learned and What's Next

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- Clinician Lessons Learned

- Importance of research and tech clearly understanding our workflows
- Need for ongoing engagement - need to feel like they were part of the process
- Importance of clinical leadership

- Research Lessons Learned

- Need to include user feedback at multiple points in the development process
- Allowing the purpose and intention of the tool to be flexible
  - Patients reporting on what they care about
- Need to be aware of the organizational context

## What's Next

Another iteration of development based on usability pilot findings

Exploratory trial to assess impact on outcomes and health system utilization – July 2015

Full pragmatic trial across multiple sites 2016

# Thank you!

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