PROTECT
Connected Health

AIM: improve patient and community outcomes through excellence and application of innovative virtual care (VC) models and remote automated monitoring (RAM) technologies.

McMaster University

INNOVATION Canada Foundation for Innovation / Fondation canadienne pour l'innovation

Ontario Research Fund

Juravinski Cancer Centre, Hamilton Health Sciences

Hamilton Health Sciences

Postoperative care – the present

Care provider

- in-hospital patients usually overseen by surgeons
    - who are often busy operating
- after discharge patients typically see physician 3-6 weeks later

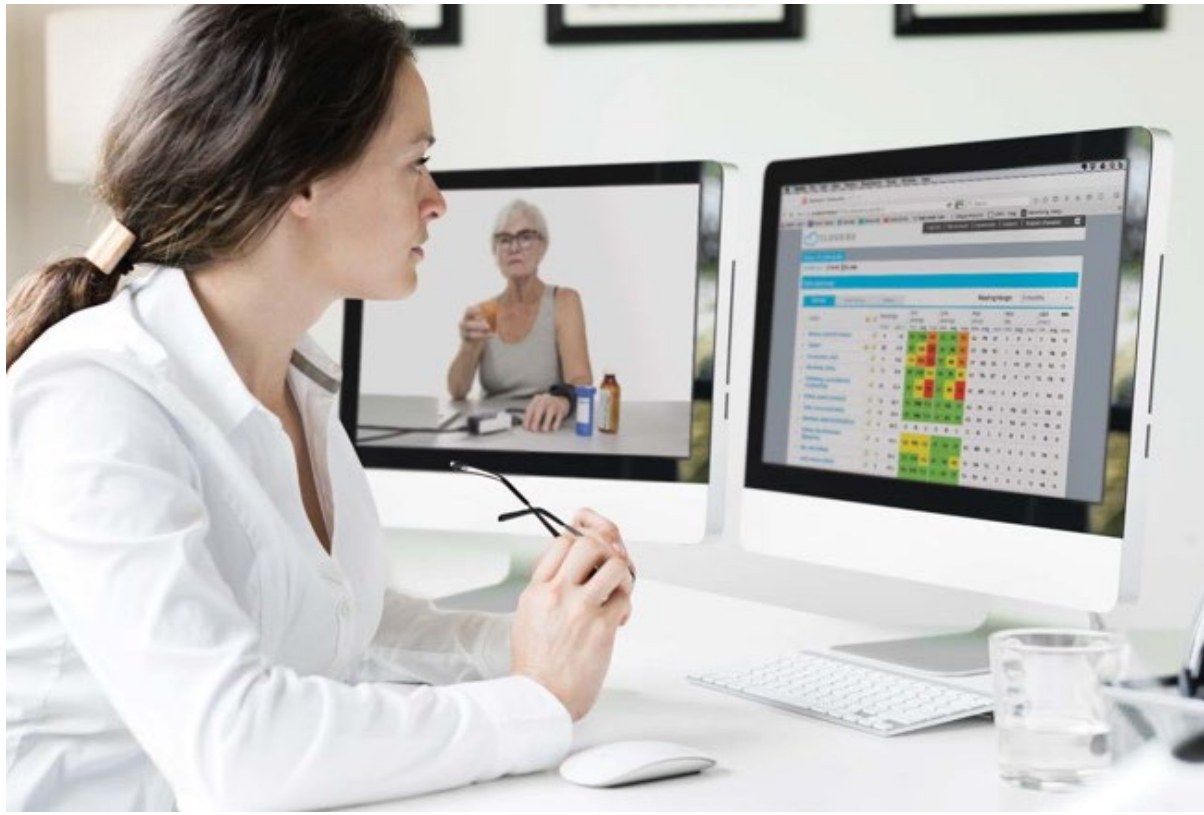
Monitoring

- in-hospital patients typically have vitals checked every 4-8 hrs
- after discharge patients only monitored at next f/u visit

Cloud DX Connected Health kit

Virtual care with RAM intervention

- Tablet computer and RAM technology
  - Cloud DX
- Intervention:
  - BP, HR, RR, SpO2, temperature, weight daily for 30 days
  - recovery survey daily for 30 days
  - Nurse video call daily on **days 1-15, every other day on days 16-30**
  - wound photo daily days 1-15, EOD days 16-30
  - Regular medication error detection/correction
  - Escalation of care from nurse to physician

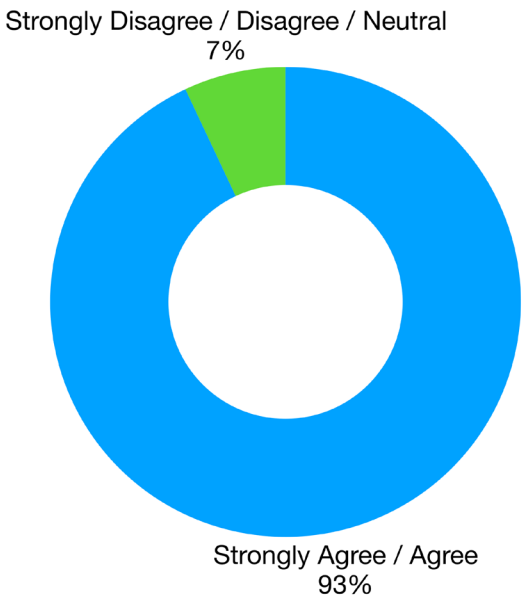


Patient and Provider Experience

Patient Experience

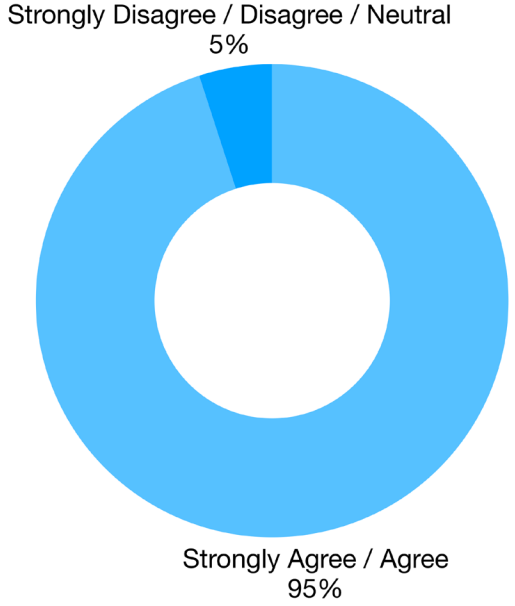
Jan 1, 2022-Nov 4, 2022 (n=552)

The program empowers me to be more active in managing my health



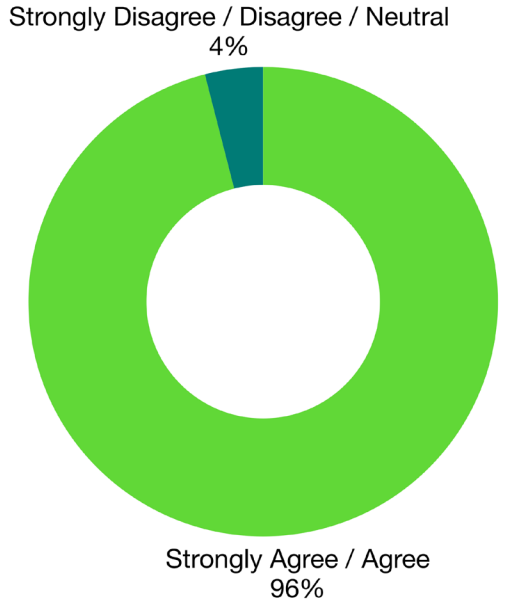
Nov 5, 2022-Apr 31, 2024 (n=1172)

While in the program, I felt that my Care Team listened to and respected me as a partner in care



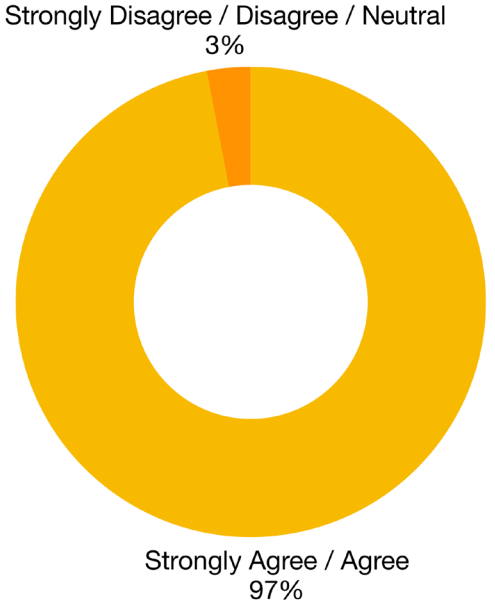
Jan 1, 2022-Apr 31, 2024 (n=1724)

I would recommend this program to a friend or family member



Jan 1, 2022-Apr 31, 2024 (n=1724)

Overall, how satisfied were you with the remote monitoring program?



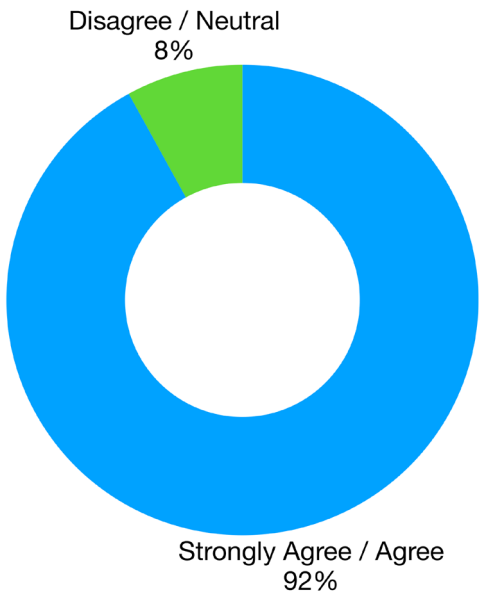
By 'satisfied', we mean the ease and functionality of the solution, quality of information, and services provided.

Provider Experience

Referrer, Primary Care and Escalation Team

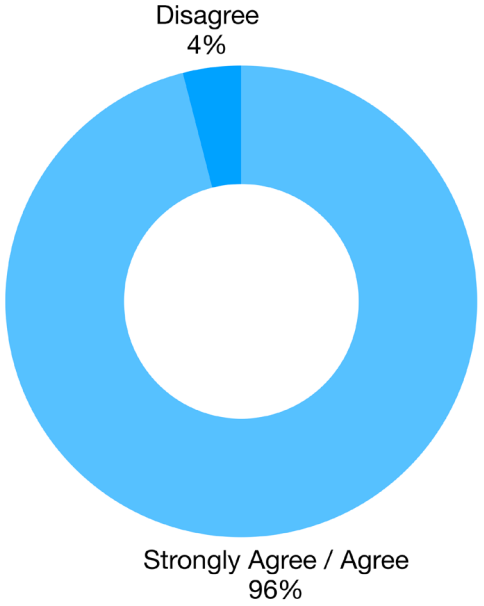
Jan 2022 - Apr 2022 (n=26)

I receive timely AND accurate information from the remote monitoring team to provide care



Jan 2022 - Apr 2022 (n=26)

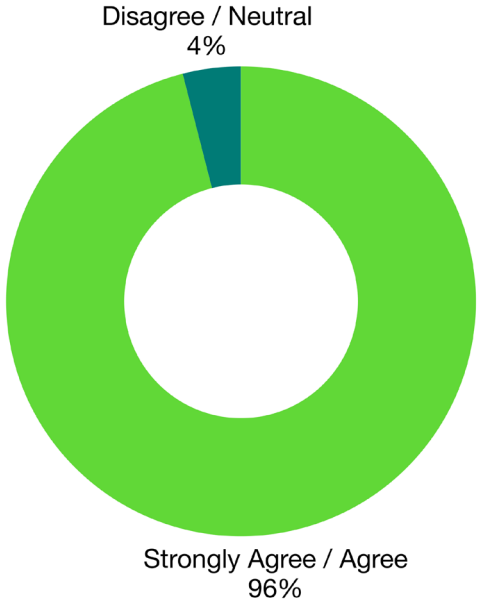
The remote monitoring program has improved the health of my patients



Virtual Nursing Team

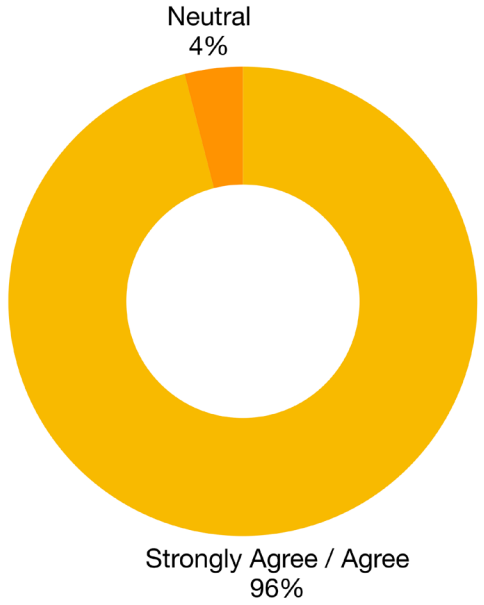
Jan 2022 - Apr 2022 (n=53)

I am confident in my skills to provide care virtually



Jan 2022 - Apr 2022 (n=53)

The remote monitoring program enables me to meet my patient's needs

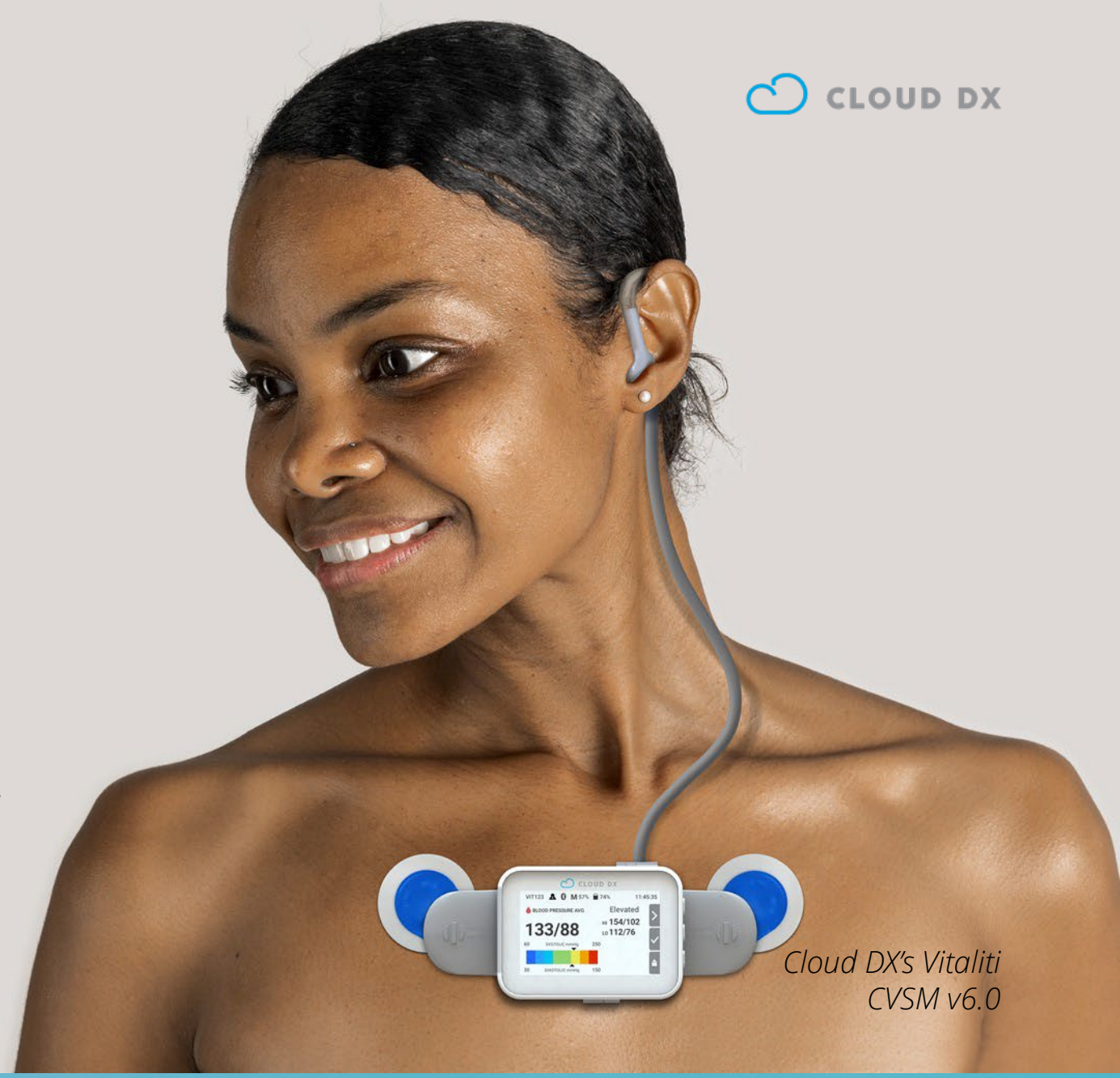


Novel Infrastructure

Cloud DX Vitaliti™ Continuous Vital Sign Monitor

(Model: CVSM-1A)

- automated wearable non-invasive wireless vital sign monitor that enables the continuous monitoring of core vital metrics
  - including systolic and diastolic blood pressure, heart rate (ECG), pulse rate (PPG), heart rate variability, core body temperature,
  - blood oxygen saturation, activity index, and respiratory rate.



Cloud DX's Vitaliti CVSM v6.0

Future Directions: VISION 2

- Big Data and Advanced Predictive Modeling
- 20,000 patients undergoing noncardiac surgery for the first 30 postoperative days
- Develop classification models for prediction of major postoperative adverse events
  - Myocardial injury
  - Major bleeding
  - Sepsis
  - Infection

Population Health Research Institute
HEALTH THROUGH KNOWLEDGE
Hamilton Health Sciences
McMaster University

Future Directions: VISION 2

- Automate labour intensive tasks
- Increase efficiency
- Preserve valuable clinician and patient time
  - e.g., medication error reconciliation, detection of wound infections

Population Health Research Institute
HEALTH THROUGH KNOWLEDGE
Hamilton Health Sciences
McMaster University