Smart Technologies for Mental Health Management

Agenda

- Smart Mental Health Vision

- Pilot Projects

- The Technology Backbone

- Additional Projects

- Smart Apartments: Integrating Technology into the lived environment

- Evaluation Framework

- Conclusions & Future Directions

- Questions

Smart Mental Health Vision

- Mental Health Research at Lawson strives to recognize and study the importance of community integration across the continuum of mental health and illness.
  - Taking advantage of newer technology and care approaches
  - Revising delivery of care to better meet the goal of community integration
  - Establishing a mental health system that focuses on community integration
  - Aligning research with a clinical model that spans the continuum of care

Pilot Projects

1. Telepsychiatry to provide video linkages to community mental health agencies

2. A smart apartment in a psychiatric hospital as part of discharge readiness

3. Case management program with video and remote health monitoring in people's homes

4. Access to income and hospital data on hospital programs to prevent discharge to homelessness

The Technology Backbone

- Leaders Opportunity Fund – Canada Foundation for Innovation
  - For servers, integrated database system to cross hospitals, community mental health, addiction and homeless services in London
  - Data stored behind hospital firewall
  - Looking at unique means of identification – iris scanning, facial recognition
  - On the street input of data: homeless programs & case management programs using handheld devices

The Technology Backbone

- Lawson Integrated DataBase (LIDB)
  - Captures range of mental health data
  - Keeps data isolated between different data sources
  - Enables data collaboration between agencies, hospitals, and researchers
  - Provides role-based access control
  - Allows data import and document upload
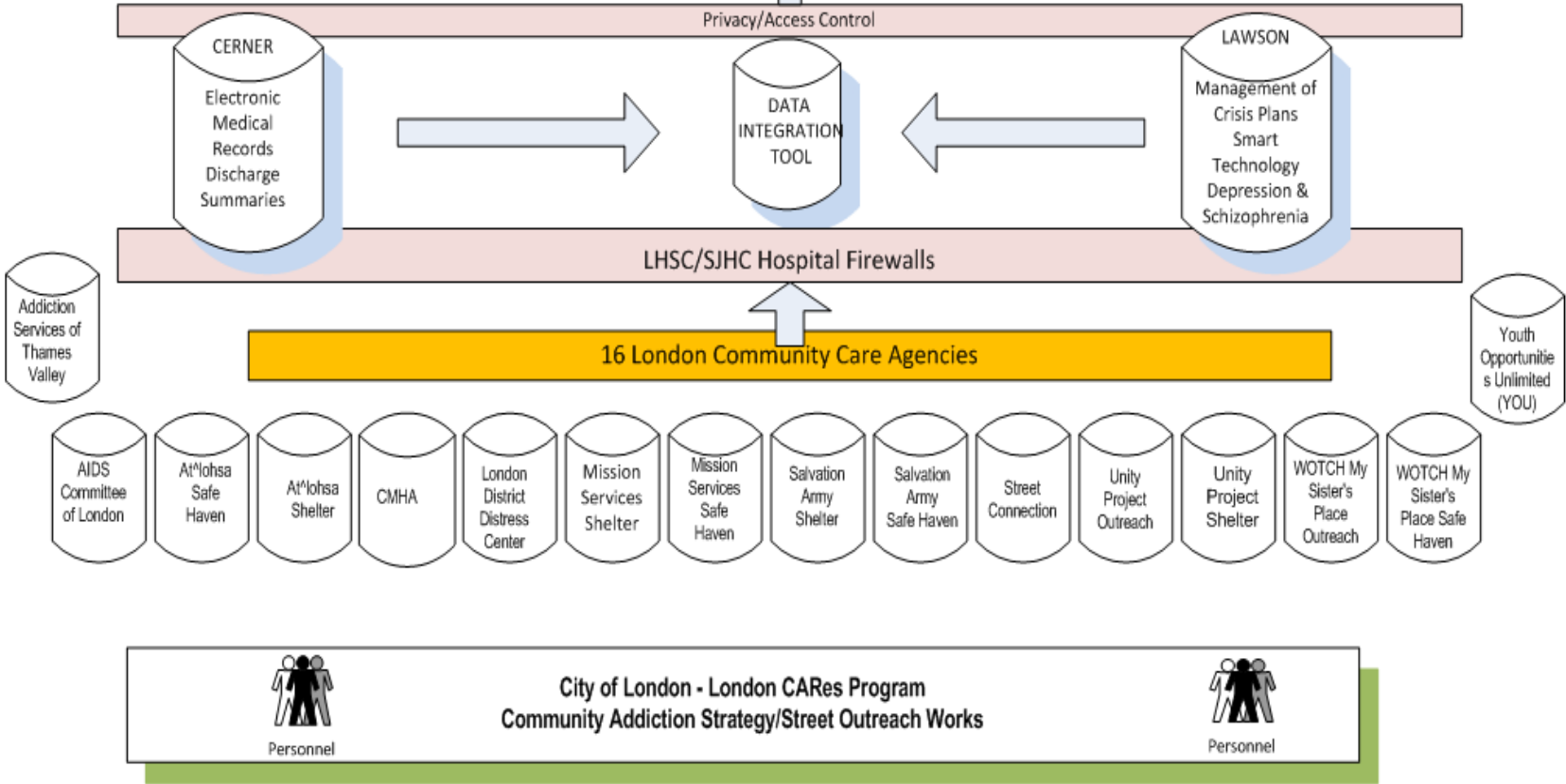 - Supports the development of mental health applications

TELUS HEALTH SPACE
Personal Health Record (PHR):
- Discharge Care Plan/Posted to PHR/Empower Self Mgmt
- Access to Care Plan/Client can share with care givers
- Personal Crisis Plan linked to PHR Mood Diary for earlier intervention, associated with e-Consults
- Mood Diary Linkage to Crisis Plan/Earlier Intervention
- Medication Renewals for e-Prescribing
- Technology and Technical Expertise to ensure project linked with Health System Design Blueprint Vision 2022
- Future Phases, ie., other tools - Personal Health Insights etc.

Community Data

Linkages with Provincially Adopted Tools:
- SPIRE
- InterRAI
- OCAN

Federal Linkages:
- The Homeless Individuals & Families Information System (HIFIS)
- National Homelessness Information System
- Quality Indicators
- Policy-Making

Privacy/Access Control

CERNER
Electronic Medical Records Discharge Summaries

DATA INTEGRATION TOOL

LAWSON
Management of Crisis Plans Smart Technology Depression & Schizophrenia

LHSC/SJHC Hospital Firewalls

Addiction Services of Thames Valley

16 London Community Care Agencies

Youth Opportunities Unlimited (YOU)

AIDS Committee of London | At^Iohsa Safe Haven | At^Iohsa Shelter | CMHA | London District Distress Center | Mission Services Shelter | Mission Services Safe Haven | Salvation Army Shelter | Salvation Army Safe Haven | Street Connection | Unity Project Outreach | Unity Project Shelter | WOTCH My Sister's Place Outreach | WOTCH My Sister's Place Safe Haven

City of London - London CARes Program
Community Addiction Strategy/Street Outreach Works

Personnel

Personnel

LAWSON HEALTH RESEARCH INSTITUTE

London Health Sciences Centre

St JOSEPH's HEALTH CARE LONDON

Western

The Technology Backbone

Additional Projects

Several research projects have leveraged the capabilities of the LIDB:

1. Mental Health Smart Technologies (MHST) - Veenboer Foundation:
    -   Extended smart apartment project at Regional Mental Health Care (St. Thomas)
    -   Added use of handheld devices/smart phones for patients discharged the community
    -   Involved a smart group home
    -   Prompts and reminders went directly from LIBD to mobile phones

Additional Projects

1. Mental Health Smart Technologies (MHST): Care Provider Dashboard

Additional Projects

2. Mental Health Engagement Network (MHEN) – Canada Health Infoway and TELUS Health:

   - Implemented and evaluated the use of a web-based personal health record – the Lawson SMART Record

   - Tested in a population of 400 individuals living in the community and experiencing a mood or psychotic disorder

   - Facilitated communication between clients and care providers

   - Study results demonstrated improved quality of life and community integration, as well as a reduction in outpatient visits, psychiatric hospitalizations, and arrests

Additional Projects

3. Youth - Mental Health Engagement Network (YMHEN) – The Sandbox Project:
   − Piloted the use of the Lawson SMART Record in a sample of 41 adolescents experiencing depressive symptoms
   − Qualitative findings suggested that using technology enhanced mental health treatment and fit well with evidenced based treatments often used with adolescents experiencing mental illness (i.e., CBT and DBT)

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Smart Apartments

- Past research has demonstrated the feasibility, efficacy, and cost-effectiveness of integrating mobile smart technologies into mental health care

- We plan to expand on these proof-of-concept models to study in-home support solutions for individuals experiencing mental illnesses

Smart Apartments

- In-home solutions will include prompt and reminder systems built into the lived environment:

  e.g.

  – Medication reminders
  – Appointment reminders

- Aim is to facilitate mental well-being and self-care in the home

Smart Apartments

- Funding from Lawson is supporting the development of pilot "smart apartments" at Parkwood Institute Mental Health Care Building (London) and Southwest Centre for Forensic Mental Health Care (St. Thomas)

- Pilot apartments will include a variety of technologies

  e.g.

  – Smart TVs

  – Smart mirrors

  – Tablets

  – Blood pressure monitors

  – Medication dispensers

Smart Apartments
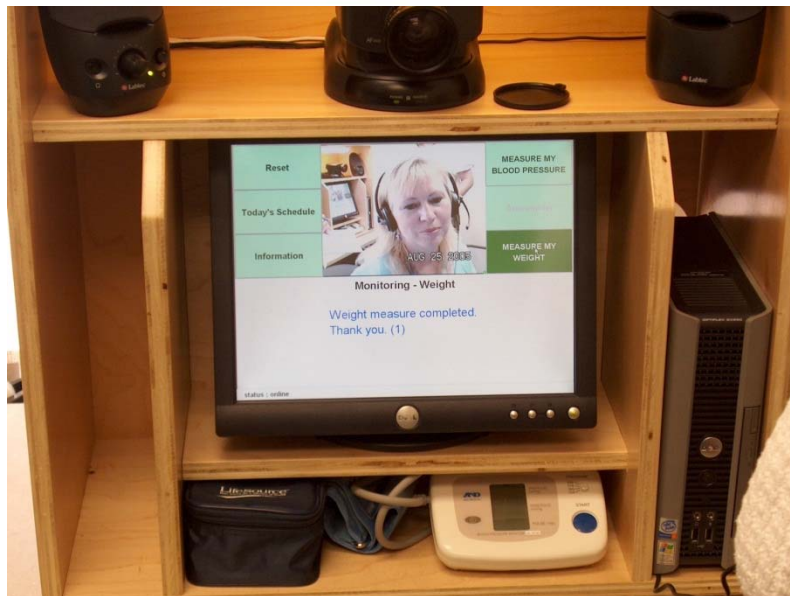
Patient Station (Prototype)

Clinician Station (Prototype)
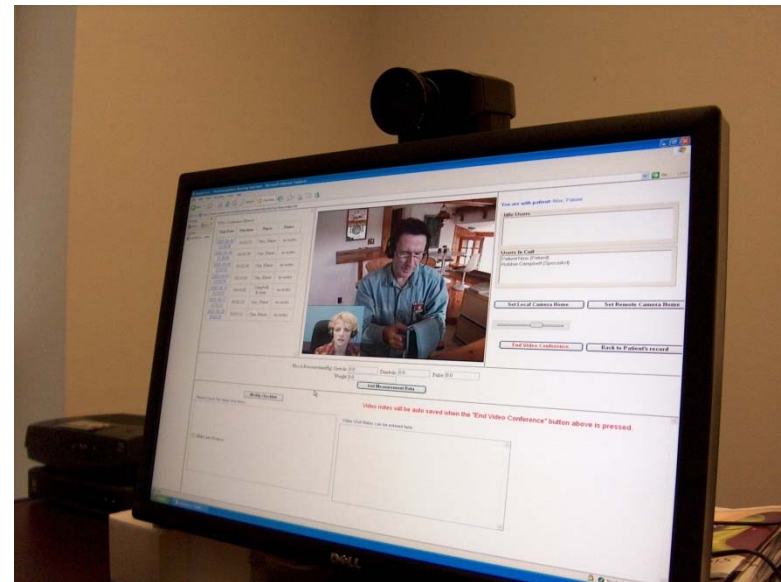
Smart Apartments

- Client and staff perceptions of the technologies in the hospital pilot apartments will be assessed to facilitate future development and large-scale implementation

- Additional funding will be sought from the Ontario Research Fund – Research Excellence (ORF-RE) Grant to establish "smart apartments" throughout London

- CMHA Middlesex Housing and London-Middlesex Housing have agreed to provide 40 apartments each for future study of this technology in the community

Evaluation Framework: How we Study Smart Technologies

Research Evaluation Framework
Smart Technologies to Support New Paradigm of Health Care

EFFECTIVENESS ANALYSIS
Target populations: demographic data and characteristics (income status, housing, etc)
Evaluate interventions delivered: technology use 'in context' and over time, health promotion
Implementation system: intervention fidelity
Intermediate outcomes: Consumer usability testing, uptake or fit of technology with life patterns, longer term outcomes: e.g. health status, quality of life etc

ECONOMIC ANALYSIS
Evaluate "value for money" – extra cost vis-à-vis the extra benefit
Analysis of person level cost and outcome data for each study participant
Analysis of costs and benefits on a societal level to identify specific sub categories such as, caregiver costs, health costs, government costs etc.

ETHICAL ANALYSIS
Evaluation of specific ethical implications in data exchange, secure storage, and use of technologies
Comparison of ethical standards to project's findings in relation to fairness, autonomy, privacy, social inclusion etc

POLICY ANALYSIS
Identification of specific policy implications in data exchange, secure storage, and use of technologies
Address policy implications arising from the issues identified throughout the research process. Include key stakeholders in identifying both problems and solutions

Technology Research Assessment Innovation Network (TRAIN)
"Consumer Facilitated Ecosystem of Care"

Conclusions & Future Directions

- Developing smart technologies is essential for improving the quality and efficiency of health care

- Integrating smart technologies into the lived environment will further our vision of creating a smart technology enabled mental healthcare system

- Future work will explore additional avenues, such as linking data between community agencies and hospitals, as well as developing novel methods of identification (e.g., iris scanners)

Questions?

Contact

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