Home Care and Technology: A Case Study

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Background: Health Care Aides

- In Alberta, approximately 16,000 health care aides (HCAs) serve the needs of clients in various types of organizations.
- Second to nurses, HCAs form the largest group of front-line service providers in the health care system.
- By 2017, it is projected that there will be a significant shortage of these service providers (nearly 7500).

Contributing factors to increasing shortage and high turnover rates:
- Low job satisfaction
- Increasing job stress
- Poor hours/compensation/benefits

HCA-T Project

This project addresses a key strategic objective of Alberta’s Health Workforce Action Plan:

To increase capacity of the health workforce by increasing productivity and reducing workload through the application of ICT (Information Communications Technologies).

Question:
How can technology reduce the workload and increase the productivity of Health Care Aides in home care settings and increase the efficiency of the home care teams overall?

Research Participants

A variety of ICTs are currently being applied to assist clients with activities of daily living and to facilitate health care delivery.

There has been little to no investigation into commercial, ‘off-the-shelf’ (ICT) to address the workload of HCAs.

Background: ICT
Project Work Groups

Workflow Analysis

HCA-T Project

Technology

Education

Research Process:

Phase 1:
Understand and describe challenges that affect HCAs’ workflows and team interactions. Ethnographic approach used to collected information through documentation review, questionnaires or surveys, interviews and focus groups, about the typical HCA tasks, responsibilities and routines.

Phase 2:
Based on Phase 1 findings, consultations and meetings with service providers and expert groups, to identify key challenges that may be addressed by ICTs. An ICT tool suite was designed, integrating available existing and newly developed (by our team) technologies to address these issues.

Phase 3:
Assess the potential impact of these technological solutions on the workflow and productivity of HCAs, their healthcare teams, and client care.

Technologies were deployed in simulated settings with real HCAs; knowledge translation strategies for education programs developed.
**Mixed-Method Approach**

- **Qualitative** – Focused Ethnography
- **Quantitative** – Survey (Likert and written responses)
- **Data collection methods:**
  - Semi-structured interviews
  - Focus groups
  - Questionnaires
- **Documentation review**
- **Knowledge Translation/Mobilization:**
  - Symposiums and Conferences
  - Community Sounding Board

421 Research Participants across 5 health zones

**Results for Phase 1**

**Key themes:**

1. need for better scheduling,
2. improved communication of relevant client information,
3. timely communication between home care offices and HCAs, and
4. varying levels of perceived acceptance that technology can support provision of care.
Features of a Useful ICT Device

Communication:
- colleagues, professional staff, clients: e-mail, text, videoconference, camera

Workflow:
- client information/care plans/scheduling/real time documentation

Tablet

Education

Safety

HCA Workflow – Technology Innovations

Assignment
- • Smartphone
- • EMS
- • Case Management
- • Patient Relationship (CRM)
- • Videoconferencing
- • Collaboration Tools

Scheduling
- • Smartphone
- • Case Management
- • Prepopulated Schedules
- • Scheduling
- • Collaboration Tools
- • Workflows for Documentation
- • Task Management

First Meeting
- • Panic Button
- • EMS Access
- • Smartphone
- • Translation Resources
- • Staff eReference Resources
- • Open Messaging System
- • Collaboration Tools
- • Case Management
- • EMR/EHR
- • Task Management
- • eCare Maps
- • Prescribed apps

Results: Phase 2

Platform: consists of a server and two clients: a web-based one for schedulers at the head office and a mobile app for HCAs in the field.

Cloud deployment: Our software, deployed on the cloud, relies on open standards and supports multi-platform mobile applications.

Results for Phase 2

Scheduling Solution:
We developed an algorithm based on previous work on ambulance scheduling. This algorithm respects the availability constraints and capabilities of clients and HCAs, considers client-HCA affinity, and optimizes HCA travel time.
The mobile "HCA App"
Enables HCAs to:
(a) access their daily schedule and each individual client’s information and required services, and
(b) record notes on how these tasks were accomplished and other pertinent information.

A set of third-part tools, including:

- **Navigation support** (thus addressing travel-related safety concerns);
- **Messaging tools** (to address ad-hoc communication needs);
- **GPS-enabled alarm service** (to address safety concerns); and
- **Access to the authoritative on-line Community-Care Desktop** (addressing just-in-time knowledge needs).

**HCA-T ICT Piloted Solution: Samsung Galaxy Tablet**
Equipped with:
- Navigation
- Care Plan
- Camera and Video
- Skype
- Email and texting
- Continuing Care Desktop
- GPS Tracking app (Safetracks)
- Fruit Ninja App (for training)
- TIKI (in-facility walkie talkie type app)
- HCAMobile App (developed by University of Alberta)
We provided training for HCAs over 2-3 hours, followed by two simulated home visits with "clients". HCAs completed pre/post-training/simulation questionnaires, and a focus group at the end of each session.

Total number of HCA participants: 53 (range/site: 1-5, mean/site: 3)
Focus group participants: range/zone: 8-15, mean/zone: 6
Percentage Rural/Urban: 75/25%
**Results for Phase 3**

Post-training and simulation: The majority of HCAs responded they would use ICT for:

- Internet (91%)
- Voice recognition (88%)
- Skype (88%)
- Camera (97%)
- Messaging (94%)
- E-mail (91%)
- GPS (91%)

**ICT Acceptance – Changing Attitudes**

The first thing I said as soon as (the training) was over – “I want one.”

**ICT Barriers to acceptance**

If the tablet doesn’t do it all ... then it’s not really worth it. I would want it to do everything I need ...when I go out the door all I do is grab my tablet and I am ready for anything.
I feel appreciated, or “You’re doing an important job here. We need you to have some good equipment on board.”

If you could pass that information on to the next person, then they could just start right out with that.

Benefits of ICT

Job satisfaction: Decreased job stress:

...where if we had a system set up where it was documentation there, and everyone had access to it, they could pop it up and see it and it wouldn’t have to be all this circle of time-wasting.

Especially when you cannot describe, there is a, like, bruise or, you know, redness in the skin, you cannot describe how red it is. So you can show it to the nurse (using the camera function).

Benefits of ICT

Increased perception of support, well-being and security.

Heightened sense of autonomy – more immediate care for clients:

A lot of times in our work, especially if we work out of facility, we feel segregated because we’re going individually from home to home to home, but at the same time we’re very disconnected from the rest of the world, and this is a plug-in to feeling connected.

Why are ICT solutions so important?
Conclusions

Our data demonstrates that technology can help address workload, productivity and efficiency of home care:

1. Retention - HCAs felt they would be safer, could work more efficiently and would feel more valued, if they were provided with the technology.
2. Recruitment
   Although working with clients brings job satisfaction, participants believed that the technology would attract more people to the profession.
3. Recognition
   HCAs thought the technology would make them feel recognized for their work because the tools would address their workflow and communication challenges.

Questions