

Socio-Economic Impact of Telehealth: Evidence Now for Health Care in the Future

Penny Jennett, Head, Health Telematics Unit

Overview

1. Introduction
2. Methodology
3. Results
4. Recommendations & Conclusions
5. Summary / Implications

Introduction: The Team

Principal Investigator:

- Dr. Penny Jennett

Co-Investigators:

- Dr. David Hailey
- Dr. Arto Ohinmaa
- Dr. Richard E. Scott
- Dr. Roger Thomas
- Carol Anderson

Advisors:

- Dr. Tom Noseworthy
- Dr. Steve Edworthy
- Dr. David Topps
- Dr. Barbara Young
- Diane Lorenzetti
- Janice Hopkins
- Dr. Penny Hawe
- Mr. Steven Lewis
- Dr. Robert Hayward

Project Managers: Louise Hall, Lorna Milkovitch

Assistants: Tara Perverseff, Caroline Claussen, Julianne Sanguins, Susan Brownell

Introduction:

Telehealth Definition

- Telehealth, telemedicine, or e-health is defined as “the use of information and communication technology (ICT) to deliver health services, expertise and information over distance, geographic, time, social and cultural barriers” (Reid, 1996).
- Telehealth encompasses Internet or web-based “e-health”, as well as video-based applications. Applications can be real-time or store-and-forward.

Introduction: Purpose

Sample Research Questions

- 1. What is the socio-economic impact of telehealth as a method of delivery of healthcare and information, compared to that of the status quo?
- 2. What are optimal indicators and proxy indicators for the assessment of the impact of telehealth?
- 3. What are the related recommendations for policy and decision makers?

Introduction:

Socio-economic Indicators

Social Determinants of Health

- Poverty
- Social isolation
- Education
- Life stress
- Early life
- Access to transport
- Nutrition
- Access to health care and services

Socio-economic performance of a community

- Economy
- Labour markets
- Innovation
- Environment
- Education
- Health

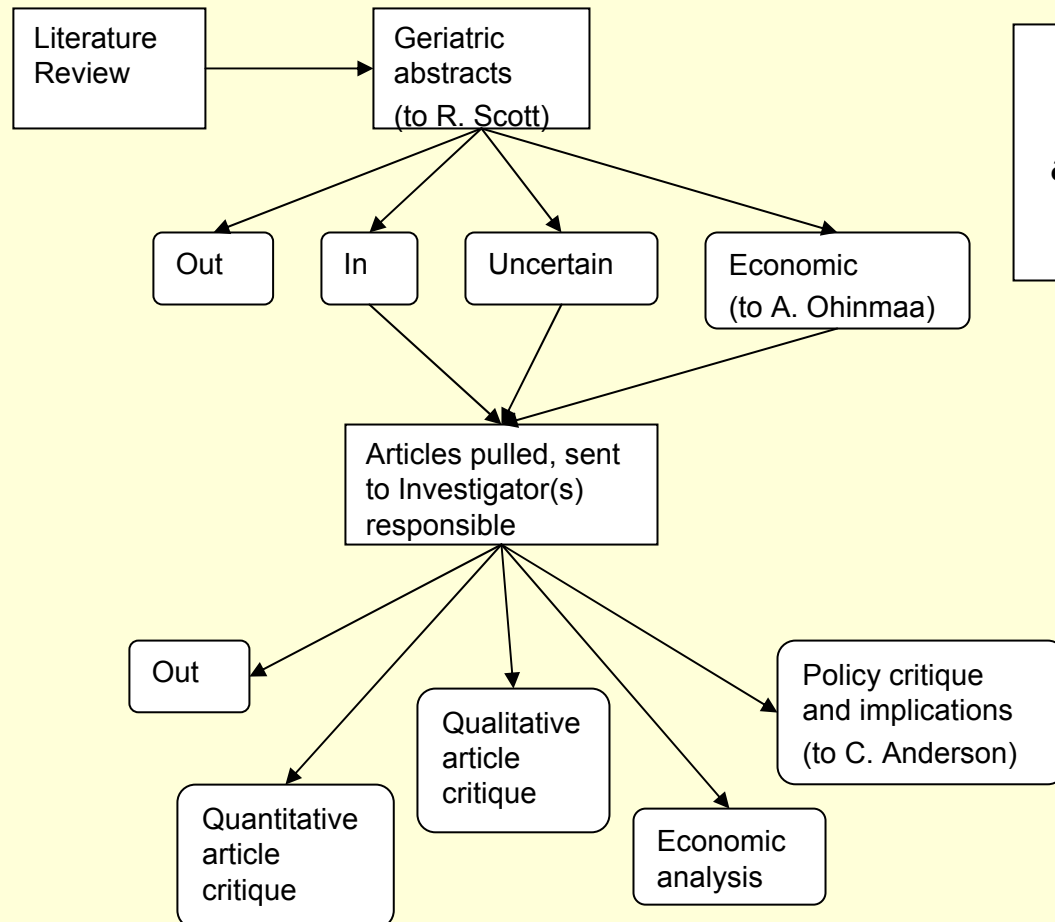
Cost Effectiveness in health care delivery

Methodology

Focus on subject areas

- Paediatrics
- First Nations
- Geriatrics
- Tele-homecare
- Tele-mental health
- Teleradiology
- Telerehabilitation
- Renal Dialysis telehealth
- Rural/remote telehealth
- Systematic Reviews
- Economic Analysis
- Policy

Methodology: Process for Abstract Review and Critique



Example:
*Process for review of
abstracts and articles re.
Geriatric Telehealth*

Methodology: Critique Strategy

- **Quantitative research**
 - Articles reviewed using Cochrane Collaboration Review Manager framework
 - Strength of evidence assessed using Jovell and Navarro-Rubio scale (1995)
- **Qualitative research**
 - Cochrane Collaboration Review Manager framework
 - Quality criteria: Dependability, Credibility, Transferability
- **Economic analysis**
 - Drummond et al (1997) criteria
- **Policy**
 - Cochrane Collaboration Review Manager framework
 - Strength of evidence assessed utilizing predetermined criteria

Methodology

Policy strategy

- Local Policy Team (7 persons)
- Policy Working Group Contacts
(43 persons – Federal/Provincial/Territorial
Policy & decision-makers)
 - Awareness
 - Engagement

Results:

State of the Science

Of the socio-economic indicators listed, studies have demonstrated the greatest impact of telehealth in:

- Access to health care and services (esp. rural / remote populations)
- Cost Effectiveness
- Health (clinical outcomes)
- Education – both patients and health care providers

Results

State of the Science

Also some evidence of positive impact of telehealth with respect to:

- Social isolation (persons with mobility problems, e.g., elderly or disabled persons)
- Life stress (caregivers)
- Early life (improved access to care for infants and children / families)
- Transportation (reduced travel time and cost for patients/families and providers)

Results

Policy vs. Science

- Policy reviews emphasize the importance of telehealth with respect to the indicators:
 - Economy (i.e., growth)
 - Labour markets
 - Innovation (competitiveness)
- However, the impact of telehealth on these indicators has not yet been addressed in the scientific literature
- Policies can in themselves, be barriers to implementation and investment if not continually evolved with attention to the changing socio-cultural and technological environment.

Recommendations & Conclusions: General

Policy

- To be successful and sustainable, telehealth must be fully integrated into existing health structures and processes in a practical and policy manner.
- Integration can be achieved through aligning telehealth initiatives with existing strategic health plans, policy goal-setting, accompanying action steps, and attention to policy barriers.
- Establishment of a policy forum that focuses on telehealth policy would facilitate these needs.
- Telehealth applications should incorporate capacity for education, research, and administrative functions, as well as health and clinical functions.

Recommendations & Conclusions: General

Policy

- Federal-provincial/territorial partnerships in telehealth should be established where there are opportunities to improve efficiency in health care and decrease duplication.
- As telehealth continues to evolve, input from all key stakeholders (including patients, health care providers, and the public) into policy development is required. Consideration of needs as well as practical experience is essential for a meaningful exchange of information and views.
- Consistent terminology and definitions around telehealth, e-health and related terms should be adopted across jurisdictions.

Recommendations & Conclusions: General

Technology

- To facilitate access to many bandwidth intensive telehealth applications increased broadband connectivity is needed, particularly to rural and remote communities.
- Given the evidence, the use of telephone-based telehealth applications should be re-examined.
- Technology modalities (broadband, narrowband, web-based) and applications (videoconferencing, data monitoring, telephone) should be viewed as synergistic, not competitive, and the most appropriate tool applied; i.e., hybrid connectivity solutions are recommended.

Recommendations & Conclusions: General

Evaluation

- Suitable outcome indicators, measures, and reliable and valid instruments for socio-economic benefit of telehealth must be identified, defined, and consistently applied within a recognized evaluation framework that asks relevant research questions.
- Suitable frameworks for economic analysis need to be developed that capture non-monetary and unintended consequences, as well as monetary measures.
- Telehealth programs should be implemented and evaluated in a culturally aware and culturally sensitive manner.
- Evaluations should include examination of the social, organizational, and policy aspects of telehealth.

Recommendations & Conclusions: General

Economic

- Telehealth demonstrates sufficient evidence of socio-economic benefit to indicate ongoing investment is appropriate.
- Sustainable telehealth ‘programs’ and not ‘projects’ should be targeted.
- Full integration of telehealth will increase its use and decrease the per contact episode cost.
- Investment in information and communications technology infrastructure should be considered as an investment not only in health, but in business, education, and other e-sectors.

Investment Opportunities

- R & D and economic development opportunities require pursuit.

Recommendations & Conclusions: Specific

Paediatrics

- Telehealth programs that improve quality of care and offer economic benefit for 'at risk' paediatric populations (e.g., neonates, adolescent asthmatics) should be introduced.
- Evidence would suggest decision makers should consider telehealth to achieve enhanced social environments for children, and staff efficiencies as related to data transfer.
- The use of low-cost technology solutions (e.g., the telephone) is strongly recommended for Paediatric telehealth where appropriate.

Recommendations & Conclusions: Specific

Geriatrics

- Telehealth programs should be used to support palliative home care initiatives.
- Remote, wireless monitoring (e.g., personal alerts, caregiver and patient support, 'smart' homes and clothing) should be investigated for both enhanced independent living and geriatric healthcare applications.
- Geriatric telehealth applications should be strongly considered as a technology R & D and economic development opportunity.
- The use of e-prescription applications should be used to increase self-efficacy and compliance, and to reduce adverse effects.
- The use of low-cost technology solutions (e.g., the telephone) is strongly recommended for Geriatric telehealth where appropriate.²⁰

Recommendations & Conclusions: Specific

First Nations

- The recommendations provided in the Health Transition Fund project report of 2001 (Health Canada) should be implemented, viz:
 - Increase connectivity to rural and remote communities, and especially Aboriginal communities;
 - Undertake new research further to implementation of successful telehealth initiatives in First Nations and Inuit communities, and regarding the impact of telehealth on costs, health services and human resources;
 - Promote equality of opportunity for telehealth across First Nations and Inuit communities;
 - Increase awareness and understanding of telehealth opportunities among First Nations and Inuit stakeholders;
 - Create linkages between telehealth and other initiatives of the Aboriginal Health Infostructure in order to leverage investments.
- Health services and information content should be delivered in a culturally sensitive context.

Recommendations & Conclusions: Specific

Tele-homecare

- Telehealth should be considered for application in managing and monitoring chronic heart failure, chronic obstructive pulmonary disease, oncology, diabetes, wound care, asthma, anxiety, and cardiovascular accident.
- Home Telehealth programs should be used to assist with and transform the mode of delivery of home care. Such programs should be used to support change within the context of the continuum of care, and a comprehensive home healthcare program.

Recommendations & Conclusions: Specific

Tele-mental health

- Tele-mental health, a proven and sustainable telehealth application, should be expanded.
- The use of low-cost technology solutions (e.g., the telephone) is strongly recommended for tele-mental health where appropriate.

Renal Dialysis Telehealth

- Teledialysis should be evaluated more comprehensively before commitment is made.

Recommendations & Conclusions: Specific

Teleradiology

- Teleradiology, a proven and sustainable telehealth application in settings of appropriate workload and distance, should be expanded.
- Teleradiology should be adopted in settings where the need to travel or poor speed of care provision present barriers to access

Recommendations & Conclusions: *Specific*

Rural and Remote Telehealth

- Increased access to a broad range of clinical and educational resources should be provided to rural, remote, and underserved populations.
- Enhanced connectivity to rural and remote communities and residences should be a priority to improve economies of scale in future service and information delivery.

Telerehabilitation

- Telerehabilitation, which has been demonstrated to show benefits for health care and patients (e.g., speech pathology, transtelephonic exercise monitoring) requires more comprehensive economic analysis.

Summary

- Socio-economic benefits of telehealth supported by evidence in the scientific literature include: access, cost effectiveness / cost savings, health (clinical outcomes), education, reduced social isolation and life stress
- Future telehealth programs and research can benefit from use of standardized evaluation frameworks and indicators, and appropriate quantitative and qualitative research methodologies
- Integration of telehealth into existing health care structures and processes is considered essential for realization of its full socio-economic benefit. However, there are long-standing policy challenges which need to be resolved.

Acknowledgements

Policy Teams

Local Policy Team

Policy Working Group

Funding

Alberta Heritage Foundation for Medical
Research and Alberta Health and
Wellness

The Keston Group