Telemedicine: building bridges, improving access, saving healthcare costs in rural and remote communities

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Disclosure Statement

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An interactive workshop will assist participants:

* To understand the terms: telemedicine, telehealth, e-health
* To learn how telemedicine is building bridges, improving access and saving costs in health care in rural communities
* To understand opportunities and challenges of telemedicine for individual participants, health organizations and health training institutions and colleges
Workplan for the Session

* Define telemedicine, telehealth and ehealth, review historical perspective of
* Define role of telemedicine and emerging technologies in medical and surgical practice in remote communities
* Discuss delivery models and benefits of telemedicine network
* Discuss the efficiencies and challenges of remote telementoring for surgical and interventional procedure
Workplan for the Session

* Envision how a successful telemedicine program might impact health care delivery in various regions - building bridges, improving access and saving costs
* Review results of some projects in telemedicine in individual physicians’ practice; hospitals and health institutions; undergraduate, postgraduate; hospitals and health institutions
* Discuss future possibilities
Definitions and Boundaries

- Telemedicine
- Telehealth
- E-Health
Historical Background

- History spans over 50 years
- Different story in different countries and regions
- USA, Canada, England, France, Europe, Asia, Africa, Australia and New Zealand, South America, Russia
1959- Dr. Albert Jutras sets up a Telemedicine project between two hospitals in Montreal – thus Telehealth in Canada

“The day will come when radiological consultation for sparsely populated areas can be conducted by television instead of the present questions and answers over the radio.” – Dr. Albert Jutras, 1959
Milestones in Telemedicine
Milestones in Telemedicine

- **1960s**
- NASA with astronauts into space got involved in telehealth
- NASA continued to develop technology and funded telehealth projects eg: medical care program to the Papago Indian reserves in Arizona (1972-1975)
- Costs were prohibitive and this initiative was stalled
Milestones in Telemedicine

* 1972
* First use of the term telemedicine by a group of physicians who set up a telemedicine service between the Massachusetts General Hospital and the Boston Airport
* Murphy, RL, Fitzpatrick, TB, Haynes et.al : Accuracy of Dermatologic Diagnoses by Television – ARCH Dermatology
Milestones in Telemedicine

* 1977
* In Canada, the longest running telehealth project started in Newfoundland and continues until today
* 2006
* Amalgamation of 3 regional telemedicine programs in Ontario – into one Ontario Telemedicine Network (OTN)
Telemedicine Milestones in other parts of the world

- India - Apollo Telemedicine Program
- Mali- Pilot project between Switzerland/Belgium and French West African Communities
- UK Story
- European Programs in Scandinavian and Mediterranean countries
Driving Force behind Telemedicine

- Need to reach under-serviced, isolated communities with appropriate health services and education
- Emerging technologies in electronic and information sharing
- Visionaries who were prepared to accept the challenge of meeting the needs of these communities
Telemedicine — Building Bridges, Improving Access, Saving Health Care Costs In Rural and Remote Communities

Telemedicine Forces

- Summarized with these keywords:
  - Technology
  - Innovation
  - Resilience
  - Efforts
  - collaboration
Telemedicine and emerging technologies in medical and surgical practice in remote communities can result in:

* Timely diagnosis and management
* Efficient use of health care providers and patients’ time
* Reduced travel time and expense
* Reduced anxiety and inconvenience to relatives
* Increased access to health services
* Public health education and disease prevention enhancement
* And more...
Delivery models and benefits of telemedicine networks

- Teleconsultation
- Telementoring
- Teleoncology, telepsychiatry, teledermatology
- Tele long-term care and chronic disease management
- Professional development and educational events
- Administrative program – meeting seminars, etc.
Delivery models and benefits of telemedicine network

- Benefits
- Cost reduction
- Sharing of technological service and maintenance
- Achieving sustainability
- Growing partnership, collaboration and team building
- Research and development
Efficiencies and challenges of remote telementoring for surgical and Interventional procedures

- Perceived efficiencies/positives
- New techniques are taught
- New equipment are acquired
- Minimizing and reducing list of capacity building and manpower training
- Minimal disruption of mentor’s true and program
- Mentee does not need to travel outside his domain of practice
Telementoring
Many possibilities.
Several specialties.
Efficiencies and Challenges

CHALLENGES

* Funding
* Long range planning
* Cultural mix and different
* Sustainability
* Politics
EFFICIENCIES

* Improved health care delivery
* Increased awareness of services
* Utilization of services increased
* Early diagnosis and interventions may result in improved outcomes
* Increased communication and collaboration among health care professionals
* Cost savings in health care
* Innovative technology driving efficient mode of care may evolve
How a successful telemedicine program might impact health care delivery in rural and remote communities

Ambulatory In-Person Visits

Wait Time

Acute Inpatient Days

Collaboration with Community Partners

Virtual Care Delivery

Community Hospitals

Rehabilitation

Primary Care

Home

Courtesy of BG
Factors that may lead to success

- Assessment
- Proper goals
- Manpower resource “full of champion”
- Funding availability
- Right technology for the program
- Quality assessment and evaluation
Expected results of a good telemedicine program

- Improved health care delivery
- Increased awareness of services
- Utilization MRI increase
- Early diagnosis and interventions may result in improved outcomes
- Increased communication and collaboration among health care professionals
- Cost savings in health care
- Innovative technology driven efficient mode of care my evolve
Ontario Telemedicine Network (OTN) Studio 285

- 2006 – First community urotelehealth studio in Ontario
- Folg Needs assessment, technological, structural, sound/colour, specifications, construction of studio
- Approval
- Went live Dec 2006
- Once/month – seeing 10-20 patients/session
- Has grown to 2 days / month
- Experience with building 2 studios – mobile/wall unit; desktop
- Now progressed to desktop
- Over the period of 2006-2015 – we have seen over 2000 patients
OTN Encounters 2006-2015

- Teleconsultation
- Teleassessment post-op
- Telecounselling re biopsy report
- Pre assessment and planning
- “Team care” approach
- Care review with primary care providers/other consultants
Diagnosed by us - preop consult by OTN
CT scan abdomen – confirmed renal cell ca. no mets
Radical nephrectomy/QA at YCH Richmond Hill
2 days post-op-discharged to daughter for convalescence in GTA
7 days later follow-up through OTN discussion of pathology report; daughter part of the encounter
Referred to oncology for collaborative Care
Case 2

- 78 years old man lived 304 km from Timmins
- Mild urinary symptoms
- PSA > 1,000 ug/l
- No bone pain, no weight loss
- Family MD called – patient booked for OTN
  - Management plan discussed with patient, relatives, and Family MD
  - Bone scan
  - u/s abdomen, pelvic and prostate ordered
  - Biopsy confirmed – Gleason grade 9 /10, adenocarcinoma

Started on hormonal therapy, PSA decreased to 6; follow-up on 36 months through OTN and periodic regular clinic visitis,
  - LHRH administration by Nurse at local hospital
Patient continued community leadership role until he passed away peacefully
Northern Ontario School of Medicine (NOSM) - Campus

In, by and for Northern Ontario
Distributed Community Engaged Learning

* Curriculum Innovations
* Community Engagement
* Clinical learning
* Distributed learning
* Longitudinal learning
* Integrated learning
Integrated Clinical Learning

Learning occurs at points of overlap – multiple overlap can lead to richer learning

Context:
- Clinical setting
- Area of care
- Physical environment
- Practice culture
- Community

Clinical Teachers
Medical Students
Patient & Family
Postgraduate Residents
Interprofessional Learners and Providers
Integrated learning by Telemedicine

- Undergraduate and postgraduate learning powered by technology.
integrating Telemedicine in training programs

* Family Practice
* Royal College Specialties
* Local Educational Groups
* Research programs
* Community Engagement
Telemedicine perspectives in the province of Ontario

* 1998: Launch of Ontario’s first telemedicine sites
* 2006: The three sites merged to become ONTARIO TELEMEDICINE NETWORK (OTN)
Anticipated Opportunities?

* **Ambulatory in-person visits:** 50% of health care visits can be done virtually

* **ED Visits:** 50-70% of non-critical ED visits can be avoided through remote monitoring, coaching and/or telemedicine

* **Acute Inpatient Days:** Faster transition to rehab for stroke can free up 45,000 acute bed days annually across the province (OSN); THC also supports reduced LOS for CHF, COPD; Home video visits for mental health reduced psychiatric hospitalization by 25% in the VHA system
# OTN Services and Programs

## Primary Care

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<th>Family Doctors</th>
<th>General Practitioners</th>
<th>Nurse Practitioners</th>
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OTN Services and Programs

Specialty Care

- Specialist Physicians
- Allied Healthcare

- Surgery
- Oncology
- Mental Health & Addictions

OTNhub:
- Videoconferencing
- Directory
- Scheduling
- Learning
- Clinical Programs:
  - OTNtelederm
  - Teleophthalmology
  - Telepsychiatry
# OTN Services and Programs

## Healthcare Organizations

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<th>Administrators</th>
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Possibilities with the OTNHub
Avoid travel grants to northern and rural communities to have 160,000 specialists visits ($62M)

Avoid 12,000 emergency visits from long term care ($9M)

Avoid 1,400 crisis emergency room visits by treating patients in lower cost settings ($600K)

Avoid 400 critical care transfers ($2M)

Through Telehomecare, reduce unscheduled ED visits, walk-in clinic visits and/or hospital admissions due to unmanaged chronic disease ($170M)
Potential Benefits of the OTNHub

TMCs & Nurses
- Low cost way to expand programs
- Backup endpoint
- Support/monitor to Education events from your desktop
- Be the local expert on the OTNhub to encourage adoption

Physicians & Allied Health
- Convenient and mobile access to telemedicine
- Attend rounds and special events from wherever
- Backup endpoint for when a room system is not available
- Soon - see patients at home

Administrators
- Enable new models of care
- Public health planning
- Increased efficiency – drives down operational costs
- Patient satisfaction – reduced travel and cost associated
OTNHub- The Future
* Telemedicine is a good tool for building equity in healthcare
* It improves access and saves costs
* Quality patient-centered care is achievable especially in rural and remote communities
* Hospitals, health care institutions, educational facilities and individual professional offices are encouraged to adopt telemedicine
* A glimpse into the future with smartphones, doctors’ offices will be transformed in time and space
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