OTN BSO Optimization - Literature Scan of Grey Literature

It is important to note that not all grey literature included in the scan is specific to dementia-related telemedicine care due to the limited grey literature published in this area.

a) Search Terms

Google search:
- Telemedicine + Dementia
- Telemedicine + Dementia + Best Practices
- Telemedicine Best Practices

b) Summary of Results

How is telemedicine being used (in Canada and internationally) to support patients, family members, and care teams who provide care and services for seniors? {across urban, small urban and rural areas}

• To increase access for patients and caregivers to health care services (including dementia care, respite, and home care)[1-4]
• To increase the ability of health care providers ability to see new patients[5]
• To provide clinical consultations[3,6,7] and specialist referral services[7]
• To improve show rate at live clinics[5]
• To enable more frequent and regular follow-up[5,8]
• To provide ongoing consultation and management of patients with cognitive complaints including pharmacologic and non- pharmacological management[9,10]
    ○ E.g., the majority of physician-patient telemedicine encounters involve urban physicians assisting rural primary care physicians with the diagnosis and clinical management of patients in the rural community, frequently accomplished via live video conferencing directly with the patient[3]
• To improve care coordination[10]
• To improve end of life care[1]
• To reduce travel time and costs for patients, caregivers, and health care providers[1-3,7-8,11-13]
• To connect families to specialized training and care (greatly enhancing the ability of rural families in providing care for their loved ones affected by Alzheimer's disease)[14]
• To provide patient education and discussion groups[9]
• To reduce the economic burden associated with long-term care costs for patients, families, and employers through early identification and intervention of Alzheimer's disease and other dementias[15]
• To support patient independence and wellbeing, letting them manage their long-term condition better[16]
• To provide remote patient monitoring (e.g. home telehealth) [7]
• To provide opportunities for care workers to develop new professional skills[3,9,11-12]
    ○ E.g., continued professional development through educational learning and training via video conferencing and secure professional portals[12]
    ○ E.g., provide both continuing education to health care providers using telehealth technology as well as providing primary and supportive education to patients and their families in support of care plans and health and wellness[12]

- To enable health care providers to develop contacts with other health and social care professionals, and to conduct meetings without physical proximity[11]

What are the promising practices/best practices to using telemedicine by physicians, specialists and care teams; as well as patients and families?

- New practice guidelines were recently released in October 2009 by the American Telemedicine Association regarding video-conferencing for telemental health[7]
- A best practice for improving physician's comfort with the telemedicine equipment is to find alternative non-clinical uses for the technology that allow physicians to practice and become more familiar with the equipment[3]
- Best practices for overcoming health care provider reluctance to accept telemedicine include finding ways to make the technology easier to use, improving the quality of audio and video transmission, making telemedicine more convenient for the physician to use, and giving the physician some financial ownership in the system promoting telemedicine amongst the physicians, administrators, and other health care professionals[3]
- Many key informants identify establishing physician champions on both the urban and rural side of a telemedicine program as a best practice for success[3]
- Best practices for overcoming the loss of face-to-face contact when using telemedicine is to help physicians learn how to improve their interpersonal communications skills and giving them the opportunity to experience the televideo physician-patient interaction first hand[3]
- Where demand exists, implementation of telemedicine is an obvious choice that will improve outcomes while reducing costs. Once a market assessment has been completed and the facility knows which services it will implement to better serve its patients, a timeline must be developed for the rollout of those new services. Don't rush the transition process, and be sure not to surprise patients with an early rollout of electronic doctors or other services that they're not yet expecting. Appreciate the extra time as a way to test the system, check security, and learn more about the new services being offered. When patients know how they'll benefit from a new healthcare system, they're more likely to embrace it. When it arrives on a scheduled date, not ahead of or behind schedule, they'll be more likely to appreciate it. Focus on patient satisfaction and outcomes, and the rest will follow[17]
- Those who operate telemedicine systems owe it to their physicians to train them in their new, virtual landscape. This training will serve as a key way to boost patient outcomes and to promote a smoother transition between traditional medicine and its electronic replacement. Physicians and nurses who have a good understanding of how a system works can use it more efficiently and promote better patient outcomes[17]
- It is a good idea to identify leaders who can monitor and manage telemedicine systems, keeping current with updates, new approaches, and new areas of opportunity. They can also serve to motivate the entire clinic, driving them to achieve better results with non-traditional tools and resources. Whether these leaders are trained in information systems, the healthcare profession, or something completely unrelated, their presence helps productivity and understanding[17]
- Presence of a Physician Champion at rural sites to encourage health care provider involvement in telemedicine[7]
- Strong technical and administrative support by hub (urban) facilities including training and technical assistance services for spoke (rural) sites[7]

What are the challenges/barriers to using telemedicine by physicians, specialists and care teams; as well as patients and families?

Health Care Provider Attitudes & Concerns

- Health care providers may have concerns about job security and be fearful of being replaced by technology[11]
- Both carers and care workers have expressed uncertainty and anxiety about the use of telecare (4)
- Resistance to change among care workers and professionals can present a barrier to the successful implementation of these technologies[3,7,11]
    - Physicians who have done things a certain way for a certain amount of time and find that it's working well feel like saying, "why change what's working well?' Most of us physicians, especially in rural communities, are not likely to adopt something new just because it's new and can act as a significant barrier until the use of telemedicine becomes more commonplace." [3]
- Physicians commented that they are reluctant to try something new unless they see a specifically defined need for the new technology. The barrier becomes the lack of imagination in figuring out how to solve the problem using telemedicine[3]
    - A very successful program manager described this theme as, "Physician engagement starts with a highly visible identified need that is important to them." Starting a program with a specific solution in mind without defining the need for the program was described as a barrier to adoption. She went on to say, "You need to start out with an understanding of what are your needs and then progress to answer the question 'how do we solve this problem with telemedicine'?" [5]
- Physicians must see an immediate benefit or a compelling need in order to adopt telemedicine and to continue to use it[3]
- Physicians are frequently described as being too time challenged to learn how to use new technology. Physicians are extremely busy people and anything that takes time away from the practice of medicine is seen as a distraction to be avoided. Physicians are also aware of the need to be as productive as possible with their time because income is directly proportional to the number of patient visits they complete in a work day. The inefficiency created by having to learn how to use a new technology in their clinical practice acts as a significant barrier to its adoption[3]
- Rural physicians fear of losing patients to urban specialists[3]

Clients Attitudes & Concerns

- "It's hard to sit here and talk, and if you feel like crying it's hard to cry to a computer screen. I just don't get to say what I want to say." [18]
- "Video contact can be difficult—the person just isn't there. It isn't the same. They can't see any emotion. You feel ridiculous just talking to a monitor. That is why I prefer a few other agencies. Someone is actually there." [18]
- "More one on one, no video. We should be able to talk to someone in person. Some [clients] don't care, they just want to get in and out, but I do. I need to talk." [18]
- "Set up video counselling via home computer; this would make life easier, and I would use it more."[18]
- "I have never seen the doctor or the counsellor in person since I started eight months ago. It feels impersonal. The actual time they speak and the way they do it doesn't justify the payments from OHIP. No other doctor would get a payment for this. How easy is that? Two to three minutes on a screen and not caring to visit us in eight months. There is no other specialist that would work like

that." [18]

Lack of Support/Buy-In
- Lacklustre sponsorship/engagement by senior decision makers[11]
- Lack of buy-in from key stakeholders[11]
- Little or no administrative support[3]
- Inadequate local staff support[7]
- The lack of a physician leader to serve as a champion for the use of telemedicine amongst other physicians is another barrier to adoption. A physician champion or medical director often has better rapport with other physicians. He or she utilizes the same language and can help peers overcome what they perceive as barriers to the adoption of telemedicine[3]
  - When asked to further describe what was meant by physician champion, one physician stated: You have to have a physician champion who is passionate to use the technology. Without one it is very difficult to sustain a program. The physician leader or champion is the guy that gets out there, talks to rural physicians, and helps them find solutions to their problems. No one can talk to docs like another doc. We've had telemedicine clinics for many years and its easily duplicable so why aren't there more of them? It's a lack of physician-driven leadership. The role of a physician champion is reported to be easy to explain but finding a physician to serve in the role is extremely difficult[3]
- Limited, inconsistent or poor project management[11]
- Frontline staff felt telecare was helpful in caring for people with dementia, giving confidence to both dementia sufferers and their carers; however, the authors of this study also noted concerns about additional pressure on carers when response staff did not perform their function well[11]

Limited Training/Information/Understanding
- Limited understanding and skills to implement service redesign[11]
- Lack of knowledge and training on how to use these technologies[11]
- Lack of information and awareness, as carers and care workers are often unaware of the range of telecare services available or how to access them[11]
- There is an ongoing need for orientation and training[14]
- Lack of knowledge and understanding of telemedicine technology can hinder its development and use - providers who are knowledgeable about telemedicine and its use are more likely to use telemedicine in the future[3]
  - A rural physician champion said, "Having the physicians understand it and its benefits both clinically and economically is important to its success. We demonstrate to the physician that by using telemedicine they are expanding their catchment area from which to draw patients, increasing their patient referrals for services, and making better use of their time." [3]
- Lack of technical expertise[3]
- Service provision via telehealth needs to be widened to include clinical discussions (such as pre-acute admission issues, case conferencing and dementia assessment) and for improved administrative coordination[19]

Cost & Resources
- As technology and capacity improve, requirements for more staff will increase. Therefore future costs to maintain the system will likely increase[14]
- Consultants and coordinators will always have some responsibility for the equipment; it is another

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tool in the interaction[14]
- Low reimbursement and return on investment[3]
- Inefficient use of technicians time[3]
- Telemedicine video conferencing equipment, medical instrumentation, and data transmission lines are expensive to purchase and maintain. The high cost of the equipment, on-going maintenance expense, and rapid obsolescence of equipment are perceived as barriers to adoption of this technology[3,7]
- Telemedicine programs depend highly on people with technological expertise. The absence of technical support personnel with the training and experience in setting up, maintaining, and trouble-shooting this technology is recognized as a major barrier to its use in several published studies[3]

Technology Challenges
- Engaging carers with technology is difficult if the carer is older and/or feels ill prepared to learn new skills[11]
- If the equipment does not work with what the client needed, was too difficult to use, was unsafe, did not work properly, or was not delivered on time all of which affected compliance[11]
- The equipment is a factor in every appointment; it is not invisible[14]
- Equipment malfunctions and the sudden loss of telecommunications transmission are cited as reasons clinical personnel would give up on the use of telemedicine[3]
- Lack of connectivity between telemedicine programs[3]

Relationship Building & Maintenance
- Opponents show evidence that telemedicine represents a threat to the traditional physician-patient relationship and demonstrate that physicians are still reluctant to adopt telemedicine as a means of providing care for their patients[3]
- Potential drawbacks to using telemedicine include the breakdown in the fundamental personal relationship between the patient and the physician[3,11], lack of physical contact with the patient[3,11], loss of communication between health care professionals[3], and lack of continuity with previous care provision[11]
- Loss of personal interaction may diminish quality of care[11]

Research/Standards in Telemedicine
- Lack of knowledge and vision[3]
- Inadequately defined need for telemedicine[3]
- Lack of scientific study about the adoption of telemedicine[3]
- The absence of standards of practice for the use of telemedicine[3]
  - One rural physician stated that "There are very little standards or guidance for the use of telemedicine. A lot of physicians are waiting for standards of practice. They feel a lot safer and more confident if they can refer to some sort of standard."[3]

Other
- Fear of the consequences of 'getting it wrong'[11]
- Potential for a mismatch between technologies and the needs of services users. Managing the differing needs of care workers, carers and the people they care for can also be challenging[11]

What are strategies/practical ideas about how to overcome potential challenges/barriers?

Training & Technical Support

- Short term memory loss (age related cognitive change) can also make learning about new AT difficult for frail older people who are also less used to learning while doing. This group are likely to need the support of a teacher/tutor/adviser at home[11]
- Studies have shown that in the case of dementia, new technology is no more likely to cause difficulties than familiar equipment and that careful attention should be given to training, not only during implementation but also continually through the use of telecare[11]
- Providing telecare users with training was also judged important - success in using telecare with older people could be achieved if the equipment was adapted to needs and if intensive instruction was given. Adequate instruction in use was important, and some researchers advise that instructions should be preferably given at home and should include family and carers[11]
- Training courses for both carers and care workers could be important in reducing anxieties about using these technologies, and addressing barriers concerning a lack of knowledge and understanding of how to use them[11]
- All participants should be briefed in use of the equipment[14]
- Some recent work has emphasised the need for both on and off the job training for care sector staff, preferably mandatory, with a survey of 254 staff in social care reporting in 2012 that current training opportunities regarding use of telemedicine was 'average to poor'[11]
- The IT staff, though generally invisible, is on the front line to ensure that the proper equipment is provided, that it functions adequately and that all are trained in its use and maintenance[14]
- The responsiveness of staff to potential issues and technical difficulties can make or break an appointment. Occasional equipment or technical issues may occur and the availability of staff for prompt resolution is essential[14]
- A written guide for use and maintenance of the equipment should be provided to all telemedicine sites[14]
- The absence of technical support personnel with the training and experience in setting up, maintaining, and trouble-shooting this technology is recognized as a major barrier to its use in several published studies. Equipment malfunctions and the sudden loss of telecommunications transmission are cited as reasons clinical personnel would give up on the use of telemedicine. A suggestion for overcoming this barrier was increasing the availability of technical support personnel and therefore the benefit they bring in making telemedicine as reliable and user-friendly as possible[3]
- Technology barriers to the adoption of telemedicine include the quality of the technology, lack of connectivity, and the absence of technical expertise. Significant improvements have been made in the quality of telemedicine equipment and the availability of high-speed data transmission, yet the quality of the video encounter is not that of a face-to-face visit[3]
    - This theme is best summarized by a telemedicine program manager when he said, "We believe that telemedicine technology is becoming less and less of a barrier. The technology is becoming simpler to set up and use." The real technical issues are related to the quality and reliability of the equipment, the transmission of information. He further said that, "You have to have the personnel to troubleshoot and fix it when it goes down." In addition to the inability to communicate between networks many key informants identified the absence of technical expertise and support as a barrier. As one program manager said, "You can buy the best equipment you can find, get the docs to use it, but if you don't have the technical people to be able to keep the system up and running on a full-time basis you'll fail." [3]
- Informants suggest that the best way to increase physician understanding and use of telemedicine technology is to incorporate it into their medical education[3]

Raising Awareness/Engagement in Telemedicine

- Another barrier to the successful uptake of telecare by carers concerns a lack of information and awareness, as carers and care workers are often unaware of the range of telecare services available or how to access them. To address this, it is argued more needs to be done to raise awareness of telecare in local areas[11]
- Care workers may have concerns about job security and be fearful of being replaced by technology. However, the introduction of telecare may open up possibilities for new roles and should not reduce contact time with people with dementia. Instead, the report claims, routine check visits can be replaced by equipment, freeing up staff time for more worthwhile social interaction[11]
- Knowledge, familiarity, and use of telemedicine technology improves physicians' comfort with the equipment and probability of their using it for clinical consultations[3]
- The practice of medicine has always involved the personal attention and physical presence of the physician. Accepting the reality of an electronic patient visit will take time and practice before the physician feels comfortable using this technology[3]
- One way to address the complaint that physicians believe they are too active to practice telemedicine is to engage them in the process when they are new to their practice and before they become busy[3]
    - One physician said, "We are concentrating on new doctors coming into town. We want to get to them before their practice is full and make sure telemedicine is a normal part of how they establish and grow their new practice[3]
- One suggestion for overcoming physician resistance to change includes getting physicians engaged in planning the telemedicine service[3]
    - Several key informants report that involving physicians in the planning stages of a new telemedicine venture helped them overcome their resistance[3]
    - Additionally one physician suggested the value of direct clinical experience with the telemedicine equipment as a means of overcoming physician resistance[3]
- Suggestions for overcoming a lack of knowledge and understanding about telemedicine include setting reasonable expectations for how telemedicine is used, providing physicians with the opportunity to try it, integrating telemedicine into medical education, allowing enough time for physicians to get accustomed to using it, and actively promoting it. Physicians need to understand that they won't be able to do everything they can in the office. Make sure that the clinicians fully understand the limitations of the technology in advance[3]

Assessing User Needs

- Both staff and carers have emphasised the need for integrating telecare with effective face to face services and support. This includes effective assessment of the needs of the carer and person cared for, and a coordinated response. Assessing telecare needs as part of a carer's assessment may be a way towards more integrated support[11]
- While many health and social care staff have emphasised the benefits of telecare for the people they support, they sometimes felt there was a mismatch between technologies and the needs of services users. Managing the differing needs of care workers, carers and the people they care for can also be challenging. To address this it has been recommended that telecare should be personalised to meet the specific needs of clients/carers[11]

Coordination

- To ensure program partners had access to the clients and care providers during sessions, each partnering agency needed to be informed of the interaction and coordinate with the host sites. From

the participant perspective, this coordination was essential in providing the continuity of care to individuals affected with Alzheimer's disease and their care provider. Though some components for telehealth trainings could be completed autonomously, the coordination at the patient level was the most beneficial in providing the supportive structure necessary for patient and care provider[14]

- The program initiative must be consistent in its application, throughout the time frame established. Services must continue without breaks or delay, as revitalizing services is often more difficult than simply maintaining services and visibility[14]
    - o E.g., during a project initiative, the loss of the nurse practitioner and the transition to the Cleveland Clinic, resulted in project delays. Though additional program partners (including the Alzheimer's Association and the Rural Coordinator) were able to compensate as available to continue activities, a loss of momentum for the program resulted[14]
- Use of a nurse at the remote site to socialize with the patient, interview the patient, and make sure that the urban physician had all the information needed in advance of the telemedicine visit improved the productivity and efficiency of the encounter[3]
- A telemedicine physician champion can assist in bridging the diverse and competing values and motivations of the clinical providers, policy-makers, managers, information technology personnel, and support staff[3]

Relationship Building
- Cultural differences from outreach relating to the acceptance of technology can influence the attractiveness of a telehealth initiative. The key to this outreach is to develop a trusting relationship with individuals in the target communities. As these relationships are built and leaders in the community are able to speak with other members of the targeted community the telehealth initiative may provide a larger impact to the target populations[14]
- Several additional factors must be considered when developing a telemedicine program for rural areas. As important as maintaining the physical link between provider consultants and specialists, rural providers, and patients, is the need to ensure healthy connections between program implementers, insurance companies, and public health authorities. Collaboration and shared objectives are key to making any telemedicine program successful[7]
- Excellent communication between all program partners is essential to successful program performance, project outcomes, and successful adaption of the program. Overall project communication must be frequent and consistent to identify and prevent or eliminate potential barriers and other issues[14]
- Ensuring that a telecare solution to health and social care needs did not result in a loss of valued personal contact[11]

Other
- Early introduction of telecare was essential; if it was implemented too late it was not effective[11]
- Establishing an appropriate balance between privacy and autonomy, as well as maximising safety[11]
- Preventing telecare from being used as a substitute for alternative services rather than as a complementary solution[11]
- Pro-technology users and 'early adopters were more likely to take up and adopt major packages of telecare[11]
- When the equipment is used for educational programs, brief lectures followed by discussion and opportunities for all to interact are better received than long lectures, as it is difficult to sit and "watch" a lecture on the monitor[14]

- Identifying aspects of the use of telemedicine that improve efficiency or expand opportunities for growth are important suggestions for overcoming resistance to adoption[3]
- Equipment must be up-to-date, and easy to use and maintain[14]
- Payment incentives based upon the number of patients seen or the volume of revenue generated still provide a significant incentive for employed physicians to be mindful of the efficient use of their time[3]
- Establishing responsibility for and ownership of the equipment, as well as who bears the costs[11]
- Equipment can be improved with the addition of earphones for those who may have difficulty hearing[14]

What are examples of success stories and benefits to physicians, care teams, patients, families, system as a whole for using telemedicine?

Benefits to Patients & Families
- Offer increased choice and independence for service users[11]
- Reduce pressures on carers and give them more personal freedom[11]
- Reduce the potential for accidents and falls in the home[11]
- Carers frequently describe increased 'peace of mind' as one of the key benefits of telecare[11]
- Telecare can reduce the stress carers experience[11,14]
- The role of telecare in meeting the care needs of older people can enhance their relationships with family or close friends[11]
- Carers have described an improved ability to care and to sustain the caring role through telemedicine[11]
- Studies have also found that networked telemedicine interventions' can help carers develop social networks and social support, reducing isolation[2,11]
- Using telecommunications technology to assist with the care of older people with dementia helped carers benefit from improved knowledge of operating such equipment, which enabled them to access new sources of support (e.g. online forums) [11]
- Telehealth solutions were also effective in connecting patients with their families and their providers during these critical times[13]
- Communities can stay connected to health professionals and have greater control and access to information and services[12]
- Reduced travel time and greater convenience to patients [2,3,12,13]
- Access to health care is also improved as a result of faster access to specialist physicians. For patients, it is more convenient and saves time[3]
- Improved access to dementia care services such as respite and home services[2]
- Reduce the need for residential care, mainly through delayed admissions[11]
- Reduce the number of visits to your GP and unplanned visits to the hospital that you need to make[16]
- Prevention of hospital admissions[1]
- Improved end of life care[1]
- By having rural sites, people are likely to get care sooner, to access care more consistently over time and to generally be engaged in efforts that may improve patients' quality of life[14]
- Telehealth has demonstrated improvements in patient quality of life and in achieving better outcomes. More than 80% of patients reported satisfaction with these remote services, better capability to manage their care, and measurable improvements in clinical outcomes and hospitalizations[13]

- Improve access to healthcare for a wide range of conditions, including heart and cerebrovascular disease, diabetes, cancer, psychiatric disorders, and trauma[1,4]
- Promote individual adoption of healthy lifestyles and self-care[4]
- Reduction in use of antipsychotic medications[1]

Benefits to Health Care Providers/Health Care System
- Improved staff confidence in managing psychiatric disorders in the elderly[1]
- Reduction in travel and cost for staff to counsel patients[1,3,7,11]
- Reduces the number of client visits needed[11]
- Improved access to outlying areas through telemedicine technology[2]
- Contribute to the development of a range of preventative services[11]
- Telemedicine technology is one option to maximize the productivity of physicians, expand access to care, improve quality, increase efficiency, and reduce cost[3]
- Benefits of using telemedicine for physician-patient encounters include improved access to patient information, the ability to provide care not previously deliverable at a remote site, better education opportunities for rural providers, improved quality control, patient screening programs, and reduced cost[3]
- Staff are generally positive about the benefits of telecare for the people they support and their families[11]
- A study which explored the impact of telecare on care workers' job roles and on service delivery found that telecare had little impact on their work and was easily integrated into routine activities[11]
- Social care staff reported that having telecare in place improved their ability to carry out their role effectively, providing them with another tool to assist service users and improving system responsiveness[11]
- Care workers felt telecare services offered them opportunities to develop new professional skills, and a small minority said their workloads were lower when telecare was used[11]
- More opportunities to provide dementia-related education[2]
- Cohesive teamwork between the physician, social worker, patient and caregiver that reduces miscommunication and redundancy[2]
- Leverage of a shared medical visit format to increase access to dementia care specialists[2]
- The system is an efficient and feasible method for providing clinical care for patients with dementia[14]
- Promote patient-centered care at lower cost and in local environments[4]
- Enhance efficiency in clinical decision-making, prescription ordering, and mentoring[4]
- Increase effectiveness of chronic disease management in both long-term care facilities and in the home[4]
- In 2010, Telehealth was used for Mental Health consults in 54% of the reported 187,385 clinical events; Almost 94,000 consults were performed for rural Canadians in 2010[13]
- Quality Telehealth demonstrated improvements in timeliness of care, leading to improved outcomes[13]
- Current Telehealth activity across Canada has resulted in annual health system cost avoidance of approximately $55 million and personal travel cost savings of $70 million[13]
- Telemedicine services would provide a means for geriatric input following hospitalization in a timely manner to hopefully maintain patients in the community and prevent re-admission Videoconferencing consultation services are extremely client focused in so far as they allow the individual to be seen closer to their home in a more familiar setting. Client satisfaction data collected by the Ontario Telemedicine Network indicates that individuals would rather receive teleconference

services as opposed to traveling longer distances to meet with a specialist if they are given the choice[20]

Other
- As technology improves, the capacity of the system improves, and existing problems can be resolved[14]
- Use of equipment is generally good; people are able to communicate through the system[14]

Success Stories:
- University of Texas (UT) Southwestern and the Choctaw Nation (United States) - UT Southwestern has a federally funded Alzheimer's Center and a satellite telemedicine site in Choctaw Nation since 2001. Choctaw Nation includes 15,000 square miles in the southeastern Oklahoma (approximately 80,000 persons). Choctaw Nation Healthcare Center is in Talihina, OK (pop. 1,200). The aims of the telemedicine service are to: Provide excellent service; More rapid response to clinical need (as team can go to Oklahoma only 3x/year); Increase our ability to see new patients; Improve show rate at live clinics; Optimize faculty time; Enable more frequent and regular follow-up; Facilitate research by creating good will; Mastering videoconferencing technology. Satisfaction Surveys were distributed to families about our telemedicine service: 86% were very satisfied or satisfied[5]
- Bradford City, Northern England (United Kingdom) - A Bradford care home which specialises in looking after elderly residents with dementia has been linked up to a Telehealth hub at Airedale Hospital providing care 24 hours-a-day, seven-days-a-week. And staff at Ashville, in Idle, used the new telemedicine service for the first time to get round-the-clock care from specialist nurses for one of its residents on New Year's Eve. The home is amongst the first wave of 50 nursing and residential care homes funded by City and Bradford District Clinical Commissioning Groups (CCGs) to be able to get urgent medical help from hospital consultants or specialist nurse on screen via a secure video link if and when they need it – without having to leave the comfort of their own surroundings. The Telehealth hub is staffed by specialist nurses who can assess patients as well as support the nursing home staff to provide any additional care[21]
- Abbeyfield Care Home, Scotland (United Kingdom)- A Video Conferencing unit was installed in Abbeyfield Care Home, Ballachulish, allowing twice weekly nurse led clinics under the supervision of the consultant psychiatrist. The clinic aims to: improve access to psychiatric services; reduce unnecessary admissions; reduce antipsychotic use for people with dementia; and improve the management of behavioural and psychiatric symptoms of dementia. Data gathered over the first 4 months has provided very promising results. There was a reduction in the use of antipsychotic medication, prevention of hospital admissions (with potential savings of £40,600), improved end of life care, significantly improved access to psychiatric services and an increase in staff confidence in managing psychiatric disorders in the elderly. Patients who were able to complete questionnaires indicated that they were satisfied with the clinic, felt comfortable and listened to, were happy to have further consultations by video conferencing and did not want to wait longer or travel further for a face to face appointment. Even those with severe dementia were able to benefit from the clinic. When patients were reviewed face to face there were no occasions where the assessment and/or management plan made during the video conferencing was found to have been inaccurate. This level of input without utilising telemedicine would involve a significant amount of time travelling for staff and high travel costs. There is the added benefit of a reduction in carbon emission by reducing the

number of journeys from the base hospital to the care home. Overall, technology such as video conferencing can be used successfully with the elderly, even those living with moderate to severe dementia within a care home environment, to improve access to treatment, improve patient outcomes and reduce costs[1]

- Carers studied in an evaluation of the 'ACTiON' in Sweden (which provided information, education and support to carers and care workers through telemedicine) described an improved ability to care and to sustain the caring role[11]

- Seattle, Washington (Unite States): We present here a treatment model being piloted at VA Puget Sound Healthcare System that adapts the Co-operative Dementia Care Clinic (CDCC) model to tele-medicine delivery. The CDCC model, originally developed in a university based Memory Disorders clinic, is a shared medical visit model where patient-caregiver dyads meet as a group together with a geriatric psychiatrist and social worker who provide specialized dementia care. In our telemedicine adaptation, a neurologist or geriatric psychiatrist and a licensed social worker meet with a group of 4 to 6 patients with mild-moderate dementia and their caregivers. The physician and social worker are located in the VA Puget Sound Seattle campus and the patients and caregivers are located in a remote site, interfacing through a video teleconferencing system. A geriatric registered nurse is located at the remote site and provides coordination and local support. Visits occur on a monthly basis, and patients and caregivers decide the frequency and number of visits they wish to attend. The first pilot telemedicine dementia care group started in May 2013. We anticipate several advantages for this approach, including cohesive teamwork between the physician, social worker, patient and caregiver that reduces miscommunication and redundancy; improved access to dementia care services such as respite and home services; more opportunities to provide dementia-related education; reduced travel time and greater convenience to patients; and peer-to-peer support through the group dynamic. During this early stage in our pilot program, we will assess outcomes such as the number of and types of physician and social work interventions provided (e.g. changes in chronic disease care, medication management, referrals for respite or adult day health), patient satisfaction, effects on caregiver stress, and nature of dementia-related education provided to patients and caregivers. A telemedicine CDCC model holds potential as a treatment approach that better provides services to patients with dementia and their caregivers lacking access to specialized dementia services in their home communities. Unique qualities include the collaborative nature of care between the physician, nurse, social worker, patients, caregivers, and peers; leverage of a shared medical visit format to increase access to dementia care specialists; and improved access to outlying areas through telemedicine technology[2]

- Nevada's Early Stage Dementia Project, Telehealth Early Phase Patient and Family Support Program (TESP) (United States) - For the period of September 30, 2008 through March 31, 2010, Nevada's goal was to improve function and delay institutionalization of rural dementia patients, through telehealth initiatives. Connecting individuals with Alzheimer's disease and their care providers, especially in rural areas, to a supportive network of medical and support specialists maximizes available resources and ensures efficiency for service delivery throughout Nevada. The targeted populations for Nevada's project were rural, financially compromised individuals with early stage Alzheimer's Disease and their family caregivers. A special emphasis was given to Hispanic and Spanish-speaking populations and Native American populations for both caregiver/care receiver dyads. Target populations were mainly comprised of individuals in rural areas of Northern Nevada and included Reno, Carson City, Elko, Winnemucca, and Battle Mountain. The telehealth project was developed to connect rural and underserved populations to medical and support specialists. Rural areas of Nevada have limited access to medical professionals and support programs, often taken for

granted in more urban areas of the state. Existing familiar sites and organizations were used to connect the urban and specialized areas of Nevada to rural areas and underserved populations using compressed video. Telehealth activities began to decline in July 2009, with the loss of the nurse practitioner initially involved in the project. Neurologists from Las Vegas began flying to Reno weekly to continue program development and support, and continued trips to Reno even after the nurse practitioner position was filled. The clinic referred clients to the Alzheimer's Association, as needed, for additional caregiver and patient support, beyond the diagnosis and medical perspectives. The partnership between the Cleveland Clinic Lou Ruvo Center for Brain Health and the Alzheimer's Association of Northern Nevada and Northern California continues to provide the continuity of services to Nevadans affected by Alzheimer's disease and their care providers. Lessons learned from two years of monitoring: The IT staff, though generally invisible, is on the front line to ensure that the proper equipment is provided, that it functions adequately and that all are trained in its use and maintenance; The responsiveness of staff to potential issues and technical difficulties can make or break an appointment. Occasional equipment or technical issues may occur and the availability of staff for prompt resolution is essential; When the equipment is used for educational programs, brief lectures followed by discussion and opportunities for all to interact are better received than long lectures, as it is difficult to sit and "watch" a lecture on the monitor; All participants should be briefed in use of the equipment; A written guide for use and maintenance of the equipment should be provided to all telemedicine sites; Equipment can be improved with the addition of earphones for those who may have difficulty hearing[14]

- San Francisco Veterans Administration (SFVA) Memory Disorders Clinic (MDC) (United States) - We used telemedicine to evaluate patients with cognitive impairment in rural Northern California using a multidisciplinary team to determine if a clinical diagnosis and treatment recommendations could be made using this technology. Patients at a rural veteran's community clinic nearly 300 miles north of San Francisco were referred by their local provider for evaluation of memory complaints by the multidisciplinary team of the San Francisco Veterans Administration (SFVA) Memory Disorders Clinic (MDC). The telemedicine team consisted of a physician who performed a history and focused physical exam and a neuropsychologist who administered selected components of a neuropsychological battery used in the MDC and a liaison clinician at the community clinic was trained by MDC staff in the evaluation of patients with cognitive impairment and was present for the evaluation to facilitate the components of the evaluation Community clinic staff attended the MDC case conference via telemedicine to discuss diagnosis and recommendations. We have evaluated 10 new patients. Patients included those unable to travel to the SFVAMC who had an involved caregiver. Patients with significant sensory deficits (e.g., hearing or vision) or moderate-severe dementia (Mini Mental State Examination < 15) were excluded. In each case, the telemedicine format permitted the MDC team to arrive at a working diagnosis; 7 patients with dementia, 2 with mild cognitive impairment and 1 cognitively normal. Relevant treatment recommendations (antidepressant therapy, cholinesterase inhibitors, counseling about vascular risk factor reduction and behavioral management strategies) were made to the patients and discussed with providers who joined the clinic conference. Telemedicine is emerging as an effective way to provide consultation and care to rural residents who may not have access to specialty services. Further research about outcomes is needed[9]

- Telemedicine Alzheimer's and Dementia Clinics (Nevada, United States) - Through the capabilities that telemedicine offers, Battle Mountain General Hospital and the University of Nevada, School of Medicine bring urban medical specialists face-to-face with Alzheimer's and dementia patients in Battle Mountain. Individuals identified by community screening sessions or through physicians'

offices are also provided follow-up care and ongoing medication management. In addition to medical care, the telemedicine project is used to train health care professionals, health care providers and caregivers; and to provide a venue by which support groups can meet. This telemedicine program is also aimed at reducing the economic burden associated with long-term care costs for patients, families, and employers through early identification and intervention of Alzheimer's disease and other dementias. Since its implementation, several local families have benefitted from the Telemedicine Clinic[15]

- Lochaber Telemedicine Clinic (United Kingdom) – Case study: 86 year old lady, severe dementia. Two recent admissions to hospital with challenging behaviour that staff felt unable to manage. Recurrence of same symptoms mainly during interventions (scratching, kicking, biting, shouting). At times requiring 3 staff to assist. Poor compliance with medication. One occasion so agitated she refused interview via videoconference and attempted to push videoconference unit over. However, discussing her with staff and putting in place various behavioural techniques (validation/distraction/ minimising stimulation) staff confidence improved as did her behaviour and compliance with medication. Contact information for staff to arrange violence and aggression training given. No additional medication was prescribed. Admission was avoided (similar symptoms resulted in admission previously). Developed an infection in the setting of late stage dementia, reviewed by GP for palliative care and died peacefully in her local area close to her family instead of 80 miles away in a dementia ward[22]

- Dementia-Behavioral Assessment and Response Team (D-BART) (United States) – D-BART has been making one to two on-site visits a week to nursing and assisted living facilities and patients' homes. Unfortunately, extensive travel time to local nursing homes has limited this program's capacity. This project aims to change that paradigm and provide electronic consultations. D-BART is providing dementia behavior management consultations to local nursing homes using telemedicine. Laptops and Skype allow nursing homes quick connections with Mayo Clinic psychiatrists and neuropsychologists when dementia patients exhibit disruptive behaviors, eliminating the need to physically drive to the nursing homes to see patients has opened up greater capacity to see more patients. In the past, care centers often had to wait two weeks for a consultation. Wait times of up to four to six weeks were not unusual. As a result of this new model, 75 percent of all requests are scheduled within one week. Prior to starting the teleconferences, the D-BART averaged 5.3 consultations a month. Now, capacity is about 11 consults a month[8]

- Thunder Bay Regional Health Sciences Centre (TBRHSC) Telemedicine Program (Northwestern Ontario) - Telemedicine (aka Telehealth in other Provinces) is a secure video connection facilitated by the Ontario Telemedicine Network (OTN) and the Keewaytinook Okimakanak Telemedicine Network (KOTM). TBRHSC Telemedicine is one of the busiest Telemedicine sites in Canada. Last year, TBRHSC Telemedicine used secure connections and 25 video conference systems to support more than 8,600 events. The vast majority of these events were clinical consultations. More than 400 consultants representing 82 specialties/sub-specialties offered service to the residents of Northwestern Ontario using videoconferencing technology. In 2011, our program met or exceeded all Accreditation Canada's 2010 standards for best practices specific to a Telemedicine program. Additionally, Tele-visitation was designated a "leading practice" by that same survey team. Currently, people living in Thunder Bay who access consultants in Eastern Ontario and out of province, are asking their doctors, "can this consultation or follow-up happen by video?". Increasingly the answer is YES![6]

- Telemedicine-Based Collaborative Care Model (University of Arkansas for Medical Sciences (UAMS) and the Central Arkansas Veterans Health Care System) (United States): Aim is to improve

depression outcomes (response and remission) in rural primary care practices that lack on-site mental health specialists. Model: Begun in 2003, implementation of the model has taken place in 19 clinics, including 12 Veterans Affairs Community-Based Outpatient Clinics and 7 Federally Qualified Health Centers around the state of Arkansas. To date, over 763 patients have received care through this model. The intervention requires at least three types of providers: 1) on-site primary care providers; 2) off-site telephone nurse care managers (CM); and 3) off-site tele-psychiatrists. On-site primary care providers screen, diagnose, and prescribe antidepressants to patients. CMs conduct biweekly telephone encounters using a web-based decision support system. CM activities include: education, assessment of barriers, preferences and co-morbidities, patient self-management, and monitoring of symptoms, adherence and side-effects. Tele-psychiatrists provide clinical supervision for CMs during weekly meetings to discuss new patients and recommendations for patients failing treatment with primary care providers, as well as consultations with patients via interactive video. Impact: 31% of patients receiving telemedicine-based collaborative care during a study of Community-based Outpatient Clinics in Arkansas experienced a 50% reduction in depression symptom severity. Patients receiving collaborative care through teleconferencing showed an increase in Quality Adjusted Life Years (QALYs), improvement in medication adherence, and lower likelihood of remission after 12 months. Challenges: Finding an entity to host the off-site depression care team (nurse care manager, psychiatrist, psychologist) and a mechanism to pay the off-site care team were the biggest challenges to implementation. Policy Implications: Policy reform efforts should address reimbursement for telemental health services using a capitation method rather than the per-patient per-encounter method[7]

- Maine Telemedicine System (MTS) (United States) - Objective(s): To address the state's health disparities by increasing access to healthcare, mental health, social services, and distance education throughout Maine using telemedicine technology. Model: MTS is composed of a number of regional telemedicine networks in the state, including Downeast Telecommunications Services, Maine Telemedicine Services, Northern Maine Telehealth Network, Aroostook Visiting Nurse Association, and Eastern Maine Healthcare's Northern New England Telemedicine System. Because of the large number of partners and telemedicine sites, MTS is now considered a statewide program. The major applications of MTS are mental health, diabetes, primary care, pediatrics, genetics, and dermatology. Primary care is provided through MTS in the form of mobile telemedicine boat service to small islands off the coast. The directors of MTS identify two reasons the project is unique: 1) the system is mainly organized as an open, collaborative alliance of independent healthcare organizations; and 2) MTS does not follow the common hub and spoke model-instead, a health center (RMCL) in one of the state's most rural areas has taken the lead in coordinating the network activities. Currently over 200 sites, ranging from Indian health centers to state social service agencies, participate in telemedicine activities through the network. All 16 counties in Maine have at least one site participating in MTS. MTS' role in facilitating the introduction of a new site/organization to the network includes telemedicine demonstrations for providers, training of local site coordinators, protocol development, quality assurance, and continuing medical education planning. Impact: In a survey conducted in 2000 with 65 telemedicine sessions, 95% of patients, site coordinators, referring providers, and consulting providers found the telehealth sessions moderately or highly satisfactory. In 2,619 home health televisits, 95% of patients and 98% of staff found the technology "very satisfactory." Total estimated savings for a single clinical session, educational session, and administrative session are $491, $496, and $386, respectively. Between 1998 and 2002, the network had over 1,000 telemedicine sessions and over 800 home health televisits. Challenges: As with most telemedicine networks, financial sustainability will rely on the volume of usage by all participating

sites, as well as current state policies on Medicaid reimbursement. MTS is optimistic that the network will become sustainable due to the cost savings observed from transportation and travel of patients and providers[7]

What does the future of telemedicine look like in supporting seniors care?

- Despite the growing body of research in this area, there remains a lack of understanding of how the social and personal characteristics of people, carers and care workers may shape their use of telecare. Research is still at an early stage and findings are often inconclusive, indicating the need for further studies on the implications of telecare for carers and care workers[11]
- Future Priorities of Telehealth Programs: Expanding/upgrading telehealth network and technology infrastructure to better serve more communities; Introducing or increasing the use of digital stethoscopes, cameras and other medical peripherals; Developing policy and procedures to further improve and support clinical and educational activities; On-boarding of telehealth services to provincial scheduling systems where these are in place, Expanding the use of desktop videoconferencing in such clinical areas as audiology, dermatology, eating disorders gastroenterology as well as to serve the educational needs of patients and clients in the areas of general health and mental wellbeing, elder health and wellness, rheumatology and stroke[12]
- There is a lack of scientifically based studies examining the barriers to adoption of telemedicine in the literature. Most studies while grounded in qualitative or quantitative theory, have been conducted on a rather limited sample size or were confined by the scope of the study to a particular program, region, state, or country[3]

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