



ICON Meeting

Improving Cognitive and Joint Health Network

July 24-25, 2014

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Executive Summary

This report summarizes the ICON (Improving Cognitive & Joint Health Network) Annual Meeting held on July 24 – 25, 2014, in Vancouver, British Columbia. The objective of this meeting was to create a 3-year work plan. The meeting was attended by 22 people, including researchers from health and computer science disciplines, patients/consumers, health professionals, and partners from the software industry.

The 1.5-day meeting included a mix of short presentations and discussions. The following topics were discussed:

- Opportunities for using digital technologies to promote healthy aging
- Opportunities for using digital technologies to improve prevention and treatment of cognitive impairment and chronic joint diseases
- Support for trainees

A number of ‘know-do’ gaps in brain and joint health were identified. In general, members would consider ICON as successful in 3 years if: 1) our knowledge translation (KT) activities demonstrate improvement in outcomes, 2) strong partnerships are developed, 3) a training program is established, and 4) the network is action-oriented and self-sustainable.

ICON members have brought a variety of resources, including connections with their own stakeholders, methodological expertise, established facilities/IT platforms, and financial support. Also, ideas for training opportunities were discussed.

The followings were recommended for the ICON work plan:

- Focus on improving physical activity, which was identified as a high priority area by ICON members. Despite the evidence that being active could improve brain and joint health, sedentary lifestyle was highly prevalent. Physical activity has been shown as one of the effective and inexpensive interventions for people with cognitive impairment and arthritis.
- The work plan should include 3 components: 1) co-development of digital media-enabled KT tools and implementation strategies, 2) rigorous evaluation, and 3) a marketing/physical activity promotion strategy, to be carried out simultaneously with the evaluation.
- ICON will promote physical activity across the health continuum, from healthy individuals to patients with dementia and arthritis.
- Development of KT tools will involve researchers, patients/the public, health professionals, and software industry partners.
- Trainees will be involved in ICON-funded projects in order to provide training opportunities.

A work plan is proposed based on the discussion. ICON members are encouraged to review and provide feedback.

1.0 Background

ICON (**I**mproving **C**ognitive & **J**oint Health **N**etwork) is a 3-year Canadian Institutes of Health Research (CIHR) -funded knowledge translation (KT) network. Funding was received in April 2014. Our **vision** is to optimize mobility of older Canadians by modernizing the process of KT. Initially, ICON had 16 members from 9 research programs/academic institutions and 4 organizations representing patients/caregivers, health professionals, digital media, and the general public. The network has since grown to include 22 members from British Columbia (BC), Alberta, Ontario, Quebec and Nova Scotia ([Appendix A](#)).

2.0 Pre-meeting Public Survey

To engage the public in the development of KT priorities, an online survey was conducted in July 2014. Our goals were to identify challenges faced by people living with cognitive impairment or arthritis, and to understand their views on how digital media should be used for improving brain/joint health. We defined digital media as *'mobile apps, social networking tools, and health tracking devices, such as blood glucose monitors and physical activity trackers'*.

We received 825 complete responses (564 English, 261 French); of those, 34.2% were age 65 or over and 80.2% were females. 33.2% were from Quebec, 30.4% from Ontario and 26.6% from British Columbia.

Preliminary analysis of 200 responses was presented at the ICON meeting. [Table 1](#) summarizes the top three risk factors of cognitive impairment and arthritis as perceived by the respondents.

The most common challenges faced by people with cognitive impairment were having access to early diagnosis and treatment, loss of independence, and decreased quality of life. For people with arthritis, challenges include managing pain and fatigue.

[Table 2](#) summarizes respondents' perceived roles of digital media in the management of dementia and arthritis. Interestingly, over a quarter of respondents did not know or did not think that digital media play a role in prevention/treatment of dementia and arthritis.

Table 1: What increases the risk of...

Dementia, Alzheimer's disease	n = 200
1. Genetic predisposition	65 (32.5%)
2. Lack of mental stimulation	55 (27.5%)
3. Sedentary lifestyle	51 (25.5%)
Don't know	22 (11.0)
Osteoarthritis	
1. Genetic predisposition	65 (32.5%)
2. Sedentary lifestyle	49 (24.5%)
3. Injury	47 (23.5%)
Don't know	17 (8.5%)
Inflammatory arthritis	
1. Genetic predisposition	72 (36.0%)
2. Diet	19 (9.5%)
3. Environmental toxin/pollution	16 (8.0%)
Don't know	37 (18.5%)

Table 2: Roles of digital media in...

Dementia, Alzheimer's disease	n = 200
1. Brain exercises / games	23 (11.5%)
2. Advertising, public education	23 (11.5%)
3. Improve access to up-to-date information and research	15 (7.5%)
Don't know	44 (22.0%)
Don't think digital media can help	14 (7.0%)
Arthritis	
1. Advertising, public education	32 (16.0%)
2. Tracking / motivating physical activity	26 (13.0%)
3. Improve access to up-to-date information and research	25 (12.5%)
Don't know	42 (21.0%)
Don't think digital media can help	11 (5.5%)

▶ 17



3.0 The ICON Meeting

The ICON Meeting was held on July 24 – 25, 2014, in Vancouver, BC. The objective was to create a 3-year work plan. The 1.5-day meeting included a mix of short presentations and discussions, focusing on 3 topics ([Appendix B: Meeting Agenda](#)):

- Opportunities for using digital technologies to promote healthy aging.
- Opportunities for using digital technologies to improve prevention and treatment of cognitive impairment and chronic joint diseases.
- Support for trainees.

3.1 Day 1

Day 1 included a series of presentations by ICON members. They were asked to address 3 questions:

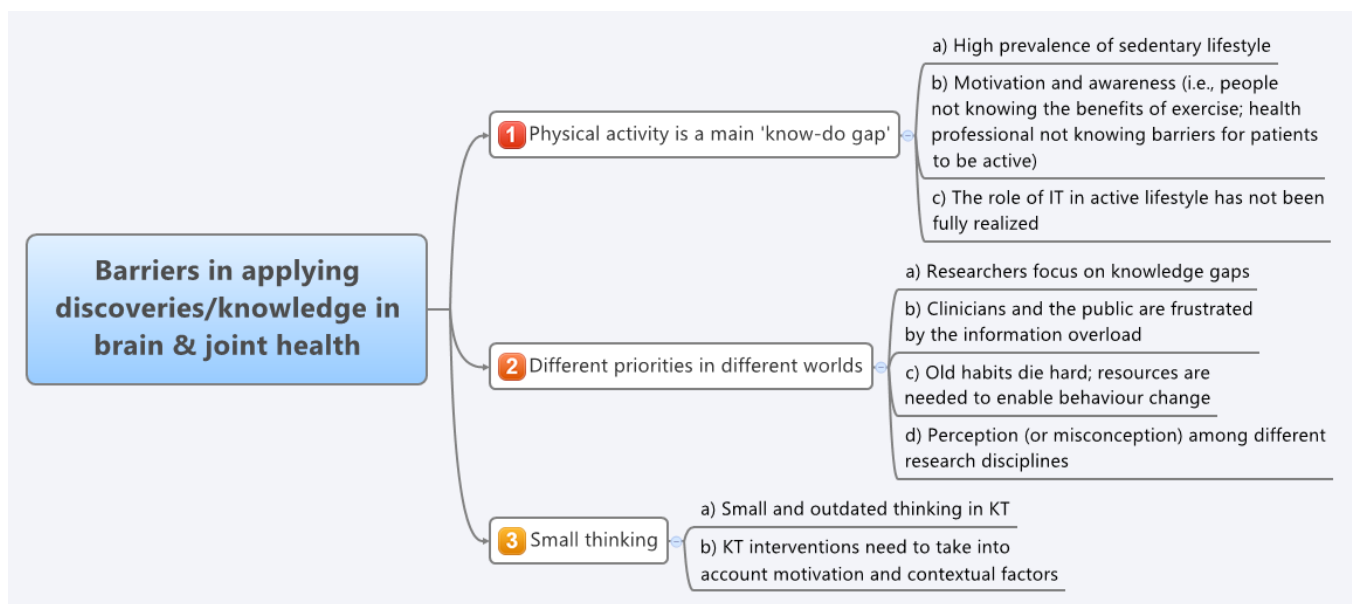
- In your field, what are the gaps in applying the major discoveries/knowledge to prevent and treat cognitive impairment and/or arthritis?
- How does a successful ICON look in 3 years?
- What do you and your organization bring to ICON?

All presentations and discussion recordings were analysed (see [Appendix C: Summary of Presentations](#)). While everyone contributed, only names of the main proponents of specific ideas are listed below.

3.1.1 What are the gaps in applying major discoveries/knowledge?

Three themes emerged from the presentations regarding gaps in applying major discoveries/knowledge to manage cognitive impairment and arthritis ([Figure 1](#)): **1**) physical activity has not been fully incorporated in the promotion of brain and joint health; **2**) different priorities in different worlds; **3**) small and outdated thinking in moving discoveries and knowledge to patients and the public.

Figure 1: Barriers to applying discoveries/knowledge



Theme 1: Physical activity is a main ‘know-do gap’. While many different aspects of health were discussed, the consensus was that increasing physical activity represented one of the most urgent and most feasible targets to address. Several presenters spoke about the high prevalence of a sedentary lifestyle and the urgent need for innovative interventions to improve physical activity participation (Liu-Ambrose, Li). It was recognized that motivation and awareness (e.g., knowing the benefits of exercise for people with cognitive decline) were major barriers. Some people might not know how to start exercising safely (Liu-Ambrose, Kirby). While digital technologies are becoming popular in sports and recreational activities, their role in supporting an active lifestyle among people with chronic diseases has not been fully realized (Kirby).

Theme 2: Different priorities in different worlds. Different sectors approached the ‘gaps’ question differently. Researchers tended to focus on the knowledge gaps; e.g., lack of evidence in managing cognitive impairment (Kastner); lack of effective strategies to implement shared decision-making (Légaré); lack of knowledge about the connection between brain health and joint health (Jones). Health professionals and members of the public, on the other hand, viewed information overload as the culprit for the know-do gap (Schwartz, Kayfetz). They recognized that ‘old habits die hard’ (Soever, O’Hagan) and felt that resources such as skilled clinicians (Soever), community services (Kayfetz) and funding (Koehn) ought to be present in order to improve the use of new discoveries and knowledge to change behaviours. Also, researchers from computer science and the health sector might have misconceptions about each other’s field, and this could hinder collaboration (Gromala).

Theme 3: Small thinking. From the patients’ perspective, a major issue was the ‘small and outdated thinking in moving new discoveries and knowledge to patients and the public’ (Koehn). This was echoed by several researchers who pointed out the poor integration of psychology and social sciences in developing KT strategies that takes into account motivations of human behaviours and the contextual factors (Shaw, Légaré, Kastner).

Discussion: Several members spoke about combining the strengths within ICON in the next 3 years to target physical activity for promoting brain and joint health.

One suggestion was an online marketing campaign, ‘**A More Active You**’ (Dunbar), to encourage people walking 10 blocks a day, coupling with the development of new mobile apps/monitoring tools and a rigorous evaluation process. Expertise from health, computer, behavioural and social sciences, as well as partners from patient and health professional groups, the digital media sector and the public will be crucial for carrying out this campaign.

3.1.2 How would a successful ICON look in 3 years?

Five themes were identified on how ‘a successful ICON’ would look at the end of the funding period (Figure 2).

Figure 2: How would a successful ICON look in 3 years?



Theme 1: Demonstrate improved outcomes. A key indicator of success is ICON’s ability to demonstrate the impact of our KT activities/products on individual and clinical practice outcomes (Li, Kastner, O’Hagan, Légaré). The evaluation process should account for individual characteristics and contextual factors (Kastner). Also, it was felt that we should include outcomes relevant to patient populations, caregivers, as well as healthy individuals when possible (Kastner, Kayfetz).

Theme 2: Develop strong partnerships. Having strong multi-disciplinary and multi-sector partnerships was deemed to be essential to the success of ICON. Members envisioned cohesive partnerships: 1) across health and computer science disciplines (Soever, Li), 2) among public/non-profit & industry partners (Kayfetz, Koehn, Soever, Li), 3) with the GRAND NCE (Graphics, Animation, and New Media, a Network of Centres of Excellence) (Gromala), and 4) with knowledge users outside of ICON (Koehn).

Theme 3: Include a training program. A key indicator of success for ICON is its ability to recruit highly qualified trainees from health and computer science to develop skills in KT (Liu-Ambrose, Koehn, Jones).

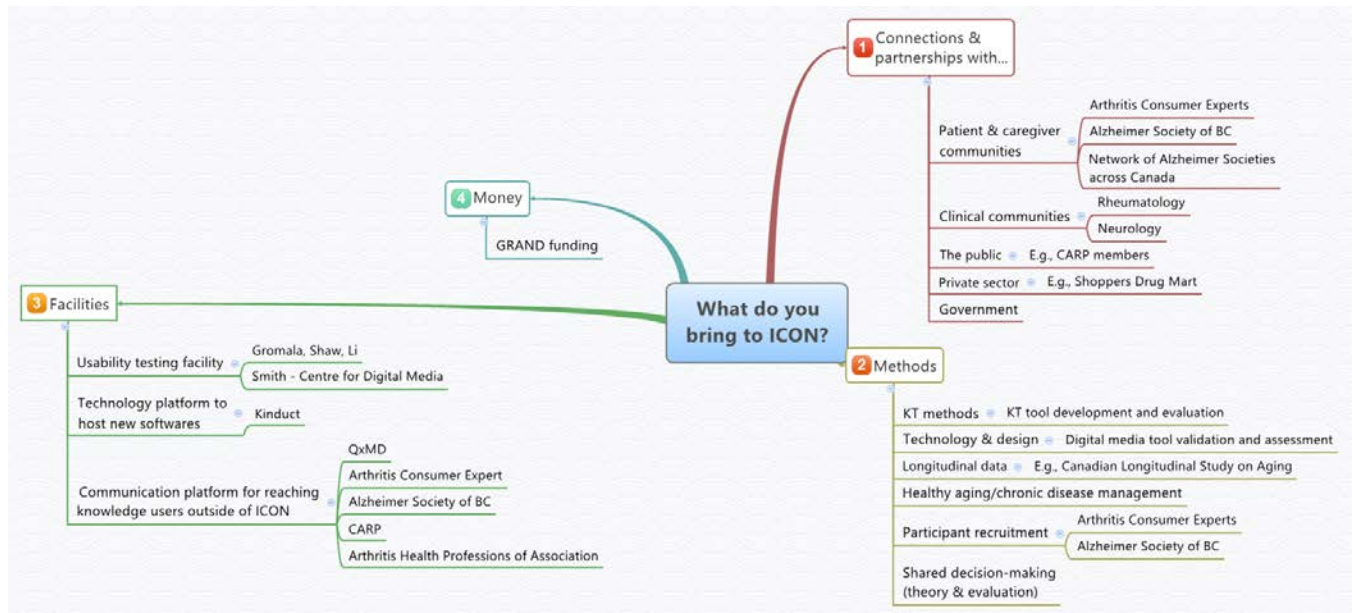
Theme 4: An action-oriented network. ICON would be deemed as successful if it stands out as an innovator in KT tool development, evaluation and implementation (Jones, Kirby, O’Hagan, Li). Also, ICON should aim to be a known knowledge source in brain and joint health by reaching out through our KT, marketing and research activities (Liu-Ambrose, Shaw). Rather than just developing tools for disease management, it was felt that ICON should adopt a broad focus of promoting a healthy lifestyle for all (Liu-Ambrose, O’Hagan, Kayfetz, Kirby).

Theme 5: A self-sustainable network. The long-term success of ICON would lie in its ability to self-sustain. Members felt that we should start developing an infrastructure and revenue generating activities from the outset (Koehn, Esdaile, Li). Ultimately, ICON should aspire to become a model that goes beyond promoting brain and joint health (Kastner).

3.1.3 What do you and your organization bring to ICON?

ICON members have brought a variety of resources to the network (Figure 3). These included: 1) connections with a variety of knowledge users, 2) research, technology and KT methods, 3) facilities, and 4) financial resources.

Figure 3: Resources brought by ICON members



3.2 Day 2

3.2.1 Student training

Allyson Jones presented the 6-year experience of the Alberta Osteoarthritis Team in student training. This generated a discussion which identified several training opportunities in ICON:

- **ICON annual meeting:** Trainees of ICON members should be invited to participate at the subsequent annual meetings.
- **ICON projects:** All ICON-funded projects should involve a student training component. Funding could be used to support trainees to work in the project.
- **GRAND NCE (Gromala, Shaw, Li):** ICON can facilitate trainees to work with GRAND Network Investigators who have access to the NCE funding and training resources.
- **KT Canada (Straus, mentioned before the ICON meeting):** Trainees should be encouraged to participate in the KT Canada monthly webinars and apply to the KT Summer Institute for additional training.
- **Arthritis Research Centre (ARC) of Canada (Esdaile):** ARC's annual research retreat offers an opportunity for trainees working in arthritis research to present their work. They could also participate in the annual ARC/UCSF annual research meeting.

- **Centre for Digital Media (CDM)** (Smith): CDM provides high quality training for digital media experts, some of whom would be interested in developing a career in the health sector. CDM organizes paid student/intern projects with a variety of organizations ([Table 4](#)).

Table 4: Centre for Digital Media student project timetable

If you want	Contact Jeannette Kopek in...	Start working	Cost
Intern	Summer	Fall (4 or 8 months)	\$25,000 (can apply for Mitacs funding)
Student group project	October	January	\$10,000
Student group project	March	May	\$10,000

3.2.2 Sustainability

John Esdaile led a discussion on the sustainability of ICON after the funding period. Several ideas were proposed:

- Leverage the partnerships within ICON to develop a business case, e.g., partnership with CARP, ACE, and Alzheimer Society of BC.
- Leverage the partnerships to develop sustainable digital tools, e.g., Kinduct Technology.
- Through ICON members' connections, we reach out to the private sector, such as fitness facilities (e.g., GoodLife Fitness), games industry (e.g., Zynga), wearable device companies (e.g., Fitbit), and pharmacies (e.g., Shoppers Drug Mart).
- Explore options for crowdfunding.

4.0 Proposed Work Plan

ICON members recommended the following approach for the work plan:

- Focus on improving physical activity, which was identified as a high priority area. Despite the evidence that being active could improve brain and joint health, sedentary lifestyle is highly prevalent. Physical activity has been shown as one of the effective and inexpensive interventions for people with cognitive impairment and arthritis.
- The work plan will include 3 components: 1) co-development of digital media-enabled KT tools and implementation strategies, 2) rigorous evaluation, and 3) a marketing/physical activity promotion strategy, to be carried out simultaneously with the evaluation.
- ICON will promote physical activity across the health continuum, from healthy individuals to patients with dementia and arthritis ([Figure 4](#)).
- Development of KT tools will involve researchers, patients/the public, health professionals, and software industry partners.
- Trainees will be involved in ICON-funded projects in order to provide training opportunities.

Based on the discussion, a work plan is proposed ([Figure 5](#)). ICON members are encouraged to review and provide feedback on the KT strategy and work plan.

Figure 4: ICON KT strategy

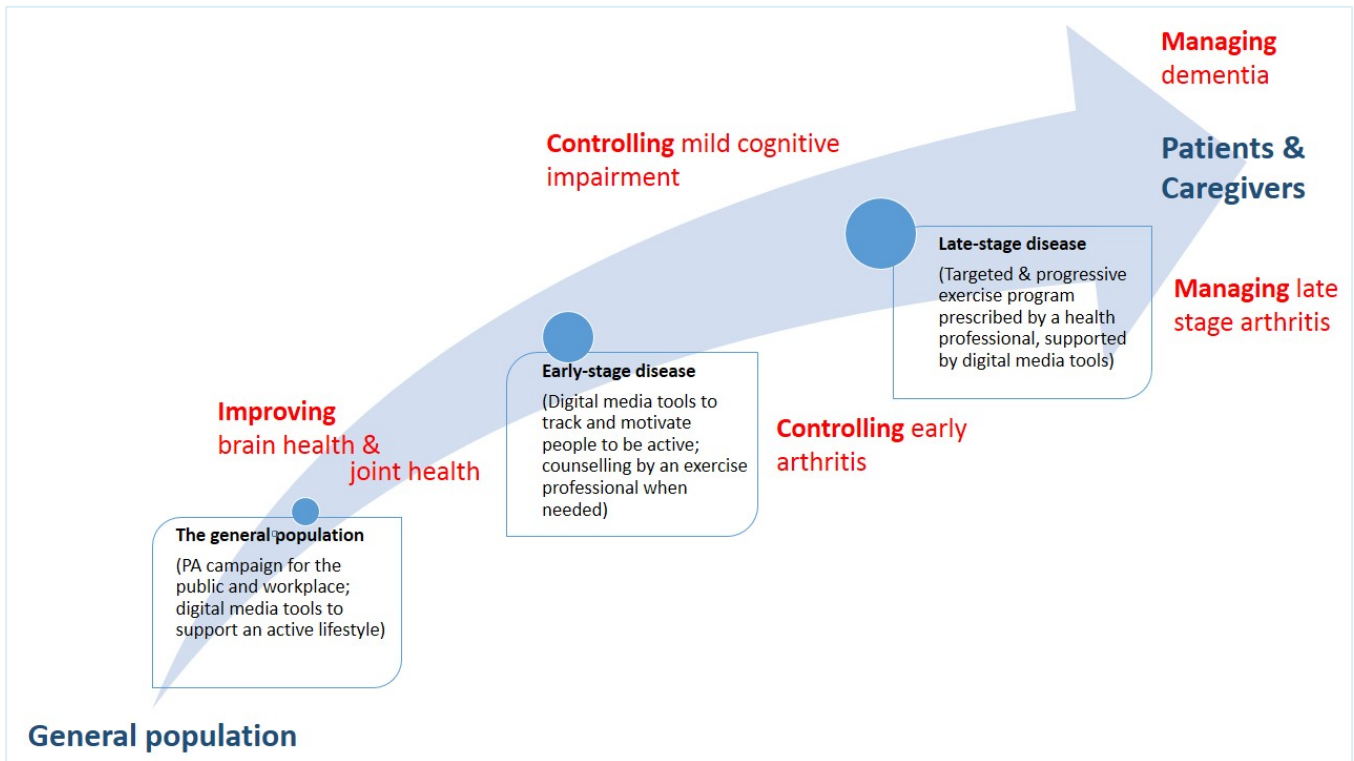
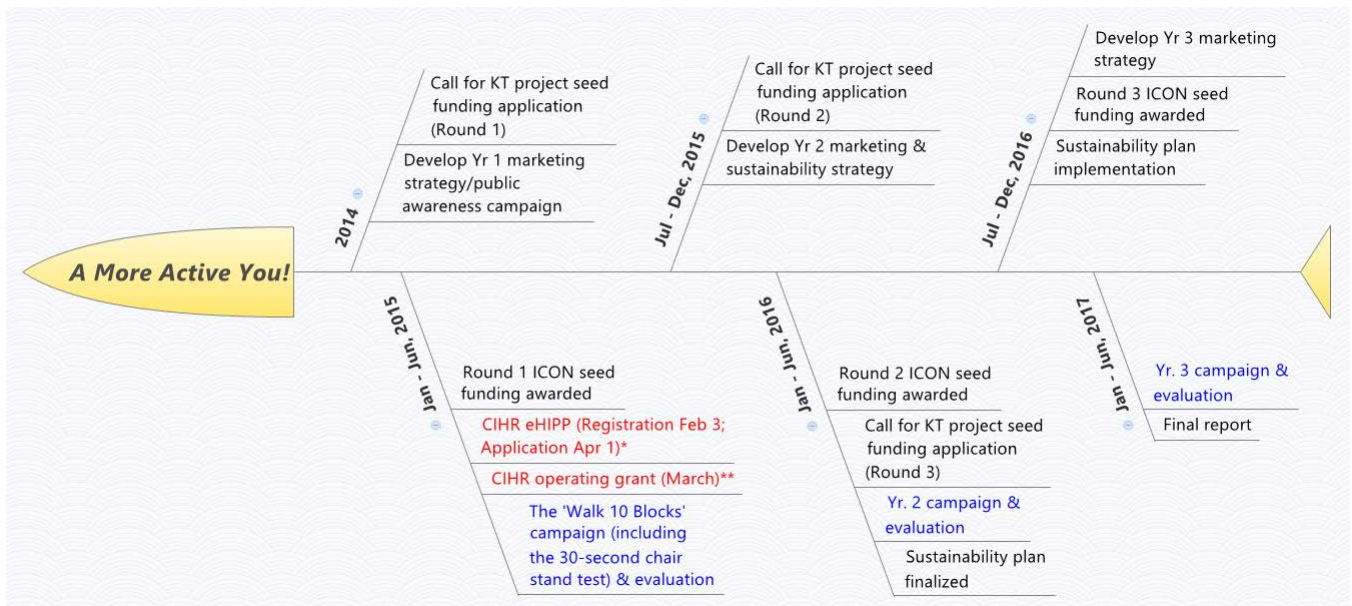


Figure 5: ICON work plan



*e-HIPP = eHealth Innovations Partnership Program. This is a new CIHR research funding program. ICON members may consider this opportunity to apply for additional research funding to evaluate the KT tools developed with the network.

ICON seed funding can be used to leverage other project funding.

Appendices

Appendix A: List of ICON Members

Appendix B: Meeting Agenda

Appendix C: Summary of Presentations

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Linda Li (Nominated Principal Applicant)

Dr. Linda Li is Associate Professor, Harold Robinson / Arthritis Society Chair in Arthritic Diseases, and Canada Research Chair in Patient-Oriented KT at the Department of Physical Therapy, University of British Columbia. She is also Senior Scientist at the Arthritis Research Centre (ARC) of Canada. She is also a Michael Smith Foundation for Health Research Scholar. Dr. Li leads the Arthritis, Joint Health & KT Research Program at ARC (<http://arthritis.rehab.med.ubc.ca/>). As a health services researcher, her research focuses in three areas: 1) Understanding the help-seeking experience in people with early inflammatory arthritis, 2) Evaluating models of arthritis care, and 3) Studying the role of digital media tools for improving the uptake of effective treatment. Her work involves collaborating with scientists and skilled workers in sociology, health psychology, computer science and visual arts to create online tools, such as decision aids for promoting shared-decision making and interactive programs for coaching people to be physically active.

Teresa Liu-Ambrose (Co-Principal Applicant)

Dr Liu-Ambrose is Associate Professor and Canada Research Chair in Physical Activity, Mobility, and Cognitive Neuroscience in the Department of Physical Therapy at the University of British Columbia. She is also a Michael Smith Foundation for Health Research Scholar. Her research laboratory, The Aging, Mobility and Cognitive Neuroscience Lab (<http://cogmob.rehab.med.ubc.ca/>), focuses on defining the role of exercise to promote healthy aging and prevent cognitive and functional decline among seniors. Dr. Liu-Ambrose has a track record successfully executing randomized controlled trials in seniors. Her most recent 12-month RCT was published in the Archives of Internal Medicine. Dr. Liu-Ambrose is also the Research Director of the Vancouver General Hospital Falls Prevention Clinic. She is an associate member of the UBC Brain Research Centre and the Centre for Hip Health and Mobility. Dr. Liu-Ambrose works collaboratively with faculty in Psychology, Family Practice, Geriatric Medicine, and Health Care and Epidemiology.

Diane Gromala (Co-Principal Applicant)

Dr. Diane Gromala is a Canada Research Chair in Computational Technologies for Transforming Pain (<http://www.chairs-chaires.gc.ca/chairholders-titulaires/profile-eng.aspx?profileId=2457>) and Professor at the School of Interactive Arts and Technology at Simon Fraser University (SFU) in Vancouver. She earned a Bachelor of Fine Arts at the University of Michigan, a Master of Fine Arts at Yale University, and a PhD in Computing Science at the University of Plymouth, England. As the founding director of the Transforming Pain Research Group (<http://www.confrontingpain.com/>), one of Dr. Gromala's primary research interests includes the development of new technologies (ranging from virtual reality and robotics to social media) to improve the lives of people living with long-term chronic pain. She is now working to develop computerized aids that will help patients through biofeedback meditation and visualization therapy.

Dr. Gromala has supervised or has been a member of over 70 MAs, MFAs, MSCs and PhD committees in departments ranging from Design, Interactive Art, English, Film and Communications to Computer Science and Engineering. Her work is widely published in the fields of Computer Science, Interactive Art and Design and Pain Studies.

John Esdaile (Co-Principal Applicant)

Dr. Esdaile completed his undergraduate medical training at McGill University and went on to post-graduate training in Montreal, Toronto, London England and New Haven Connecticut. He has been University Program Director of Rheumatology at McGill University and the University of British Columbia.

Dedicated to expanding Canada's role in arthritis research, Dr. Esdaile played a key role in establishing the Arthritis Research Centre of Canada in 2000, of which he was named Scientific Director (<http://www.arthritisresearch.ca>). The Centre now has a faculty of 12 and includes rheumatologists, orthopaedic surgeons, doctoral level occupational therapists, physical therapists, biostatisticians, as well as an epidemiologist, a pharmacoepidemiologist and a specialist in knowledge translation. In 2010, the Centre expanded to include the University of Calgary. Dr. Esdaile's areas of research interest include rheumatoid arthritis, systemic lupus erythematosus, and osteoarthritis. He has authored more than 200 publications in refereed journals.

Sharon Straus (Co-Applicant)

Dr. Straus is a geriatrician/general internist/clinical epidemiologist and Director of the Knowledge Translation (KT) Program at the Li Ka Shing Knowledge Institute of St. Michael's and the Division Director for Geriatric Medicine at the University of Toronto. She holds a Canada Research Chair in Knowledge Translation and Quality of Care (<http://www.chairs-chaire.gc.ca/chairholders-titulaires/profile-eng.aspx?profileId=2699>). Moreover, Dr. Straus serves as the Principal Investigator for [KT Canada- Strategic Training Initiative in Health Research \(STIHR\)](#). Her contributions include development and evaluation of strategies to bring evidence to the point of care, and the evaluation of other interventions to facilitate knowledge translation and promote quality of care. She has created a transdisciplinary research team which includes colleagues from human factors engineering, computer science, health informatics, and clinical epidemiology amongst others. More than 25 graduate students have been involved with research in this program which focuses on developing and evaluating strategies for effective knowledge translation. She is the co-author of a best-selling book on Evidence-Based Medicine (EBM), "Evidence-Based Medicine: How to Teach and Practice EBM".

France Légaré (Co-Applicant)

Dr. Légaré practises family medicine in Quebec and is a full professor in the Department of Family Medicine and Emergency Medicine at Université Laval, Quebec. In 2005, she obtained her PhD in Population Health from the University of Ottawa. The same year, she was awarded a grant as a clinical investigator by the Fonds de la recherche en santé du Québec (FRSQ) for her research program entitled "Health professionals in primary care: From knowledge brokers to decision brokers." Since June, 2006, Dr. Légaré has held the title of Tier II Canada Research Chair in the Implementation of Shared Decision Making in Primary Care (<http://decision.chaire.fmed.ulaval.ca/>). She has also been the Canadian Cochrane Network Site representative at Université Laval (the CHUQ Research Centre) since 1999.

Richard Smith (Co-Applicant)

Dr. Smith is Professor and Director of the Masters of Digital Media Program at the Centre for Digital Media (CDM; <http://thecdm.ca/people/director/dr-richard-smith>). He has over two decades of academic and directorial experience at Simon Fraser University. A professor at the School of Communication at SFU for over fifteen years, he has also served as Director of SFU's Centre for Policy Research on Science and Technology (CPROST) for the past ten years. Dr. Smith has actively been engaged with local, national and international media on issues related to his research into the contemporary world of technology, social media and public surveillance. In addition to research focused on social inclusion brought on by the introduction of digital media, he keeps an ongoing interest in education technology, privacy and public surveillance, online communities, and the wireless information society. His diverse projects and creative works have explored such subjects as privacy issues in the use of mobile technology, electronic scholarly publishing, and the development of technologies for mobile media-rich, urban shared experiences.

Chris Shaw (Co-Applicant)

Dr. Shaw is Associate Professor and Undergraduate Chair for the School of Interactive Arts and Technology at Simon Fraser University (SFU; <http://www.sfu.ca/~shaw/>). He is the principal investigator of the Bio-V group which investigates new methods for the visualization and understanding of biological data (<http://www.sfu.ca/siat/research/groups/biov.html>). He is the co-author of the first virtual reality application and has created numerous virtual environments for medical applications. Other areas of expertise include bioinformatics, visual analytics and two-handed interfaces for 3D applications. Dr. Shaw teaches human-computer interaction, interactive visualization and video game design.

Allyson Jones (Co-Applicant)

Dr. Jones is Associate Professor at the Department of Physical Therapy, with a cross appointment in the Department of Public Health Sciences at the University of Alberta. She has clinical experience as a physical therapist in neurology and home care along with graduate training in epidemiology. She is also an AIHS Population Health Investigator. Her research interests include patient health outcomes and health-related quality of life in chronic musculoskeletal conditions common in elderly patient populations. Her more recent work has looked at physical activity and exercise in arthritis, total knee replacements, hip fracture and Parkinson disease. Other projects include knowledge strategies for mobility in older adults in long-term care facilities and assisted living.

Cheryl Koehn (Knowledge User Collaborator)

Cheryl Koehn is the founder and president of Arthritis Consumer Experts (ACE) and JointHealth™. She is a national arthritis advocate, a community leader and a published author. In November 2000, Cheryl founded Arthritis Consumer Experts (ACE) and its JointHealth™ family of programs (<http://jointhealth.org/home.cfm?locale=en-CA>).

As a 20-year survivor of rheumatoid arthritis, Cheryl brings the arthritis consumer's perspective to ACE, and to

decision-making processes at government, research institutions, not-for-profit and for-profit organizations across Canada and internationally.

Cheryl has served on provincial and national committees and been a standard bearer for the inclusion of people with arthritis in all decision-making processes related to the field of arthritis. Her remarks from the floor during the final Arthritis 2000 plenary session have been widely recognized as the catalyst for the creation of the Canadian Arthritis Network (CAN). She is an invited speaker at National and International arthritis and health-related conferences as a leading arthritis advocate in Canada.

In May 1999, Cheryl became the consumer representative on CAN's management and research and development committee, and was elected chair of its Consumer Advisory Council (CAC). She was re-elected co-chair of this volunteer council in September 2002. She served as a consumer community representative on the CAN Partnerships and Sustainability Committee and along with her Aboriginal colleague, Joyce Greene, spearheaded the development of CAN's Aboriginal Research Initiative, the first of its kind in Canada.

Paul Adam (Knowledge User Co-Applicant)

Paul Adam has his Masters Degree in Social Work and is currently employed as the Rheumatology Liaison & Outreach Services Coordinator at the Mary Pack Arthritis Program in Vancouver. In this position he is involved in improving allied health programs and services for people with arthritis in British Columbia, and in supporting allied health professionals in the province in their provision of care to this patient population. Mr. Adam also has an interest in research as a qualitative researcher. Areas of focus include models of care, health behaviour change, help seeking, and self-employment. Mr. Adam was a member of the Canadian Arthritis Network since its inception. In addition to his work as an administrator and researcher, Mr. Adam is also involved on the board of the Canadian-based Arthritis Health Professions Association and the e-learning committee of the U.S.-based Association of Rheumatology Health Professionals.

Alison Hoens (Knowledge User Co-Applicant, Knowledge Broker)

Ms. Alison Hoens is the Physical Therapy Knowledge Broker (PT KB; <http://physicaltherapy.med.ubc.ca/physical-therapy-knowledge-broker/>). This position is jointly funded by several partner organizations (The UBC Department of Physical Therapy, The Physiotherapy Association of British Columbia, Vancouver Coastal Health Research Institute and Providence Health Care Research Institute). The focus of the role is to support both evidence-informed practice as well as practice-informed evidence. In addition, Alison is the Research, Education and Practice Coordinator for Physiotherapy at Providence Health Care (PHC). PHC provides services to patient and residents across the spectrum of health from acute, rehabilitation and residential settings.

Daniel Schwartz (Collaborator)

Dr. Schwartz is Medical Director of the Fraser Health Renal Program, Internist in the Royal Columbian Clinical Teaching Unit, Clinical Assistant Professor of Medicine at the University of British Columbia, and Co-Founder of QxMD. In addition to QxMD.com, he is the creator of many online and mobile medical education offerings,

including NephrologyNow.com and MedicalPearl.com. Dr. Schwartz aims to use digital media to make research and clinical practice knowledge accessible to all health professionals.

Jennifer O'Hagan (Collaborator)

Ms. O'Hagan is Manager, Program Development, Coordination & Evaluation, Alzheimer Society of BC. The Society (established in 1981) is dedicated to helping anyone concerned with or facing dementia have the confidence and skills to maintain quality of life, to ensuring that public policy and perceptions reflect the issues and reality, and to securing funding for support and research.

Leslie Soever (Collaborator)

Ms. Soever is President of the Arthritis Health Professions Association. Leslie graduated with a Bachelor of Science in Physical Therapy in 1984 and a Master of Science in 2002 from the Institute of Medical Science in The Collaborative Program in Bioethics, all at the University of Toronto. More recently, in 2008, she graduated from the Advanced Clinician Practitioner in Arthritis Care (ACPAC) Program, based out of St. Michael's Hospital and The Hospital for Sick Children in Toronto. Leslie has several years of clinical experience in physiotherapy as well as management experience, in research, program evaluation and the hospital sector. She is currently employed at Mount Sinai Hospital in Toronto as an advanced practice physiotherapist working in the departments of orthopaedic surgery and rheumatology and is a clinical lecturer in the Department of Physical Therapy at the University of Toronto.

Elise Kayfetz (Collaborator)

Ms. Kayfetz is Community Development Office of CARP, a national, non-partisan, non-profit organization committed to a 'New Vision of Aging for Canada' promoting social change that will bring financial security, equitable access to health care and freedom from discrimination.

Jeannette Kopak (Collaborator)

Jeannette Kopak holds the position of Director of Business Development and Operations at the Centre for Digital Media in Vancouver. In that capacity she managed the renovation of a 40-year-old tractor factory, transforming it into a digital media graduate facility, and the home of the Masters of Digital Media program. Jeannette is responsible for ensuring the Centre continues to adapt to the needs of the students and the digital community.

Jeannette is a digital media veteran with 16 years of experience at the Canadian Broadcast Corporation, in roles that ranged from designing and implementing the CBC Vancouver TV newsroom editorial system to facilitating the re-use of broadcast content for the early websites such as the Atlanta Olympics and the 1997 Federal Election. The highlight of her CBC career was leading a multi-million dollar, multi-year project to catalogue, restore, digitize and preserve the CBC radio and television archives across Canada.

Appendix B

ICON Boot Camp Meeting (July 24-25, 2014)

Aim: To create a 3-year work plan for ICON investigators and partners

July 24: Room 1312, UBC Life Sciences Center, 2350 Health Sciences Mall

08:00 – 08:30	Breakfast	
08:30 – 09:00	Opening remarks & ICON public opinion survey	Linda Li
Session 1:	Opportunities to make a difference...	Facilitator: Alison Hoens
09:00 – 09:15	Cognitive health and mobility in older adults	Teresa Liu-Ambrose
09:15 – 09:30	Gaps in arthritis prevention and treatment	Linda Li
09:30 – 09:45	Quality of care for older adults: opportunities for knowledge translation	Monika Kastner
09:45 – 10:00	New technologies for people with chronic diseases	Chris Shaw
10:00 – 10:20	Break	
10:20 – 10:35	Shared decision-making in primary care	France Légaré
10:35 – 10:50	Patient health outcomes and health-related quality of life in chronic musculoskeletal conditions in elderly populations	Allyson Jones
10:50 – 11:30	Discussion: What are the <i>feasible</i> opportunities for ICON to use digital technologies to promote healthy aging, and improve prevention/treatment of cognitive impairment and chronic joint diseases?	
11:30 – 01:00	Lunch	
Session 2:	Making it work... in real life: Insight from ICON partners	Facilitator: Alison Hoens
01:00 – 01:15	<i>Arthritis Consumer Experts:</i> TBA	Cheryl Koehn/Anita Chan
01:15 – 01:30	<i>Alzheimer Society of British Columbia:</i> ICON Collaborator	Jennifer O’Hagan
01:30 – 01:45	<i>CARP:</i> Strengthening Our Community Across Canada	Elise Kayfetz
01:45 – 02:00	<i>Arthritis Health Professions Association:</i> TBA	Leslie Soever/Paul Adam
02:00 – 02:15	Break	
02:15 – 02:30	<i>GRAND NCE:</i> the Health Theme	Diane Gromala
02:30 – 02:45	<i>Centre for Digital bMedia:</i> Digital and entertainment technologies	Richard Smith
02:45 – 03:00	<i>QxMD:</i> KT platform to disseminate ICON products and research	Daniel Schwartz
03:00 – 03:15	<i>Kinduct Technologies:</i> Software platform for health professional & patients	David Kirby
03:15 – 03:45	Discussion: What are the collaboration opportunities in investigator/partner-initiated projects?	
03:45 – 04:00	Wrap-up	Linda Li
06:00	Dinner: Q4 Ristorante, 2563 West Broadway	

Friday, July 25, 2014: Centre for Digital Media, 685 Great Northern Way, Vancouver

08:30 – 09:00	Breakfast	
Session 3:	Sustainability & work plan	Facilitator: Alison Hoens
09:00 – 09:20	Introduction	Linda Li
09:20 – 09:30	Trainee development – digital media	Richard Smith
09:30 – 09:40	Trainee development – research & KT	Allyson Jones
09:40 – 10:00	Think sustainability	John Esdaile
10:00 – 10:45	Creating a work plan: What should ICON do to support trainee development? What are the priorities for ICON to invest its funding in each of the 3 years? Funding allocation mechanism? Items to follow up?	
10:45 – 11:00	Conclusion	Linda Li
11:00 – 11:30	Centre for Digital Media tour	Jeannette Kopak

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<p>Linda Li Associate Professor, UBC Department of Physical Therapy; Senior Scientist, Arthritis Research Centre of Canada</p>	<p>ICON aims to optimize mobility of older Canadians by modernizing the process of knowledge translation (KT).</p> <p>MSK and cognitive health is the main focus.</p> <p>To measure impact, project supported by ICON will include patient outcomes (objective activity measures, adherence, & satisfaction), study how KT products are implemented, and measure KT productivity.</p> <p>ICON is also devoted to training health research and digital media students.</p>	<ul style="list-style-type: none"> • Medication adherence: Although it is known that disease-modifying drugs should be used early to prevent joint damage and reduce the risk of cardiovascular diseases, more than 50% of patients do not use these drugs, and up to 70% do not adhere to their medications • Sedentary lifestyle: The majority of people with hip/knee OA lead a sedentary lifestyle • Difficult to access coordinated care 	<ul style="list-style-type: none"> • Show evidence that our work addresses major challenges identified by the public, and makes a difference in individual & practice outcomes • ICON to be recognized as an innovator in <i>practical</i> <u>KT</u> <u>and</u> <u>KT</u> research • Strengthen partnership between health & digital media • Strengthen collaboration with public/non-profit and private partners • In 3 years, be a self-sustainable KT program funded by a mix of public / private sources, and revenue generation activities 	<ul style="list-style-type: none"> • KT research methods, focusing on the public/patients • Excellent collaboration with the arthritis community • Usability testing facility at the Arthritis Research Centre • GRAND Collaborating Network Investigator funding (~ \$15K/year)

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<p>Teresa Liu-Ambrose Associate Professor, UBC Department of Physical Therapy</p>	<p>Physical activity is a legitimate medical therapy for both impaired cognitive function and mobility</p> <p>Resistance and balance training significantly reduced falls in older adults</p> <p>Starting to exercise in late life is not futile. Even those who are sedentary can improve cognitive function</p>	<ul style="list-style-type: none"> • Poor uptake of an active lifestyle: Physical activity is simply underutilized despite the strong evidence in cognitive health. • Lack of support on how to start exercising, managing existing conditions as well as access to support. • For people with cognitive decline, a lack of motivation and awareness about the benefits of being active: among older adults who are experiencing cognitive decline. Perhaps physical activity is perceived as too simple an intervention for cognitive function improvement. 	<ul style="list-style-type: none"> • ICON will become a known resource for current knowledge regarding using physical activity to improve joint health and cognitive function. • It will provide tools to promote a healthy lifestyle for diverse populations, designed with human factors in mind. • ICON will also develop a training program, and attract high-quality trainees. 	<ul style="list-style-type: none"> • Dr. Liu-Ambrose is the director of the UBC Aging, Mobility, and Cognitive Neuroscience Lab. Through this work, her team has an established collaboration with clinical practice leaders in exercise neuroscience and falls prevention, and has allowed for access to the population of interest. • Collaborators include the VGH Falls Prevention Clinic, UBC Alzheimer’s Clinic, VGH stroke clinic and various geriatric clinics. • Dr. Liu-Ambrose is also the co-lead for the Canadian Longitudinal Study on Aging, providing technical and content expertise.
<p>Monika Kastner Scientist, KT Pprogram at Li Ka Shing Knowledge Institute, St. Michael’s Hospital, S-PORT project</p>	<p>KT tools could optimize the health of Canadian seniors with chronic diseases by supporting patient self-management.</p> <p>S-PORT (Senior’s Portal) is a module that integrates the care of seniors with multiple chronic conditions (osteoporosis and urinary incontinence). It incorporates risk assessment of modifiable</p>	<ul style="list-style-type: none"> • Lack of knowledge of how to integrate management of various conditions in an optimal way • Multimorbidity: What about high burden multiple chronic diseases? • Lack of good evidence for managing cognitive impairment • Lack of understanding of the contexts and mechanisms that 	<ul style="list-style-type: none"> • ICON will become a model that can be used beyond cognitive and joint health - for seniors with other high-burden, multiple chronic conditions • Build and continue to build capacity (e.g., KT scientists, trainees, engaged patients, clinicians) • Have evaluated the impact (including economic) of 	<ul style="list-style-type: none"> • Our research goals are in line with CIHR’s Institute of Aging (“adding life to the late years”) and ICON’s objectives to 1. Maintain mobility and functional autonomy; and 2. Use information technologies to enhance independence • Our team is developing tools for seniors with multiple, high-burden chronic diseases aimed at maintaining functional autonomy

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	<p>risks, tailored feedback and self-management tools to facilitate self-management. It includes a multi-delivery system through the internet or via a tablet/smart phone app, and social networking sites. It is also available in free standing kiosks in primary care and geriatric clinics, assisted living facilities and senior's fitness centers.</p> <p>-PATH-S (Pathways to Tools for Healthy Seniors) is a multi-Chronic Disease Management Tool (CDMT) that can harmonize single CMDTs into logical disease clusters – directly address the needs of seniors with multiple chronic diseases</p>	<p>facilitate or impede the application of knowledge (process, technology, people, environment, feasibility including resources and cost)</p>	<p>interventions with the most potential for impact</p> <ul style="list-style-type: none"> • Understand what works for whom and in what contexts • To have the infrastructure in place to build effective tools using innovative technology • We will have addressed potential barriers to the sustainability of ICON throughout the 3 years, and a plan in place to continue this beyond the 3 years • We will have an evaluation plan that is ready for implementation to measure the impact of ICON as a whole 	<p>using an integrated KT approach that we can cultivate with ICON</p> <ul style="list-style-type: none"> • Our team has innovative ideas and experience with using technology to address knowledge gaps and to enhance patient self-management • The work is also aimed at advancing KT science, which we can also integrate with ICON projects • The work related to S-PORT and PATH-S will be adaptable to any KT tool development and could inform the infrastructure for developing any seniors' tools (including those of ICON)
<p>Diane Gromala SFU School of Interactive Arts and Technology, GRAND NCE PI</p>	<p>Digital media modules can be successfully applied towards patient-centered healthcare and wellness.</p> <p>The <i>Graphics, Animation & New-Media</i> - GRAND NCE is a</p>	<ul style="list-style-type: none"> • Computer scientists tend NOT to collaborate directly with healthcare experts consistently or over time. 	<ul style="list-style-type: none"> • ICON will bridge Health Theme projects by the GRAND NCE as a “project champion” to help transform 	<ul style="list-style-type: none"> • Dr. Gromala will provide technology & design, validation and assessment expertise. She is also a Principal Network Investigator with the GRAND NCE, Canada's largest digital media

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	<p>network of computer and social scientist that has led projects aimed at developing patient-care and health education modules.</p> <p>Dr. Gromala's work and collaboration with GRAND NCE will provide design expertise and identify key research and knowledge translation areas towards building tailored modules for increasing physical activity in the ageing population.</p>	<ul style="list-style-type: none"> • Computer scientists tend NOT to publish in health research. • Computer scientists have a perception that it is very difficult to find AND work with healthcare professionals. 	<p>multi-disciplinary research into user-centered solutions.</p>	<p>network addressing complex issues in digital media & transforming multidisciplinary research into user-centered solutions.</p> <ul style="list-style-type: none"> • She will bridge her experience working with projects that develop digital media aids to manage chronic pain, influenced in part with personal experience. • GRAND NCE brings together a team of computer scientists, engineers, artists/ designers and social scientists. GRAND is also training over 84 PhD students. • Currently, the patient-centered Healthcare and Wellness theme includes projects such as Games4Health & NeuroDevNet, Surgery Simulation & Training, and Chronic Pain VR modules.

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<p>Chris Shaw Associate Professor, SFU School of Interactive Arts and Technology & PI Bio-V data visualization group</p>	<p>A number of new measurement technologies and apps have appeared on the market, however many seem to not be very effective</p> <p>Apps should take into account social and behavioral barriers to exercise. Incorporating the social network into exercise/lifestyle tracking could be key</p>	<ul style="list-style-type: none"> • Many reminder-based apps seem not to work! The extrinsic “you ought to do X” seems not to do the trick in some cases • The “problem” is not just cognitive: “I forgot to exercise”, “I don’t know how to exercise”- need to take psychology and the social context into account 	<ul style="list-style-type: none"> • ICON will build new applications that work and pave way for better engaging with patients. • These applications will also be incorporated into practice. 	<ul style="list-style-type: none"> • We have been developing systems for Chronic pain, Arthritis, Diabetes, in collaboration with GRAND colleagues, patients and health care professionals
<p>Richard Smith Professor, SFU Centre for Digital Media</p>	<p>Not shown</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

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<p>Jennifer O’Hagan <i>Alzheimer Society of British Columbia</i></p>	<p>In BC, there are over 15,000 new AD cases in each year. In Canada, there are over 700,000 cases of cognitive impairment, a number expected to double by 2031.</p> <p>Alzheimer Society of BC is dedicated to helping anyone concerned with or facing dementia have the confidence and skills to maintain quality of life. It is the leading source of education and support for people impacted by dementia in B.C.</p> <p>Alzheimer Society of BC’s mandate is to provide information, education and support for risk reduction and living a healthy lifestyle with a diagnosis of dementia and cognitive impairment</p>	<ul style="list-style-type: none"> • Too much information • Information is constantly changing • Some information not research-based (Non researched-based information often gets media attention/lots of hype) • What is a reliable resource/guideline? • Prevention vs. risk reduction • Family and clinicians’ perspective: Nothing can help after diagnosis (We hear about this perspective from families and clinicians themselves; Alzheimer Society promotes early diagnosis) 	<ul style="list-style-type: none"> • Increasing awareness • Accessible (e.g. through government platforms such as SeniorsBC, Participaction, etc.) • Accounts for gender, age, mobility, languages, interests, etc. • Inclusion of healthy adults, caregivers, people with dementia (various stages), people with MCI; families, couples, people living alone • Comprehensive tool for managing exercise, diet, stress • Early diagnosis messaging • Quantify intensity and frequency • Great KT tool: Non-scientific language • Provides a user feedback processes 	<ul style="list-style-type: none"> • The Alzheimer Society of B.C. brings: -Perspectives of people with dementia, families, general public, front-line staff, - Identification of knowledge gaps • Awareness, potential portal for access, -Opportunities for participant recruitment (e.g. program piloting) • Network of Alzheimer Societies across Canada

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<p>Elise Kayfetz CARP</p>	<p>CARP is a national non-partisan, non-for-profit advocacy group for healthy ageing. They are an important resource for the ageing community and bring awareness about the key concerns of their members.</p>	<ul style="list-style-type: none"> • According to CARP Polls, three-quarter of members polled are concerned about the onset of dementia, and most CARP members (81%) think Canada is not prepared for the projected growth of dementia cases as the boomers age. 	<ul style="list-style-type: none"> • ICON tools will be available to all. • Known for staving off brain and bone atrophy. • Chapters to partner with local Arthritis communities. • Continued relationship with CARP (and other groups). • Encourage CARP members to stay active as well as overcome barriers to physical activity 	<ul style="list-style-type: none"> • CARP (Canadian Association of Retired Persons) promotes social change that will bring financial security, equitable access to health care and freedom from age discrimination. As an advocacy association, CARP works with politicians and both private and public stakeholders to address issues such as Older Workers, Pension Reform, Health Care Reform, Elder Abuse, Dementia (In progress) and age Friendly Communities (Brockville/ Seniors Council). • Access to target community and stakeholder members
<p>Leslie Soever <i>President, Arthritis Health Professions Association</i></p>	<p>The Arthritis Health Professions Association (AHPA) is a society of health professionals who work in the field of rheumatology. AHPA is dedicated to improving health care standards for people with rheumatic diseases through the promotion of education and support of research among its members. Their mission includes stimulating interest in</p>	<ul style="list-style-type: none"> • Knowledge translation (How to best reach the care providers? How to best reach the consumers?) • Funding (Publicly-funded health care delivery for allied health services minimal; Ongoing education for health care providers) 	<ul style="list-style-type: none"> • Ongoing collaboration amongst researchers working in brain and joint health • Interprofessional clinical teams working together to address brain and joint health in a more holistic way • Collaboration amongst patient/client advocacy groups related to brain and joint health 	<ul style="list-style-type: none"> • AHPA will officially endorse activities to promote the mandate and progress of ICON through Eblasts, Newsbriefs, Postings on our website • There are also opportunities for presentation at AHPA Pre-course

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	<p>rheumatology among health professionals, promoting research and education in the field of rheumatology, and promoting public awareness of the needs of the people with arthritis. Most recently, they conducted an opinion survey to assess AHPA website use interests and patterns among active members.</p>	<ul style="list-style-type: none"> • Practice patterns ('Old habits die hard' versus application of best available evidence) • Curricula (Limited in rheumatology) • Time (Clinical workload/volumes, For clinicians to update knowledge base) 	<ul style="list-style-type: none"> • Collaboration amongst stakeholder organizations related to brain and joint health 	

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<p>Daniel Schwartz <i>Qx MD</i></p>	<p>QxMD provides fast and reliable access to peer-reviewed publications on specialized topics.</p> <p>It develops KT digital interactive tools that help clinicians prescribe therapy, follow guidelines and raise disease awareness.</p>	<ul style="list-style-type: none"> • Information overload! 16K new papers on every topic each week. Health professionals may have difficulty keeping up with the literature, applying new knowledge at the point of care, and selecting pubs that are most relevant 	<ul style="list-style-type: none"> • Integrating QxMD apps with tailored ICON decision support tools 	<ul style="list-style-type: none"> • QxMD is an automated discovery and delivery tool of the most important research directly to clinicians. An already established brand, it is a tool that provides a platform for easy sharing and discussion of published papers. It can be a valuable decision support module for MDs at the point of care. It could provide a valuable KT opportunity as 80% of physicians use a smartphone in daily practice. • QxMD has an established advertising platform that can be used to promote ICON KT products.

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<p>David Kirby <i>Kinduct Technologies</i></p>	<p>There is an increasing demand for patient-centered tools to manage their health and wellness – self-care.</p> <p>Patients retain up to 50% of information delivered through rich digital media/digital assets (videos and 3D animations).</p> <p>Kinduct is a Canadian software company offering custom development and content production services for health care patient and clinician education. The platform includes extensive and multi-mode digital content library for exercise, rehab, nutrition, medical animations.</p>	<ul style="list-style-type: none"> • Patients are unsure where to begin when it comes to exercise. • Present state of care is that those with mild to moderate OA are offered minimal treatment. • Role of IT is limited for early intervention in OA: access to Internet, but no quality control in what exercises/activities people are doing. 	<ul style="list-style-type: none"> • Using digital media assets, improve mobility and brain health by increasing physical activity in adults aged 60-79 – we can do better than 13%! • Care Team and Patients utilizing an ICON platform for: Education on the condition, Visual display of exercises, Monitoring compliance, Monitoring outcomes and feedback 	<ul style="list-style-type: none"> • Supports evidence-based decisions that increase efficiency and reduce costs, creating better results for patients and the health delivery teams behind them • Previous relevant projects such as a) Mobility @ Capital Health, an Orthopedic Platform for patient-specific content delivery and objective measurement across 3 specialties (Knee, Spine, Hip) b) Early OA Research Project related to improving care for patients with knee OA across the spectrum from early to severe (pre TKA) to outcomes following surgery, c) Leveraging the work being done with Alzheimer Society of NS & YMCA related to digital media for dementia prevention • Proven, powerful and secure patient management platform. • Enables immediate patient input and feedback that informs intelligent decision-making and planning. • Robust, scalable and customizable

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<p>France Légaré <i>Professor, Family Medicine Université Laval</i></p>	<p>Shared Decision Making (SDM) is a process by which a healthcare choice is made jointly by both the clinician (team of clinicians) and the patient (and family). Therefore, its implementation in clinical practice depends upon both the clinician and the patient. Patient-decision aids are tools for creating knowledge to improve decision quality. Providers would benefit from SDM training, especially when combined with patient-mediated interventions.</p>	<ul style="list-style-type: none"> • Can we identify overuse, underuse, and misuse in the clinical context for cognitive impairment and arthritis prevention and treatment? • Has a decisional needs assessment been done? • What are the most effective strategies to implement DAs/SDM in the clinical context for cognitive impairment and arthritis prevention and treatment? • What are the key components of a SDM training program for both providers and patients? • Can an effective SDM training program be solely web based? 	<ul style="list-style-type: none"> • ICON would show <u>improved patients outcomes such as increased mobility, increased adherence to choice and increased life satisfaction.</u> • ICON would also facilitate <u>system outcomes</u> such as decreased utilization of ineffective resources and an increased number of skilled staff. Positive academic/research outcomes would include increased number of graduate students and number of high impact journal publications 	<ul style="list-style-type: none"> • Shared Decision Making training strategies/tools in clinical inter-professional settings. SDM training could improve patients' outcomes such as increased adherence to choice and Increased satisfaction. It could also decrease utilization of ineffective resources, and increase the number of skilled staff. Evaluating SDM would also make room for graduate students and produce high quality research work.

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<p>Allyson Jones Associate Professor, Department of Physical Therapy</p>	<p>The Alberta Osteoarthritis Team is dedicated to developing strategies for primary and secondary prevention to decrease the need for TJA</p> <p>Working with patients requiring TJA and clinicians involved in their care presents an opportunity for introducing physical activity interventions. This population may not be generalizable to everyone with joint health issues because they are otherwise in good health.</p>	<ul style="list-style-type: none"> • Determining whether a relationship exists between OA and cognitive impairment • What is meant by cognitive impairment in older adults residing in the community • Patients with total joint arthroplasty (TJA) indication could introduce selection bias, because only those deemed healthy are chosen for this elective surgery. In addition, nearly half initially selected are later deemed ineligible for surgery. • Changing sedentary behavior is a challenge as well • Engaging people with depression and cognitive impairment in physical activity 	<ul style="list-style-type: none"> • Generate a number of innovative studies that bring cognition and arthritis together and a network that will move forward • Support trainees in this area of study • Develop KT strategies to take findings into clinical setting and community 	<ul style="list-style-type: none"> • Mandate of Alberta Osteoarthritis Team is to develop, implement, and evaluate evidence informed primary and secondary prevention strategies to reduce the need for total knee replacements. • Team has access to patients receiving TJA and a high proportion of patients at end stage OA, and is involved with collaborative work with exercise physiologists.

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<p>Cheryl Koehn/Anita Chan <i>Arthritis Consumer Experts</i></p>	<p>ACE is a consumer advocacy group, with over 15 years working on behalf of people with arthritis, their families, friends, government and the public.</p> <p>Leading provider of evidence-based information, education and advocacy in Canada.</p>	<ul style="list-style-type: none"> • Small/out dated thinking about how to move discoveries/knowledge out to patients and public • Lack of Community-based expertise • Money 	<ul style="list-style-type: none"> • ICON can be a <u>knowledge push-pull research training center</u> • ICON can be a self-sustaining juggernaut of health app production • Partner with the “big kids” (Apple, Samsung, Google) • Direct engagement with knowledge users via a web portal or forum, create beta versions of tools 	<ul style="list-style-type: none"> • JointHealth™ provides comprehensive web-based information modules on managing arthritis • Arthritis Broadcast Network with social media expertise • <i>Arthritis ID</i> and <i>Arthritis ID Pro</i> apps • 7200 members with Arthritis and 100,000+ subscribers • Government support and partners, commercial partners such as Shopper’s Drug Mart