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Expert Review Team Report for Institute of Aging

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Summary

This report is based on the written materials provided through CIHR which covered the earlier overall review, the self assessment from the Institute, a list of grants and publications with the keyword cognitive impairment, and from interviews with the Institute of Aging (IA) Scientific Director, Board, affiliated researchers and stakeholders, many of whom had served on the Institute Advisory Board (IAB) over the years. A wide representation was achieved with diverse disciplines, larger and small university settings, the third sector, federal government functions. We also were provided with the review of the New Emerging Team program (undated), the Biennial Report (2007-2009) and the Strategic Plan for 2007-2012. We noted the overall structure of funding and its complexity in Canada, including the different players at federal government and provincial levels, and the health charities.

The first key finding is that the Institute is a success and has great potential to continue its mandate. The existence of the Institute has galvanized the community of aging research, the varying initiatives have brought new groups and collaborators together, and international connections have been established. The Scientific Director and her supporting teams, both those in Vancouver and Ottawa, as well as the IAB are to be commended on the major achievements since the last review.

Inevitably there is unevenness in the developments and those areas that were strong already, and are the focus of international research and ministerial concern have been prioritized. Thus the Cognitive Function in Aging initiative has strengthened an already strong community, and has enabled more to be done.

A, possibly the, major vehicle for achieving the IA's mandate since the last review has been the establishment and now commencement, of the Canadian Longitudinal Study on Aging (CLSA). With its comprehensive vision of data collection and analysis it is likely to enable all 4 pillars of research from basic science through to population and health services research. It appears to have already been a major force for bringing researchers across Canada together and the setting up of an impressive infrastructure. The Scientific Director is to be commended for her commitment to securing the funding for this important initiative.

Section 1 – Institute mandate

The mandate of the Institute of Aging is based on the aging person in an aging society, and the effects of different diseases and conditions on aging. The Institute's goal is to improve the quality of life and health of older Canadians by understanding and addressing or preventing the consequences of a wide range of factors associated with aging. The Institute serves a diverse community of researchers in biomedical, clinical, health services and population health research. The Institute of Aging differs from many CIHR institutes in that it focuses on aging from a developmental perspective rather than on particular diseases or functions. The Institute considers Canada's older citizens as important stakeholders in its knowledge creation and knowledge transfer.

CIHR Institute of Aging – Internal Assessment for 2011 International Review, pg 1

Section 2 - Status of this area of research in Canada

There is a sense that aging became defined as a field within Canada by the creation of the Institute of Aging, bringing together widely divergent groups with little common ground. There is now an established Aging research community with a wealth of initiatives, both structural and topic related, bringing researchers and stakeholders together to develop fundable research.

Funding for aging research, including that reported as 'aging' in keywords funded by CIHR, has increased manifold over the ten years of the existence of the Institute. Strong areas, in which Canada had emerging programs when the Institute was founded, are cognitive impairment and mobility function, which are now established priorities. Canada has become known for its multidisciplinary work, synthetic output and knowledge translation (KT) through the funding initiatives associated with CIHR. These cover a variety of areas such as environmental and urban design, commissioned reviews of evidence if this is lacking and capitalizing on the work done on KT methodologically through the development of a disease specific KT network (Alzheimer's disease and dementia). There was a laudable philosophy espoused by all we interviewed of the understanding of the multidisciplinary and cross jurisdictional importance of their work, and the need to study healthy aging trajectories as well as the conditions and diseases of aging. In many ways it is by studying the factors which influence healthy pathways and healthy adaptation to aging processes that will give us the best information for programs for prevention and enhancing capacity in older people.

A key marker of success is the funding of the CLSA, a 20-year project which will benefit IA but also other institutes. Canada is becoming increasingly known for this study, which built on the collaborations established in the earlier Canadian Study of Health and Aging. The first set of outputs from this study are valuable in the international domain, tackling current issues of concern such as recruitment methods, ethics of consent, data sharing, bioresources and bringing together diverse research communities around a common platform to encourage truly multidisciplinary research. This will cover important sub-populations and also has the potential to bring in many other studies such as those on first

nation populations –there could already, however, have been greater progress here. Canada has a great deal more potential to contribute to international aging research including ethno-cultural diversity including immigrants from China, India, and elsewhere. Canada is a recognized leader in frailty and, as mentioned above, cognitive impairment, and is likely to become a leader in mobility function. CLSA will also cover neighborhood, community characteristics, and built environments. There has been an impressive suite of capacity building initiatives, particularly pilot grants and summer programs in aging as well as travel grants and bridging grants.

The field of biology of aging and the ability to investigate aging with good animal models remains very small in Canada inhibiting ability to develop this area of research. Attempts to repatriate experts from the US and elsewhere who left earlier in their careers because of the ability to conduct fundamental aging research elsewhere has only been partially successful.

Overall impression of the Canadian research landscape in this area

Canada has been a world leader in cognitive impairment and aging. CLSA will lead to many innovations including better knowledge on aging in the diverse groups of older people across the whole of Canada. Much aging research is the result of partnerships with other institutes. More needs to be done with the Institutes of Population and Public Health and Aboriginal Peoples' Health. Biology of aging remains weak. The balance of funding across the CIHR pillars is less unequal for IA than for other Institutions, but it is of note that pillars 3 and 4 remain under represented.

Section 3 - Transformative Impacts of the Institute

IA is one of the 'human development' (whole person) institutes and has moved thinking to development/healthy aging rather than disease-specific (even single disease).This is applauded by the Expert Review Panel (see comments above). It does however challenge all this group of institutes as to how they coordinate and work best with the disease or domain (e.g. IAMS) specific and methodological (e.g. genetics) institutes to move certain areas of research and KT forward optimally.

Given the full mandate of CIHR with its 4 pillars and the diverse and disparate nature of the research communities, it has been challenging to enhance all areas; clinical and social are felt to have been more successful than basic although there is considerable basic research relevant to aging in other disciplines (e.g. cancer).

The steps that IA has taken to develop its networks and research areas are to be commended. These were guided by community/sector consultation and an inventory of current aging research in Canada. Strengths and gaps perceived by the aging community (as convened by IA) were established and then priorities developed to work out a good and clear set of implemented strategies (see below). These are all outlined in the various documents produced by IA as well as in the report provided to the panel.

The Institute has played a major role in: leadership capacity building; enabling; collaborating across disciplines; provinces and constituencies (umbrella organizations); providing strategic and exciting new infrastructure (e.g. CLSA); networks used, expanded, developed very effectively (examples include palliative care and driving); increasing those researchers who 1) affiliate with IA; 2) do aging research ; 3) enhance career paths in aging research.

Overall impression – to what extent has this Institute been transformative?

Given the challenges including a limited IA budget, diversity of populations, research strengths and researchers, geographical and provincial dispersion the panel was impressed by the evidence provided both through the report and from the informants of the transformative effect of the Institute.

CLSA has been a major positive and transformative venture. We note that such initiatives take many years to reach maturity and that there is still much more to be done over the next decade. The work of the Institute is by no means done.

New Emerging Team grants, Strategic Priority Announcements and Catalyst / Pilot grants have played a key role in this transformative impact, both for individual career paths and overall impact/capacity building of aging research (see notes above and also on the recommendation for continued existence and funding of this Institute).

Section 4 - Outcomes

These could be presented in a variety of ways and many examples are provided in the IA documentation.

Structure: IA has created a framework and methodology, as a virtual institute, for consultation, interrogation of existing evidence, working with stakeholders to identify gaps of relevance to local communities which are also relevant to the international research arena and effective calls for new work which are likely to be taken up and implemented. The last element is more difficult to see as an output as it takes time and the ability to evaluate at population levels (see later) although the establishment of the Canada Dementia Knowledge Transfer network is a valuable example.

Capacity building: various programs supporting researchers have been launched including bridging grants, pilot grants, travel grants, training opportunities, keeping good researchers in the field and attracting new ones, encouragement of career progression with career awards outside the CIHR system such as the Canada Research Chairs. New Emerging teams have built multidisciplinary capacity. The summer school has been particularly appreciated and is likely to have increased the ability of researchers at early and mid career level to be more successful in the granting process and to develop their networks nationally.

Science output: our ability to examine this with formal evidence is limited by the lack of a synthetic bibliometric overview of relevance to IA. It is clear from the list of papers of CIHR funded people that the aging field includes internationally renowned scientists and clinician scientists. The range of research output covers molecular investigation to policy and palliative care, but these are not linked to particular funding streams or programs. From the bibliometric output on cognition and aging the emphasis was more biomedical and less pillars 2, 3 and 4.

Encouraging new areas: The New Emerging Team program, the thematic developments in cognition, mobility and environmental design, has established collaborative groupings with the potential to contribute novel and internationally relevant findings.

Leverage of additional finance: this has been achieved in a variety of ways, through successful application to open grants, brokering the funding of CLSA, successful applications to other Tri-Council funding streams including the Canadian Foundation for Innovation, and encouraging partnership at provincial and local level. The active engagement of the relevant communities around research, as noted above, makes translation more likely.

Partnership development: the Scientific Director supported by her teams and IAB have worked tirelessly to promote partnership at international (UK, World Health Organization, India, China, Australia, US), national (third and governmental sectors), regional (third sector, governmental and university sectors) levels. These are all bearing fruit in terms of collaborative research programs.

CLSA: this is a major achievement as noted in earlier sections, encapsulating the success outcomes noted above. These include the success of the IA team in brokering financial support, capacity building, a large and increasingly coherent collaborative group, a provincially dispersed research infrastructure, and a systematic approach to piloting leading to valuable ethical, methodological and developmental output.

Aging as policy priority: recognition of healthy aging as an enduring governmental priority, including the network centre for health aging.

Canada specific scientific voice: reviving the Canadian Journal of Aging, which now has a stronger quality of paper and is becoming a journal ageing researchers may wish to track.

Communication with the public: communication has been a strong point too with outputs geared to particular audiences, public engagement and events such as Café Scientifiques, journalist briefings, newsletters and website development.

Overall impression – to what extent has this Institute been successful in achieving outcomes?

The answer to this question depends on how outcomes are defined. We have taken these to mean significant achievements which address the IA mandate, earlier aims and strategic objectives. There are many successful achievements. Our ability to provide a more detailed view of gaps is inhibited by the lack of a synthetic overview of all activities but there appears to be a good range of outputs. Those at the translational end will take time to emerge and in the bibliometric analysis available to us there is more biomedical than the other pillars. Time analyses will be helpful to track the shift in research and translational outputs as the effort expended to achieve the earlier outputs such as attendance at summer schools, comes to fruition.

Section 5 - Achieving the Institute mandate

There is no question that IA has provided leadership to galvanise research in aging in Canada. It has achieved its mandate in this regard but needs further strengthening in its progress to support and strengthen developments to date, and to continue to identify and work through the new priorities focusing on identified gaps. It must continue to play a key role in keeping aging research highly visible to the public and the government. The way in which the IA work supports its developmental approach could be clearer as could the need to clearly address comorbidity, health services research and its population and public health meaning. Our sense is that the CLSA will prove to be an excellent resource for this in the coming years, but that the gaps which CLSA cannot address need, particularly in the short term, to be clearly articulated and addressed.

Overall impression – to what extent has this Institute achieved its mandate?

This is a repetition of the content above. IA has highlighted the importance of research relevant to our aging society, reaching out to the community, the policy makers, researchers already involved in aging research and attracted in new researchers, as well as making selected international linkages. It is therefore facilitating research which should, in time, improve the quality of life and health of older Canadians by understanding and addressing or preventing the consequences of a wide range of factors associated with aging. The nature and timing of impact will inevitably depend on the type of research and whether it is aimed at primary, secondary or tertiary research all of which have very different timeframes as well as ability to prove impact or effect. There are gaps which should be addressed, key to which is the overarching review of institutes, the way they work together to achieve each individual institute's mandate and also the way they interact or compete for (and label) the resources of CIHR.

Section 6 - ERT Observations (O) & Recommendations (R)

O: This is work in progress
R: Continue support for IA

O: The success of the Institute in the period reviewed is very largely attributable to the skills including leadership, diplomacy, communication, energy and dedication of Dr. Anne Martin-Matthews, including willingness to engage with the full range of stakeholders from potential students to ministers. The new Scientific Director will need to continue this tradition, build his/her own team locally, work effectively with the Ottawa team and, crucially, maintain the current impressive engagement of the IA and its Chair. The Institute is essentially the Scientific Director.
R: Dr. Martin-Matthews' contributions are fully recognised. Consideration could be given to the creation of a deputy role to provide additional support for the leadership role to make it more sustainable.

O: Whilst the documentation was very helpful there was no systematic overview of activity; case studies from first actions to full implementation would have been useful.
R: Consideration could be given to the structure of the ongoing collection of activities which are outcomes in their own right, providing evidence of the leadership component from communication, lectures, open meetings, a digested synthesised report on grants in the field of aging funded by pillar and areas within pillars, including cross cutting work. This could be complemented by case studies which track activities through from first consultations or calls (such as capacity) to intermediate and final outcomes.

O: Canada has the opportunity to lead the world through creation of integrated data systems on regional and national level providing evidence for population benefit. There are many challenges but an essential outcome is that provincial data and federal data systems need to be linkable, with appropriate and approved privacy protection, with data being made available to researchers. Fragmentation of federal structures has not helped the effective use of the data collected which is aimed at public benefit. CLSA will be all the more powerful as a resource if those that are seen and provide permission for health and social care data to be linked can be related to their population context using integrated population routine data to build this.
R: We recommend that IA work with its partners and the other institutes to highlight the benefits for the population and for Canada's research potential in order to work towards resolving these issues. It can be done with the requisite will.

O: There is evidence of translation and knowledge transfer activity but this needs to be encouraged and captured further.
R: Continue the encouragement of request for applications and other types of grant/programme call and other activities that facilitate knowledge transfer, implementation and evaluation.

O: Although there is breadth of research there are clinical and population areas that need to be considered as priorities with those identified already, with which they link. These are complexity of care with integration and rationalisation of disease based approaches

which do not serve the older old well. Multimorbidity and end of life could be developed further as themes building on the grants that have already been awarded.
R: A population based synthetic approach with an epidemiologically based needs assessment (existing evidence and ongoing grant work) would be helpful to confirm these gaps. Develop the existing strategy further to address thematic gaps. This work could inform and be built into the Strategy for Patient-Oriented Research.

O: Too little work has been done with First Nations.
R: Work with the relevant institutes to encourage the research community to work with the First Nations community to identify and address research needs.

O: Biomedical research in aging as opposed to specific disease areas has not been actively supported. A major gap is the lack of aging animals on which to work, there is no Canadian aging animal resource. Until such a resource is created, Canada will have difficulty competing in the international arena in this area.
R: Given the weaknesses of many current animal models for chronic disease which do not take into account that disease in humans occurs in an ageing context, we recommend that an assessment of the benefits and costs of setting up such a facility and whether the Canadian research community would wish to have such a resource, whether it would build capacity in this area and whether the other institutes have an interest.

O: CLSA is a huge achievement. It cannot however address concerns about the frail old, end of life, First Nations (as mentioned above) for some years. In this time it is important to ensure investment in parallel research on which CLSA, at the right time, can build.
R: Ensure continued investment tailored to ensure that the timing of CLSA and new opportunities are exploited, and that other themes continue to grow. Keep institutes informed about CLSA progress so that the research community is ready for bolt on studies and other opportunities are not missed (given there is a considerable time lag in recognising the opportunity and getting research going).

O: Capacity building, the progress here has been excellent and encouraging enthusiasm to work in aging research brings people to the post doctoral stage but there appears to be a gap after this stage at the junior academic, intermediate academic stages before chair positions. This must be addressed if there are to be leaders in aging research in future decades. CLSA is providing a base for such career development. Emerging Teams have also been an excellent avenue for this, with continued potential.
R: IA to work with CIHR and other relevant institutes to identify the career gaps and develop a longer term plan for supported career tracks for academics working in this area and develop funding streams to support these.

O: The CIHR peer review process may not be helpful to pillars 3 and 4.
R: The nature of the review process should be revisited to see whether particular fields are disadvantaged – this is something that needs to be addressed across institutes.

O: The Scientific Director's presence on governing council is an effective way of the institutes developing common themes.
R: To encourage further work in this area with recognition that some institutes such as Population and Public Health, Health Services and Policy Research, Aboriginal Peoples'

Health, and Genetics are particularly cross cutting (public health is overarching for all). This is particularly important if the outputs from each institute are to be relevant for aging populations.

O: Harmonisation was mentioned with other longitudinal studies.
R: This provides an opportunity to work with cohort studies from other life stages to develop life course approaches and holistic approaches including external influences on health – such as work with the Institute of Human Development, Child and Youth Health.

O: The third sector and public participation has been actively pursued, but there is limited representation on IAB and the CIHR Governing Council. Provincial government does not seem to be represented. Third sector bodies can have powerful roles in helping government and ministers see opportunities such as data linkage which cautious public servants might otherwise think is impossible to achieve (i.e. helping create and push a vision).
R: Consideration of what membership of IAB and Governing Council would best serve the interests of the population including addressing critical barriers to Canada's research success.

Overall impression of the performance of this Institute

Recommendations

Our recommendation is largely to continue in the direction already set, with specific areas being the key role of the Scientific Director and thus the importance of a smooth transition in the near future, the leadership for aging across the different institutes with greater interaction between these to achieve maximum benefit for the population, careful overview of activity and timeframes of potential impact so that key areas such as aboriginal health in aging, multimorbidity and complexity are being tackled. The major success with CLSA is recognized and we recommend continuing attention to sufficient resources and capacity building (particularly at intermediate levels) to make sure this early investment provides the rich potential yield in the decades to come.

Appendix 1 - Expert Review Team

Chair - Professor Carol Brayne
Professor of Public Health Medicine
Department of Public Health and Primary Care
University of Cambridge, UK

Expert Reviewer - Professor Kyriakos S. Markides
Annie and John Gnitzinger Distinguished Professor of Aging and Director Division of Sociomedical Sciences
Department of Preventive Medicine and Community Health
Editor of Journal of Aging and Health
University of Texas Medical Branch in Galveston, USA

International Review Panel – Professor Fiona Stanley
Director, Telethon Institute for Child Health Research
Chair, Australian Research Alliance for Children and Youth
Professor, School of Paediatrics and Child Health
University of Western Australia
Perth, Australia

Appendix 2 – Key Informants

Session 1 – Review of Institute

1. **Dr. Anne Martin-Matthews, IA Scientific Director**

2. **Dr. Rebecca Jane Rylett, Chair – Institute Advisory Board**
   Professor of Physiology, Pharmacology and Toxicology
   Department of Physiology
   University of Western Ontario

3. **Dr. Dorothy Pringle**
   Professor, Faculty of Nursing
   University of Toronto

4. **Dr. Christopher Patterson**
   Professor and Chief of Geriatric Medicine- Health Sciences Centre
   McMaster University/ Hamilton
   Department of Microbiology and Immunology
   Dalhousie University

Session 2 – Consultation with researchers

1. **Dr. Karim Khan**
   Professor and clinician-scientist, Department of Family Practice
   University of British Colombia

2. **Dr. Kenneth Rockwood**
   Professor of Geriatric Medicine
   Faculty of Medicine
   Dalhousie University

3. **Dr. Parminder Raina**
   Professor, Department of Clinical Epidemiology & Biostatistics
   McMaster University

Session 3 – Roundtable with stakeholders

1. **Dr Janice Keefe**
   Professor, Department of Family Studies and Gerontology
   Mount Saint Vincent University, Halifax

2. **Ms Debbie Benczkowski**
   Chief Operating Officer
   Alzheimer Society of Canada

3. **Ms. Louise A Plouffe**
   Manager, Knowledge Development
   Public Health Agency of Canada
   Division of Aging and Seniors

4. **Dr. Michael Wolfson**
   Canada Research Chair in Population Health Modelling/Populomics
   Faculty of Medicine University of Ottawa