

The Canadian Longitudinal
Study on Aging:
Protocol Development

CAG Annual Meeting
Toronto, 2003

Overview of the Presentation

- Study aims
- Conceptual framework
- Research questions
- Process
- Design considerations
- Governance
- Timeline
- Future developmental work

Background to CLSA

CANADIAN LIFELONG HEALTH INITIATIVE

- Cross cutting strategic initiative of CIHR
- Two longitudinal studies:
 - Canadian Longitudinal Study on Aging (CLSA)
 - Canadian National Birth Cohort (CNBC)

Background to CLSA

November 4, 2001

- Healthy Aging: From Cell to Society, planning workshop sponsored by the Institute of Aging
- Launch of Requests For Proposal (RFP)

January 15, 2002

- Response to RFP by investigator team

October 1, 2002

- Study commencement

Principal Investigator Triumvirate

Susan Kirkland - Dalhousie University

Parminder Raina - McMaster University

Christina Wolfson - McGill University

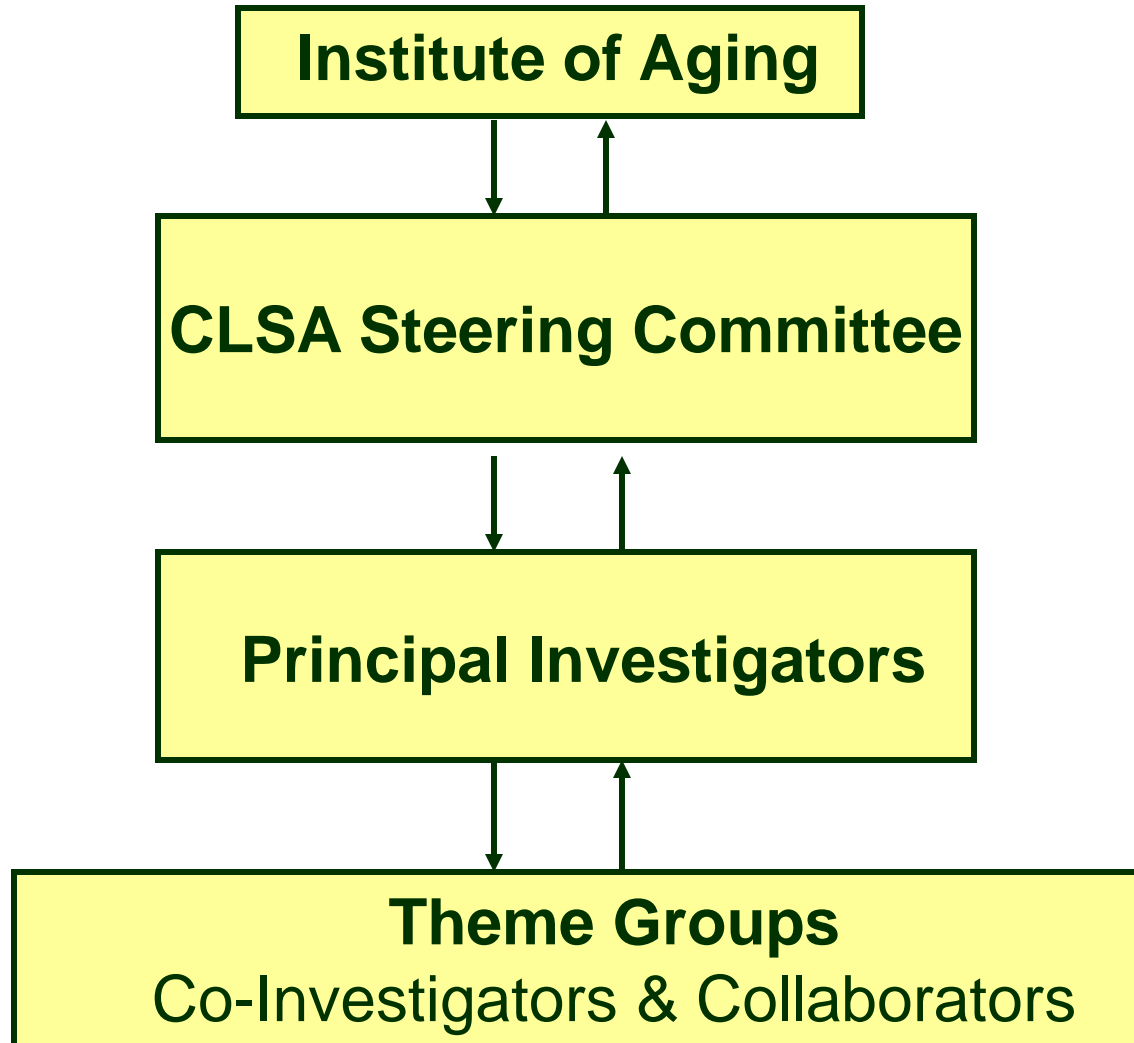


CLSA Research Team

- 3 Principal Investigators
- 20 Co-Investigators
 - 4 Senior Advisors
 - 3 Institutional Advisors
 - 8 Theme leaders
 - 5 Cross cutting Advisors
- 200 collaborators

Representing 26 Universities & 10 Provinces

CLSA Governance Structure



Rationale for CLSA

- Aging of Canadian population
- Longer life expectancies
- Baby boomers begin turning 65 in 2011
- Different needs, expectations
- Implications for health care system, social programs
- Need for evidence based decision making
- Generation of new knowledge

Development of conceptual model

- Need to characterize aging beyond the absence of disease
- Theoretical discussions in the literature: healthy aging, successful aging, optimal aging, productive aging, active aging
- Know little about the process of aging, except among the aged

Healthy/Successful Aging

Literature dominated by two models:

- Rowe and Kahn (*Gerontologist* 1997)
 - *Differentiates successful aging from usual aging*
 - *based on the assumption that successful agers engage in behaviours that modify risk factors to allow them to meet a high degree of physical, mental and social functioning*
- Baltes and Baltes (1990)
 - *Selection, optimization, compensation*
 - *based on the assumption that decline is an inevitable part of aging, and that successful agers are those who engage in processes that help them to adapt to change in order to meet their own goals*

Conceptual Framework

- Healthy and successful aging
- Adult development, lifecourse approach
- Determinants of health
- Critical and sensitive periods
- Adaptation
- Complexity: bio-psycho-social aspects of aging, intrinsic and extrinsic level factors, interactions

Aims of the CLSA

- To examine aging as a dynamic process.
- To investigate the inter-relationship among intrinsic and extrinsic factors from mid life to older age.
- To capture the transitions, trajectories and profiles of healthy and successful aging.
- To provide infrastructure and build capacity for high quality research on aging in Canada.

Study Objectives

1. To determine how changes over time in
 - Genetic and biochemical factors
 - Exercise, nutrition, other health behaviours
 - Physical, psychological, cognitive abilities
 - Social, economic, and cultural factors
 - Health and community services

Are inter-related;

Contribute to healthy and successful aging.

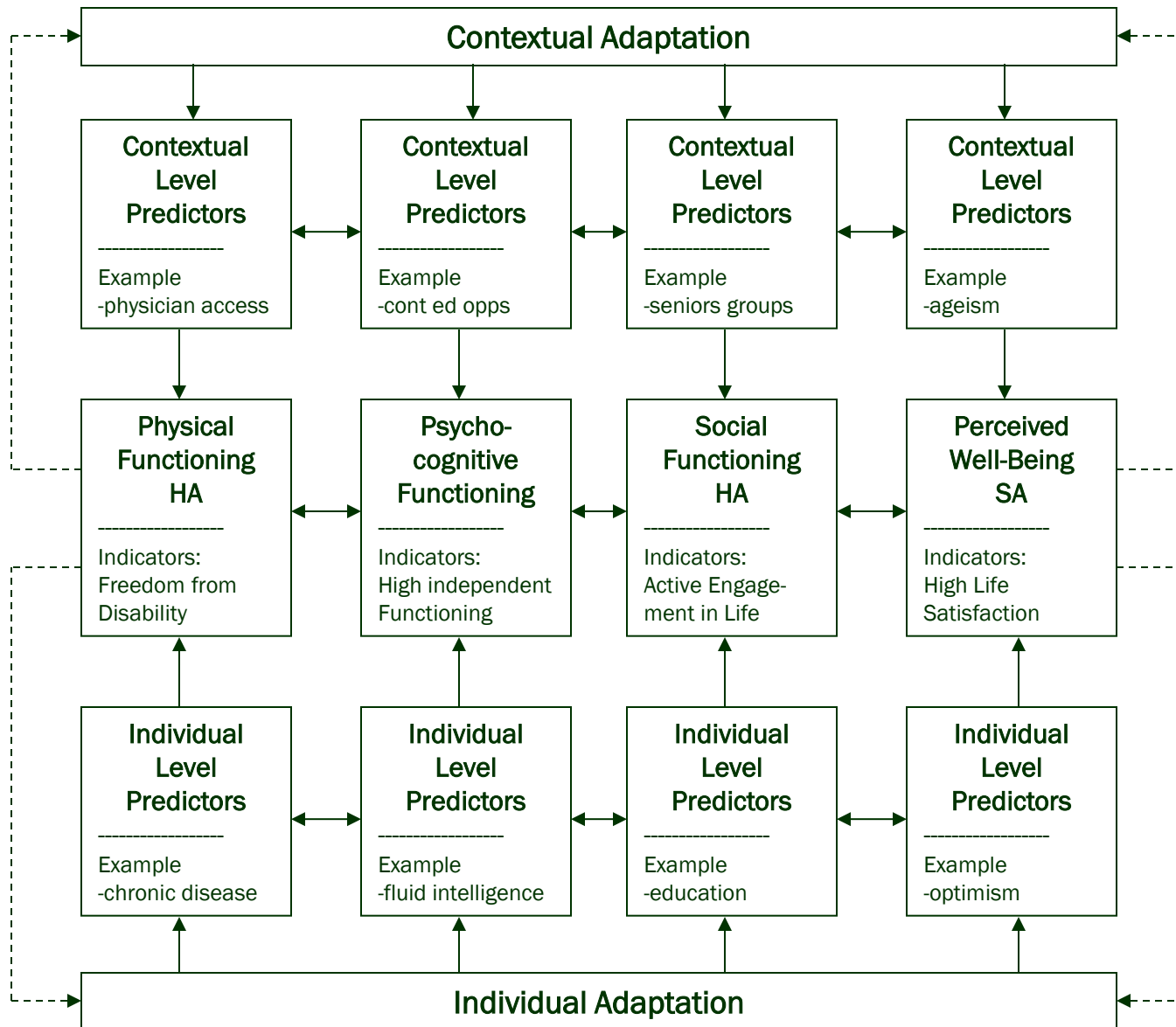
Study Objectives

2. To identify factors that will inform intervention strategies to promote healthy aging
3. To inform evidence based practice, health care delivery, public policy

Overarching Research Questions

- Physical Health and Healthy Aging
- Psychological Health and Healthy Aging
- Social Health and Healthy Aging
- Adaptation
- Perceived Well Being and Successful Aging

Proposed Model of Healthy Aging



Overarching Research Questions

Examples

- What are the determinants of the changes in physical (social, psychological) health over time and across ages?
 - Intra, inter- individual
- How does the interplay between biological, psychological, social, behavioral, health system factors influence changes in physical (social, psychological) health over time and across ages?

Overarching Research Questions

Examples

- What are the adaptive responses to changes in physical (social, psychological) health?
 - What are the individual and societal level adaptive responses to changes in physical (S, P) health?
 - Do adaptive responses vary across age and change over time?
 - Are adaptive responses health state specific?
 - What are the barriers to, or facilitators of, adaptive responses to changes in physical (S, P) health
 - How are adaptive responses related to the heterogeneity in physical (S, P) health and healthy aging?

Overarching Research Questions

Examples

- Describe changes in *perceived* successful aging over time and across ages
 - Intra, inter-individual changes
- What are the determinants of changes in *perceived* successful aging over time?
 - Intra, inter-individual changes
- How does the interaction between components of healthy aging and adaptive factors influence changes in successful aging over time and across ages?
- Why do some individuals perceive they are aging successfully and others do not?

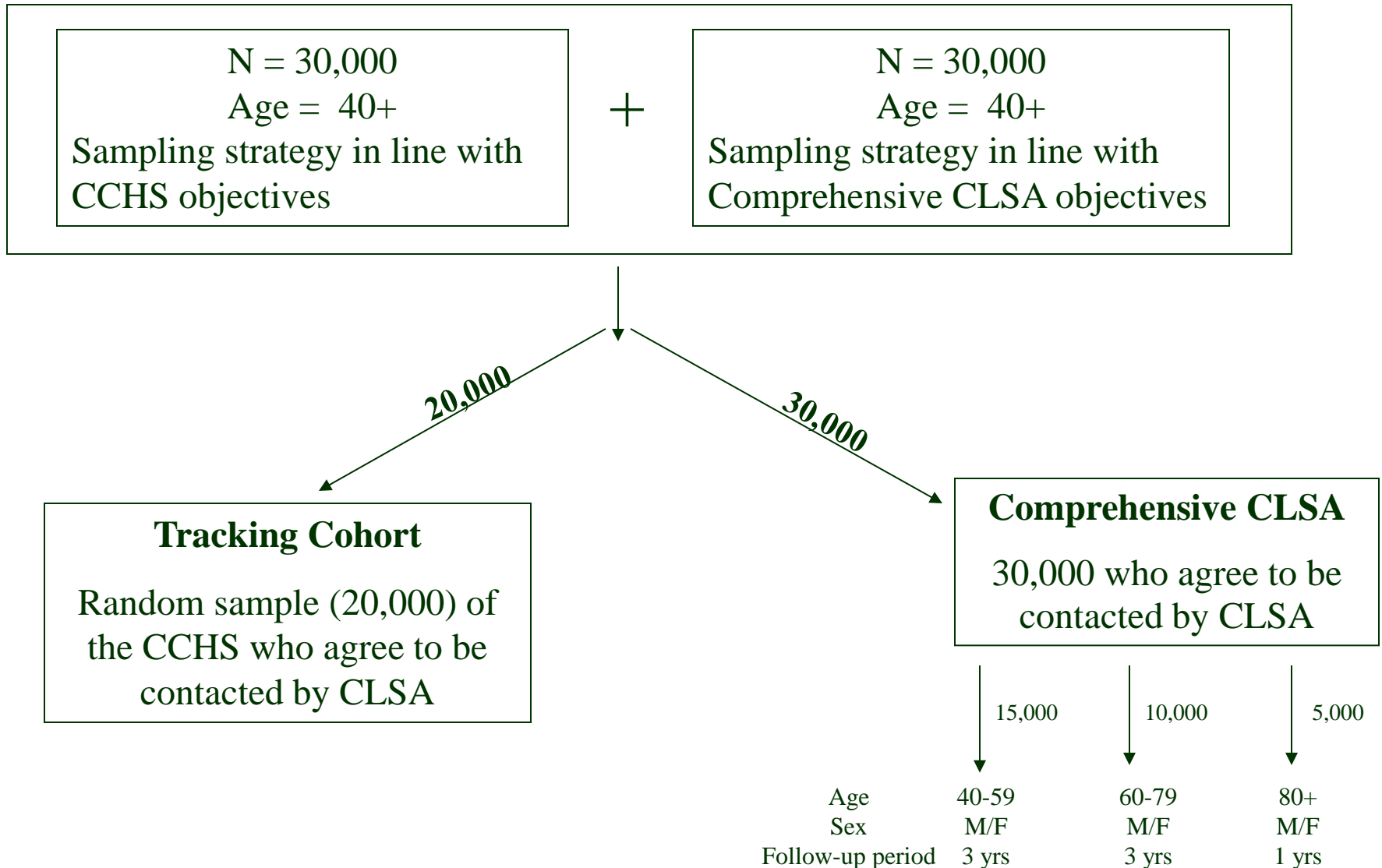
Study Design

Basic Elements

- Longitudinal design
- Canadian women and men aged 40 and over
- 50,000 individuals
- 20 year follow-up
- Repeated measurement
- Embedded sub-studies
- Linkage to existing databases
- Eventual public access data

CLSA Study Design

Canadian Community Health Survey (CCHS): Aging Module Cross-Sectional Survey, 2006



Design Considerations

CLSA Comprehensive Follow up

Birth Cohort	Frequency of Major Follow-up	Frequency of Minor Follow-up	Sample Size
40 - 59 yrs	3 years	1 yr	≈ 15,000
60 - 79 yrs	3 years	1 yr	≈ 10,000
80+	1 year	6 mo	≈ 5,000

Major follow-up includes:

- Complete survey/questionnaires
- Complete clinical/physical measures
- Bio-samples on all subjects at baseline

Minor Follow-up includes:

- Questionnaire to collect frequently occurring changes (self-report) and to maintain contact

Study Design

Tracking Cohort

- Only questionnaire based data to be collected
- Comparable to comprehensive CLSA
- Random sample and representative at provincial level
- Essential for for policy directed/relevant research
- Will be used as pool for add-on or specific embedded studies

Study Design

Core, Embedded, Add-on Studies

- Core Sample
 - Defined as all individuals recruited at baseline
- Embedded Studies
 - Two types of embedded studies are foreseen
 - Embedded measures: in-depth investigation of a selected sub sample of the core
 - Core measures collected on special populations who are not adequately represented in the core sample
 - Embedded Studies will be part of the CLSA protocol
- Add-on Studies
 - Not part of the CLSA protocol
 - Separate mechanisms for approval, funding

Study Content Development Theme-Specific Working Groups

- Research questions generated by theme specific working groups
- Guided by aims and objectives
- Integrated into overarching research questions
- Theme leaders for each WG
- Research Associate assigned to each WG
- Principal Investigators oversee 2-3 WGs
- Work accomplished via email, teleconferencing, listserves, website

Development of scientific content -Process-

- Working Groups

- Biology
- Psychology
- Social
- Clinical
- Health Outcomes
- Health Services
- Lifestyles
- Methodology

Leaders

Karl Riabowol

Holly Tuokko

Margaret Penning

David Hogan

Chris Patterson

Kevin Brazil

Hélène Payette

Robert Platt

Development of scientific content

-Process-

- Domains of study generated by Working Groups
- 30 minutes per Working Group as a guide
- Domain development (gaps, overlaps) subject of a face to face meeting with co-investigators
- WG subgroups formed
- Development of background literature, rationale, research questions
- Priority setting at a face to face meeting with co-investigators
- Guiding principles for priority setting: longitudinal, niche, aging
- Development of measures, items and assessment of properties
- Templates catalogue biochemical, physical and questionnaire measures
- Cross cutting groups forming to consider biosample & physical measures, clinical assessment protocol

Social WG

Domains:

- Social networks
- Social support
- Work and retirement
- Structural inequalities
- Income and wealth
- Transportation and migration
- Housing and built environments

Biology WG

Domains:

- Genetics of aging (susceptibility and robustness)
- Cellular aging and immunosenescence
- Caloric intake and oxidative damage
- Metabolic, physiologic biochemical markers of aging

Clinical WG

Domains:

- Frailty
- Sensory losses
- Medication use
- Injuries
- Chronic diseases: Diabetes/metabolic syndrome, osteoporosis, hypertension, stroke, arthritis, congestive heart failure
- Health status: glucose intolerance, blood pressure
- Menopause
- Incontinence

Health Outcomes WG

Domains:

- Communication: language, speech
- Oral health
- Functional health and participation
- Psychological/mental health
- Quality of life
- Elder abuse

Lifestyles WG

Domains:

- Smoking
- Drugs
- Alcohol consumption
- Physical activity
- Leisure activities
- Social participation
- Anthropometry
- Food consumption

Psychology WG

Domains:

- Everyday competence
- Adaptive functioning
- Coping
- Cognitive functioning
- Personality
- Emotion, psychopathology
- Spirituality
- Pain
- Sleep

Health Services WG

Domains:

- Formal and informal services
- Community services
- Assistive devices and emerging technology
- Medication use and compliance
- Preventive services
- Continuity of care and perception of services
- End-of-life
- Costs

Methodology WG

Domains:

- Sampling
- Missing data
- Censoring
- Event history analysis
- Change-point models
- Time-dependent covariates

Ongoing Activities

- Collaboration with Statistics Canada
- Consultation with PIs of other longitudinal studies: CSHA, AIM, MFUS, ELSA, LASA, NHANES, HRS
- Linkages with other proposed Canadian longitudinal studies: Birth Cohort, Alberta Tomorrow Study, Statistics Canada Physical and Biomarkers Survey, HRDC Transition to Retirement Study
- Discussions with IHSPR to assess the feasibility of data linkage and development of strategies
- Participation in development of legal, ethical, governance structures: GELS, ELSI
- Promotion of the CLSA at the local, national and international level: Seniors Forum, CSEB, CAG, universities, governmental agencies

Timeline

- Draft Protocol submitted to SC Dec 15, 03
- Feedback from SC Jan 07, 03
- Submit final draft for peer review Jan 21, 04
- Receive peer review comments Mar 01, 04
- Meeting with peer reviewers Mar 15, 04
- Submit CLSA protocol Mar 31, 04

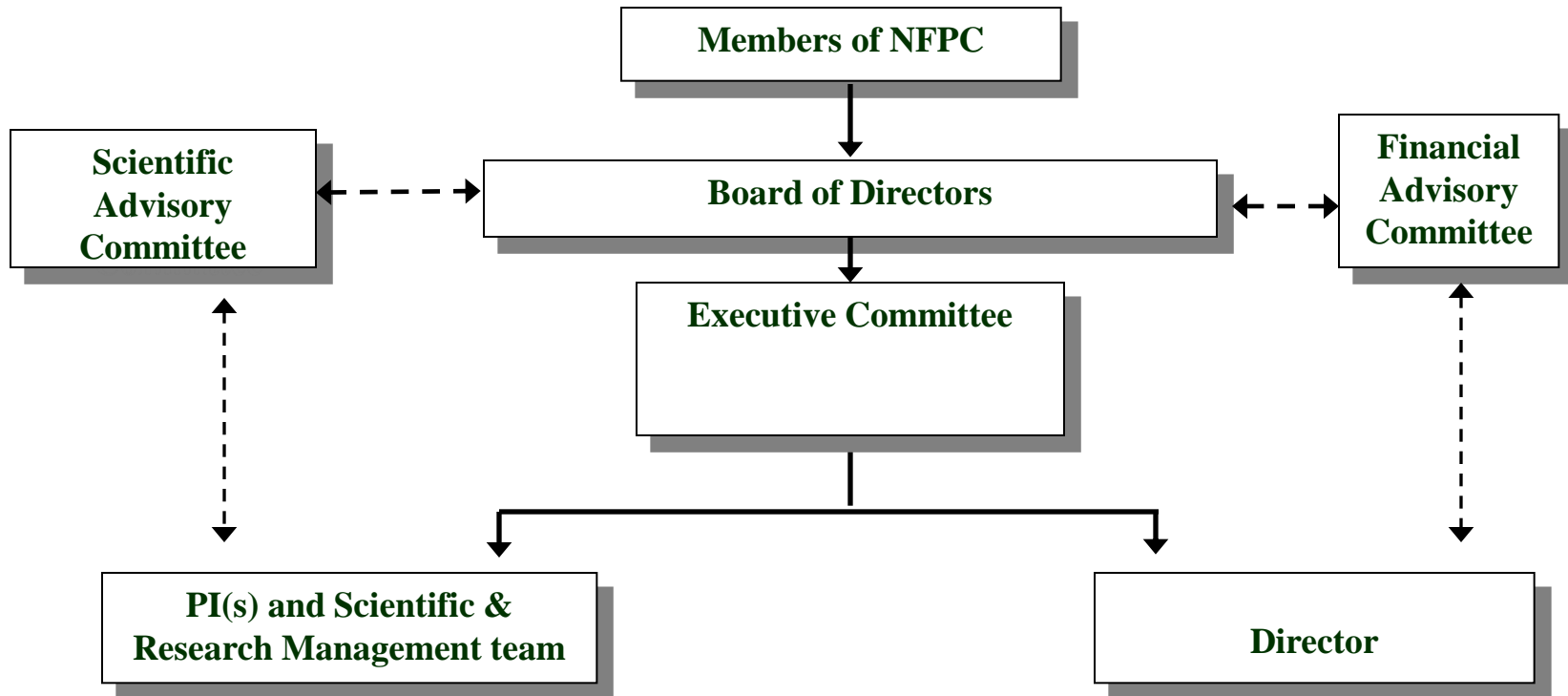
Future developmental work

- Pilot CCHS aging survey, 2004
- Development of all forms, questionnaire packages
- Develop training guides and modules, procedural manuals
- Recruit data collection directors, sites
- Hire interviewers, nurses, physicians and medical technicians
- Train data collection staff
- Obtain institutional ethics approval
- Field test data collection tools for questionnaires, biological and physical measures
- Fine tune the processing, shipping and storage of bio-samples

CIHR Steering Committee

- **Réjean Hébert** (*Chair*)
Scientific Director, CIHR - Institute of Aging
- **Anne-Cécile Desfaits**
Assistant Director, CIHR - Institute of Aging
- **Linda Mealing**
Assistant Director, Partnerships, CIHR - Institute of Aging
- **John Frank**
Scientific Director, CIHR - Institute of Population and Public Health
- **Jean-Pierre Grégoire**
Merck Frosst Canada
- **Betty Havens**
Member, Institute Advisory Board, CIHR - Institute of Aging
- **Barry McPherson**
President, Canadian Association on Gerontology
- **Morris Barer**
Scientific Director, CIHR - Institute of Health Services and Policy Research
- **Gary Catlin**
Director, Health Statistics Division - Statistics Canada
- **Cy Frank**
Scientific Director, CIHR - Institute of Musculoskeletal and Arthritis
- **Graydon Meneilly**
Member, Institute Advisory Board, CIHR - Institute of Aging
- **John Millar**
Canadian Institute for Health Information
- **Linda O'Rourke**
Canadian Association on Gerontology
- **Louise Plouffe**
Division of Aging and Seniors, Health Canada

Organizational Chart for the Recommended Legal and Governance Structure for the Canadian Longitudinal Study on Aging (CLSA)



Implementation of research protocol
 Management and supervision of scientific implementation teams
 Re-allocation of research funds to individuals, institutions and projects

Data collection supervision
 Research and analysis
 Studies and add-on studies
 International relationships
 Ethical considerations
 Knowledge dissemination and translation
 Publications

Project administration
 Active participation in the definition of the financing strategy and its implementation
 Financial management and control
 Public communication
 Support to research management (logistics, knowledge translation, data collection, etc.)
 participation and collaboration to IP value-enhancement activities as requested by the CSIP owners.

Working Group Members

SOCIAL: Margaret Penning, Denise Cloutier-Fisher, Ingret Connidis, Anne Martin Matthews, Lynn McDonald, Doug Norris, Mark Rosenberg, Andrew Wiser, Zak Zimmer. **PSYCHOLOGY:** Holly Tuokko, Thomas Hadjistavropoulos, Margaret Crossley, Norm O'Rourke, Dominique Lorrain, Louis Bherer. **HEALTH SERVICES:** Kevin Brazil, Charlyn Black, Margaret Denton, Lisa Dolovich, Marcia Finlayson, Grace Johnston, Paul Krueger, Mark Loeb, Verena Menec, Byron Spenser, Paul Stolle, Mike Veal. **BIOLOGY:** Karl Riabowol, Cynthia Balion, Tara Beattie, Torban Bech-Hansen, Samuel Bechimol, Angela Brooks-Wilson, Heather Bryant, Howard Feldman, Tamas Fulop, Pierette Gaudreau, Aziz Ghahary, David Hanley, David Heart, Siegfried Hekimi, Russell Hempel, Gin-Yusk Hsiung, Abdelouashed, Peter Lansdorp, Graydon Meneilly, Hyman Schipper, Guy Trudel, Homayoun Vazri, Eugenie Wang. **LIFESTYLE:** Helene Payette, Louise Demers, Johanne Desrosiers, Isabelle Dionne, Susan Doble, Duylaine Ferland, Geoffrey Fong, Cora Craig, Katherine Gray Donald, Carol Greenwood, Sophie Laforest, Rober Petrella, Bryna Shatenstein, Heidi Sweistrup. **CLINICAL:** David Hogan, Chris MacKnight, Paul Artes, Katherine Berg, J Beim, Michael Borrie, Fred Berge, Francine Ducharme, Gustavo Dugue, Neil MacKinnon, Ken Madden, Gary Naglie, Margaret Pichora-Fuller, Brent Tompkins, Alan Tenenhouse. **HEALTH OUTCOMES:** Chris Patterson, Jacqueline Bosch, Hertzell Gerstein, Jacek Kopek, George Heckman, Jane McCusker, Robert McKelvie, JB Orange, Alex Papaioannou, Elizabeth Podnieks, Julie Richardson. **METHODOLOGY:** Robert Platt, Michel Abrahamowicz, Richard Gallagher, Russ Steele, Robert Tate, David Wolfson. **CROSS CUTTING:** Sonia Anand, Francois Beland, Howard Bergman, Yola Moride, David Pedlar, Jacob Slonim, Laurel Strain, Salim Yusif. **SENIOR INVESTIGATORS:** Kenneth Rockwood, Ian McDowell, Larry Chambers, Neena Chappell.

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Faculty of Medicine, Dalhousie University**

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CLSA Contact Information

- E-mail: CLSA@epid.jgh.mcgill.ca
- Web site: www.fhs.mcmaster.ca/clsa



Healthy and Successful Aging! Combined age = 256



Discussion Topics

- **Feedback about the proposed design**
- **Feedback about the range of topic areas included in CLSA**
- **Governance**
- **Questions?**