Canadian Longitudinal Study on Aging: Advancing the Science of Population Health and Aging through Interdisciplinary Research

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Canadian Longitudinal Study on Aging (CLSA)

- 50,000 Canadians
- 45-85 years of age at baseline
- 20 year longitudinal study, data collection every 3 years
- More than 160 researchers in 26 institutions
- Multidisciplinary: biology, genetics, medicine, psychology, sociology, demography, economics, epidemiology, nursing, nutrition, health services, biostatistics, population health
Funders & Partners

- Strategic initiative of the Canadian Institutes of Health Research (CIHR)
- Funded by CIHR and the Canada Foundation for Innovation (CFI)
- Provinces and universities across Canada
Canadian Investment

$50M Canadian investment in national platform

- $23.5M CIHR for 5 Years (86% of the required funding)
  - Expectation is to identify non-CIHR partners (in kind or $$)
- $10M CFI for 5 Years (infrastructure)
- $10M Provinces for 5 Years (infrastructure)
- $6.5M Universities and other partners
Our Vision

A research platform – infrastructure to enable state-of-the-art, interdisciplinary population-based research and evidenced-based decision-making that will lead to better health and quality of life for Canadians.
Our Aim

To study aging as a dynamic process and the inter-relationship among intrinsic and extrinsic factors from mid-life to older age.
Selected Research Goals

- The progression of **health** from middle age to early old age to older old age
- The determinants of **well-being and quality of life**
- **Social participation, social relationships and caregiving** in an aging population
- The examination of socioeconomic and health **inequalities** in an aging population
- **Retirement** and **post-retirement** labour market activity
- **Cognitive functioning** and **mental health**
- **Disability** and the compression of morbidity
Selected Research Goals

- Risk factors (including genetics) of chronic diseases:
  - Cardiovascular
  - Cerebrovascular
  - Neurological
  - Respiratory
  - Vision and Hearing
  - Renal
  - Metabolic
  - Cancer
  - Osteoarthritis
  - Osteoporosis
  - Diabetes
  - Musculoskeletal
  - Depression
Study Overview

50,000 women and men aged 45 - 85 at baseline

n=20,000
Randomly selected within provinces

n=30,000
Randomly selected within 25-50 km of 11 sites

Questionnaire
- By telephone (CATI)

Questionnaire
- In person, in home (CAPI)

Clinical/physical tests
Blood, urine (consent)
- At Data Collection Site

Interim contact, follow up every 3 years

Data Linkage (consent)
National Scope

Winnipeg
Vancouver
Victoria
Surrey
Calgary
Hamilton
Ottawa
Montreal
Sherbrooke
Halifax
St. John’s

Maintaining Contact Questionnaire:
All sites (every 18 months)

- Home Interviews & Data Collection Site Visits
  Recruitment & follow-up

- Telephone Interviews
  Recruitment & follow-up
Depth and Breadth of the CLSA

PHYSICAL & COGNITIVE MEASUREMENTS

- Height & weight
- Waist and hip measurements
- Body composition
- Arterial pressure
- Heart rate
- ECG
- Grip strength
- Timed up-and-go
- Chair rise, 4-m walk
- Standing balance
- Vision
- Hearing
- Spirometry
- Bone density
- Aortic calcification
- Carotid intima-media thickness
- Cognitive assessment
Depth and Breadth of the CLSA

PSYCHOSOCIAL

- Social participation
- Social networks and support
- Caregiving and care receiving
- Mood, psychological distress
- Satisfaction with life
- Wealth
- Personality traits

- Work-to-retirement transitions
- Veteran identifier/PTSD
- Retirement planning
- Social inequalities
- Mobility-lifespace
- Built environments
Depth and Breadth of the CLSA

HEALTH INFORMATION

- Chronic disease and symptoms
- Medication and supplement use
- Women’s health
- Self-reported health service use
- Oral health
- Administrative data linkage health services and drugs
- Other administrative databases
- General health
- Injuries
- Pain/discomfort
- Functional status
- Activities of daily living (ADL)
- ADL impairment

Photo: Health Canada
Depth and Breadth of the CLSA

LIFESTYLE &
SOCIODEMOGRAPHIC

- Smoking
- Alcohol consumption
- Physical activity
- Nutrition
- Birth location
- Ethnicity/race/gender
- Marital status
- Education
- Income
- Transportation
- Home ownership
Biospecimen Room
Collection, processing, analysis

- 5 – 6 participants per day
- 50 mL blood
- Urine sample
- Hematology tests
- Collection to storage time – 2 hours

AcT DIFF, Beckman Coulter
Biospecimen processing
42 aliquots per participant
Recruitment & Data Collection

**Telephone Interviews**

- Recruitment of 20,000 participants for telephone interviews:
  - Statistics Canada CCHS on Healthy Aging
  - Provincial Health Care Registries
  - Random Digit Dialing

- Baseline data collection is completed!
- First Data release will be this June 2014
- Maintaining contact interviews initiated 2013 (3,000 completed, current response rate 96%)
- First follow-up begins 2015
Recruitment & Data Collection
Home Interviews and Data Collection Site Visits

- Recruitment of 30,000 for Home Interviews and Data Collection Site Visits:
  - Provincial Health Care Registries
  - Random Digit Dialing
- Baseline data collection 2012 to 2015: Data collection completed on >17,000 to date!
- Data release on 30,000 planned for Spring 2016
- Maintaining Contact Interviews start May 2014
- First follow-up begins 2015
CLSA by the Numbers

- 50,000 participants
- 20 years to complete the study
- Capacity for:
  - 140,000 telephone interviews
  - 210,000 home interviews
  - 210,000 visits to data collection sites
  - 5 million biospecimen aliquots
  - 300,000 follow-up calls
- 126 million questions will be asked during telephone interviews
- 300 million data points will form the CLSA research platform
Data and Biospecimen Access

• Data and biospecimens available to the research community

• Fundamental tenets:
  • The rights, privacy and consent of *participants* must be protected and respected at all times
  • The confidentiality and security of *data and biospecimens* must be safeguarded at all times
  • CLSA data and biospecimens are resources that will be used optimally to support research to benefit all Canadians.
What is the process to access data?

- Application process via CLSA website portal
- Review: Administrative, Data and Sample Access Committee recommendation
- Approval, data/biospecimen sharing agreements
- Raw data and/or biospecimens to investigator
- Return of derived variables to CLSA dataset
CLSA Funders and Partners
CLSA Partnerships

• Champions
  ➢ Promotion and awareness of the CLSA

• Funders
  ➢ Contribute to core platform development and maintenance

• Collaborators
  ➢ Research collaborations
  ➢ Additional data collection built into CLSA platform

• Researchers
  ➢ Use of CLSA data

• Sponsors
  ➢ In-kind and financial support other than for research
CLSA & Alzheimer Society of Canada Relationship

- Promotion of ASC and CLSA
  - Media sharing
  - Advocacy
  - Promoting research program

- ASC access to CLSA Researcher network
  - Resource for national and local outreach activities

- Supporting CLSA Communication and PR efforts
  - Support CLSA’s PR and communications activities
CLSA Research Team
Scientific Management Team

Lead Principal Investigator
Parminder Raina (McMaster)

Co-principal Investigator
Christina Wolfson (McGill)

Co-principal Investigator
Susan Kirkland (Dalhousie)
# CLSA Research Team

| Key Senior Co-investigators | Debra Sheets, Lynne Young, Holly Tuokko (Victoria), Max Cynader, Michael Hayden, Michael Kobor, Theresa Liu-Ambrose (UBC), Andrew Wister, Scott Lear (SFU), David Hogan, Marc Poulin (Calgary), Verena Menec, Phil St. John (Manitoba), Cynthia Balion, Christopher Patterson, Parminder Raina, Lauren Griffith, Mark Oremus, Harry Shannon (McMaster), Larry Chambers, Vanessa Taler (Ottawa), Christina Wolfson, Ron Postuma (McGill), Hélène Payette (Sherbrooke), Susan Kirkland (Dalhousie), Gerry Mugford, Patrick Parfrey (Memorial), Mary Thompson and Changbao Wu (Waterloo) |
| Scientific Working Groups and Co-Investigators | See our website: [www.clsa-elcv.ca](http://www.clsa-elcv.ca) |
The CLSA is funded by the Government of Canada through CIHR and CFI, and provincial governments and universities
CLSA Partners

- PHAC for Neurological Conditions Initiative
- PHAC for Injury Initiative
- Veterans Affairs (Veterans Health Initiative)
- Statistics Canada
- Ontario Ministry of Health and Long-Term Care
- Ontario Ministry of Transportation
- Provinces
- Universities
- Large number of in-kind contributions from vendors and suppliers
- Health Charities and private sector
CLSA Data Processing

- Telephone interview (n=20,000)
- Home interview and data collection site visit (n=30,000)
- Questionnaire data processed
- Blood and urine stored in Biorepository and Bioanalysis Centre (BBC)
- Linkage to administrative data with consent
- Data stored in National Coordinating Centre/Statistical Analysis Centre (NCC/SAC)
CLSA Infrastructure

4 Enabling Units

National Coordinating Centre (NCC)
Director: Parminder Raina

Biorepository and Bioanalysis Centre (BBC)
Director: Cynthia Balion

Genetics and Epigenetics Centre (GEC)
Directors: Michael Kobor and Michael Hayden

Statistical Analysis Centre (SAC)
Director: Christina Wolfson