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CENTRE FOR BRAIN HEALTH



BC
Brain
Wellness
Program

Moving from Reactive to Proactive: Integrating Wellness Interventions to Increase Healthspan, Empower Individuals (and Lower Costs)

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Conflicts of Interest

- Site Principal investigator for **industry-funded clinical trials**: Biohaven, AbbVie, BlueRock/Bayer, Praxis.
- **Speaker fees: commercial**: AbbVie, Merz;
- **Honoraria for lectures** by Canadian Movement Disorders Society, Panamerican section of the International Parkinson and Movement Disorder Society, Parkinson's Foundation
- **Research support**: Parkinson Canada, Pacific Parkinson's Research Institute (PPRI), VGH and UBC Hospital Foundation and Weston Family Foundation funded grants
- **Employment**: UBC

Future of healthcare: proactive, personalized



Adapted from a slide courtesy of Dr Sam Fereshtehnejad



Future of healthcare: proactive, personalized



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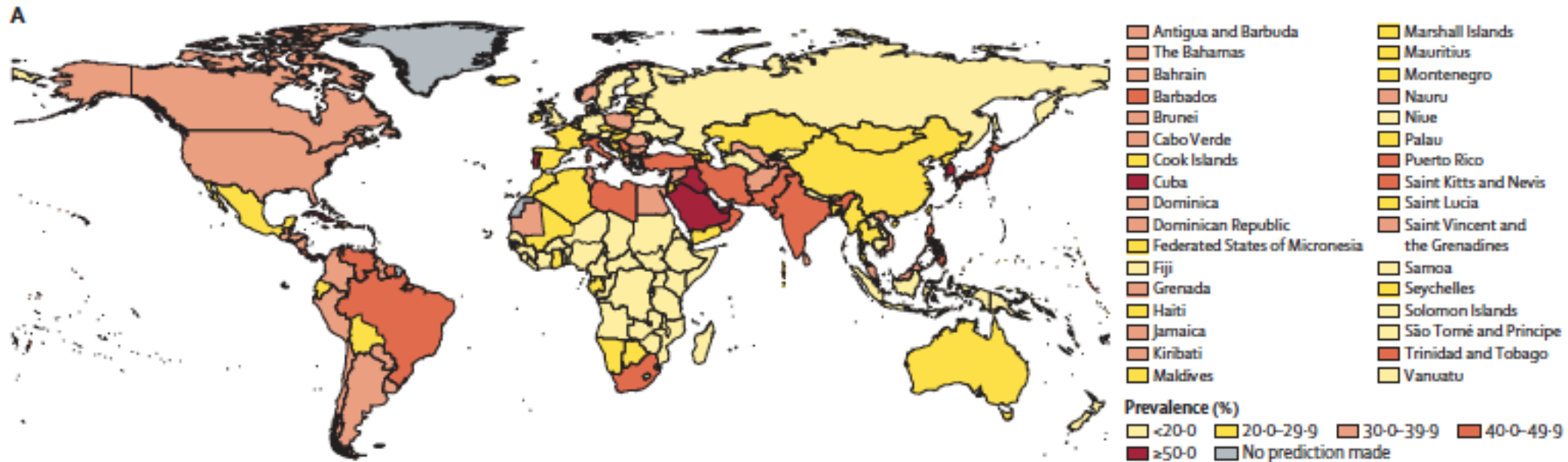
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Age-standardized prevalence of physical inactivity (2022)

National, regional, and global trends in insufficient physical activity among adults from 2000 to 2022: a pooled analysis of 507 population-based surveys with 5.7 million participants

Tessa Strain, Seth Flaxman, Regina Guthold, Elizaveta Semenova, Melanie Cowan, Leanne M Riley, Fiona C Bull, Gretchen A Stevens, and the Country Data Author Group*



5% points higher in females than males
Worse in population >60 years of age
(both sexes)

Loneliness.

- Distress due to perceived discrepancy between desired and existing social relationships



Our Epidemic of Loneliness and Isolation



2023

The U.S. Surgeon General's Advisory on the Healing Effects of Social Connection and Community



- Increased risk of
 - anxiety, depression
 - Heart disease (+29%)
 - Dementia (+50%)
 - Stroke (+32%)
 - Parkinson's (+37%)
- Poorer immune system function
- Increased inflammation (similar to not exercising)
- Increased risk of premature death similar to smoking daily (Harvard Longitudinal Study of Aging)

Parkinson's disease in 2026

- Fastest growing neurodegenerative disease globally and in Canada
- No disease modifying medication
- Exercise has best evidence for neuroprotection and to slow disease progression
- Highly complex, highly diverse

The evolution of Parkinson's disease

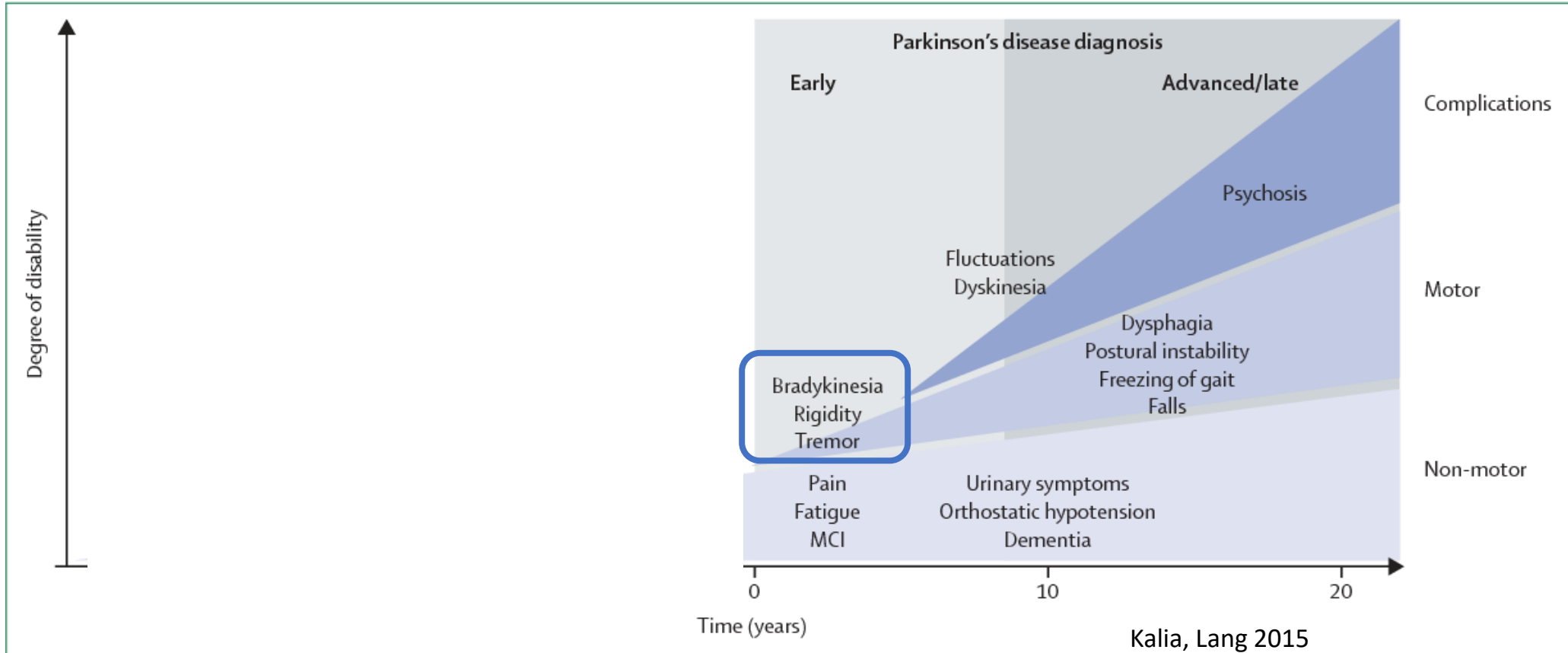


Figure 1: Clinical symptoms and time course of Parkinson's disease progression

The evolution of Parkinson's disease

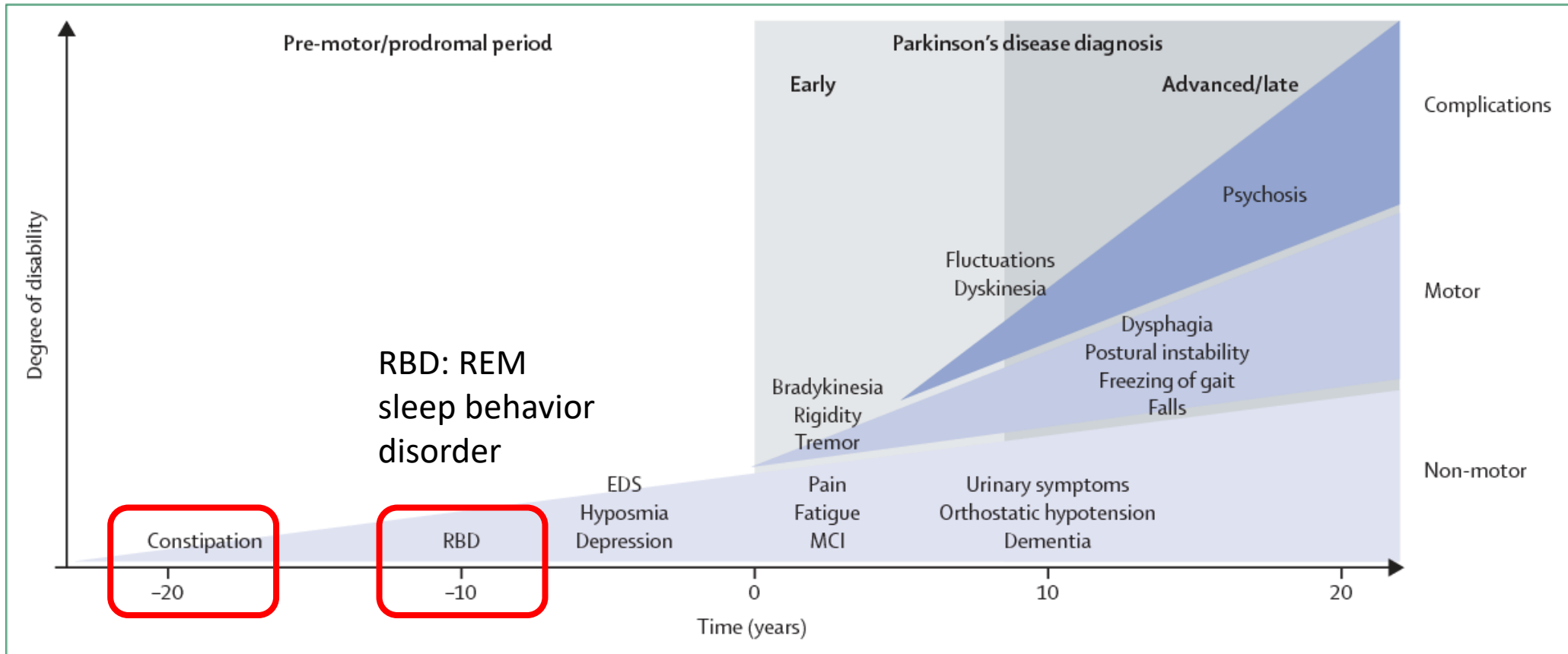
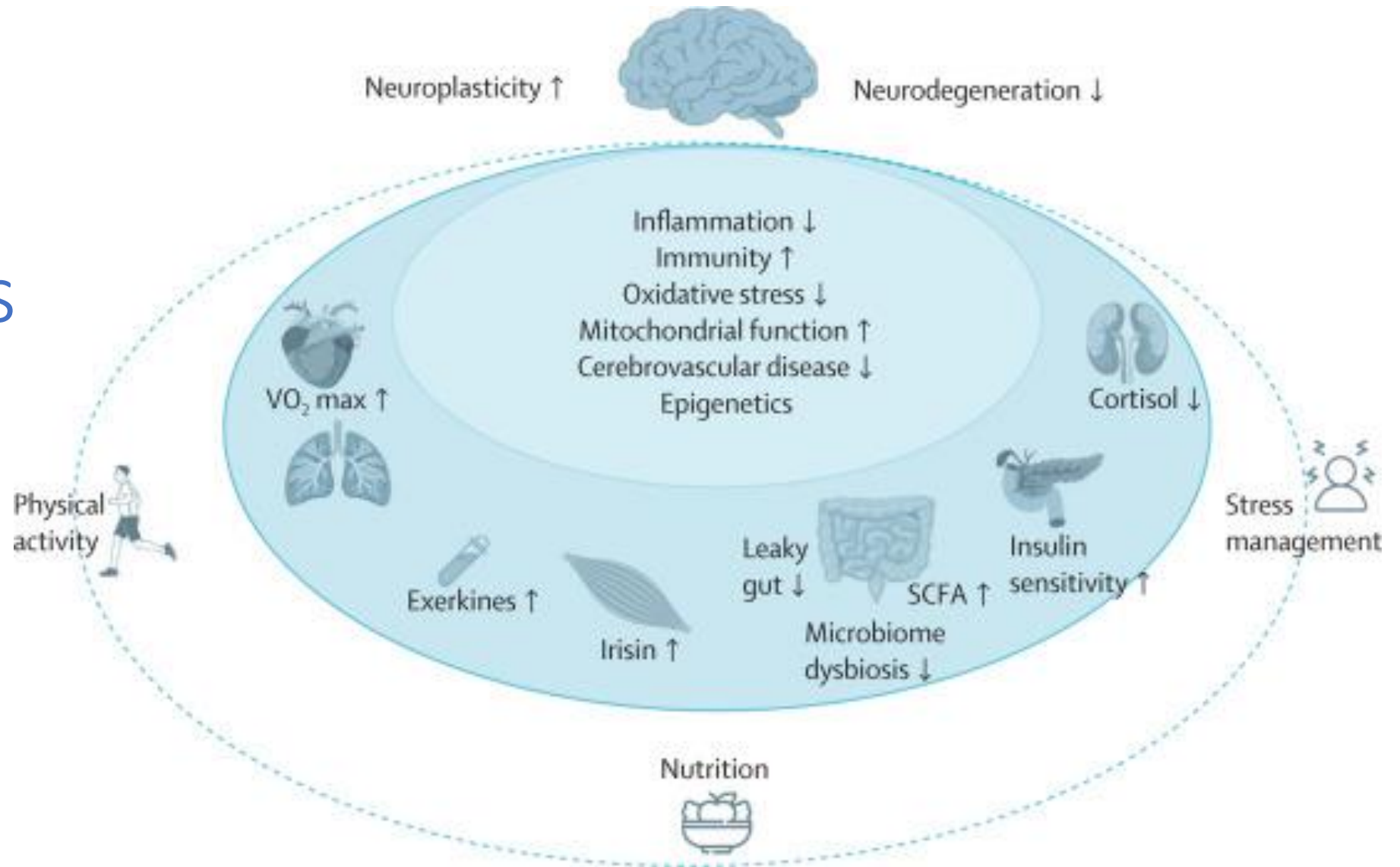


Figure 1: Clinical symptoms and time course of Parkinson's disease progression

Lifestyle interventions in Parkinson's

- Multimodal pathology meets multimodal intervention





Association of Diet and Physical Activity With All-Cause Mortality Among Adults With Parkinson Disease

Xinyuan Zhang, PhD; Samantha A. Molsberry, PhD; Michael A. Schwarzschild, MD, PhD; Alberto Ascherio, MD, DrPH; Xiang Gao, MD, PhD

- Population-based cohort study: Health Professionals Follow-up Study (N=51,529, all male) and Nurses' Health Study (N=121,700, all female)
- Predominantly white, higher socioeconomic status
- Follow up 32 to 34 years
- Pre- and post-diagnosis capture of diet and physical activity
- Alternative Healthy Eating Index
- Primary outcome: mortality (death)

Association of Diet and Physical Activity With All-Cause Mortality Among Adults With Parkinson Disease

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- 1251 individuals developed PD during study of which 942 died
- Hazard ratios for mortality highest versus lowest quartiles (lowest quartile: hazard ratio of 1.0):
 - Healthy eating:
 - prediagnosis 0.69 (HR 0.56-0.85), **post-diagnosis 0.57** (HR 0.42-0.78)
 - Exercise:
 - Prediagnosis 0.71 (HR 0.57-0.87), **post-diagnosis 0.47** (HR 0.35-0.63)
 - Combined diet and exercise highest vs lowest tertile:
 - Prediagnosis 0.51 (HR 0.36-0.73), **postdiagnosis 0.35** (HR 0.23-0.80)

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Take away:

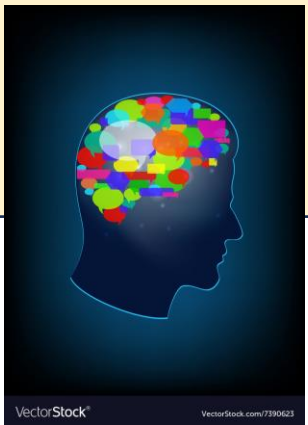
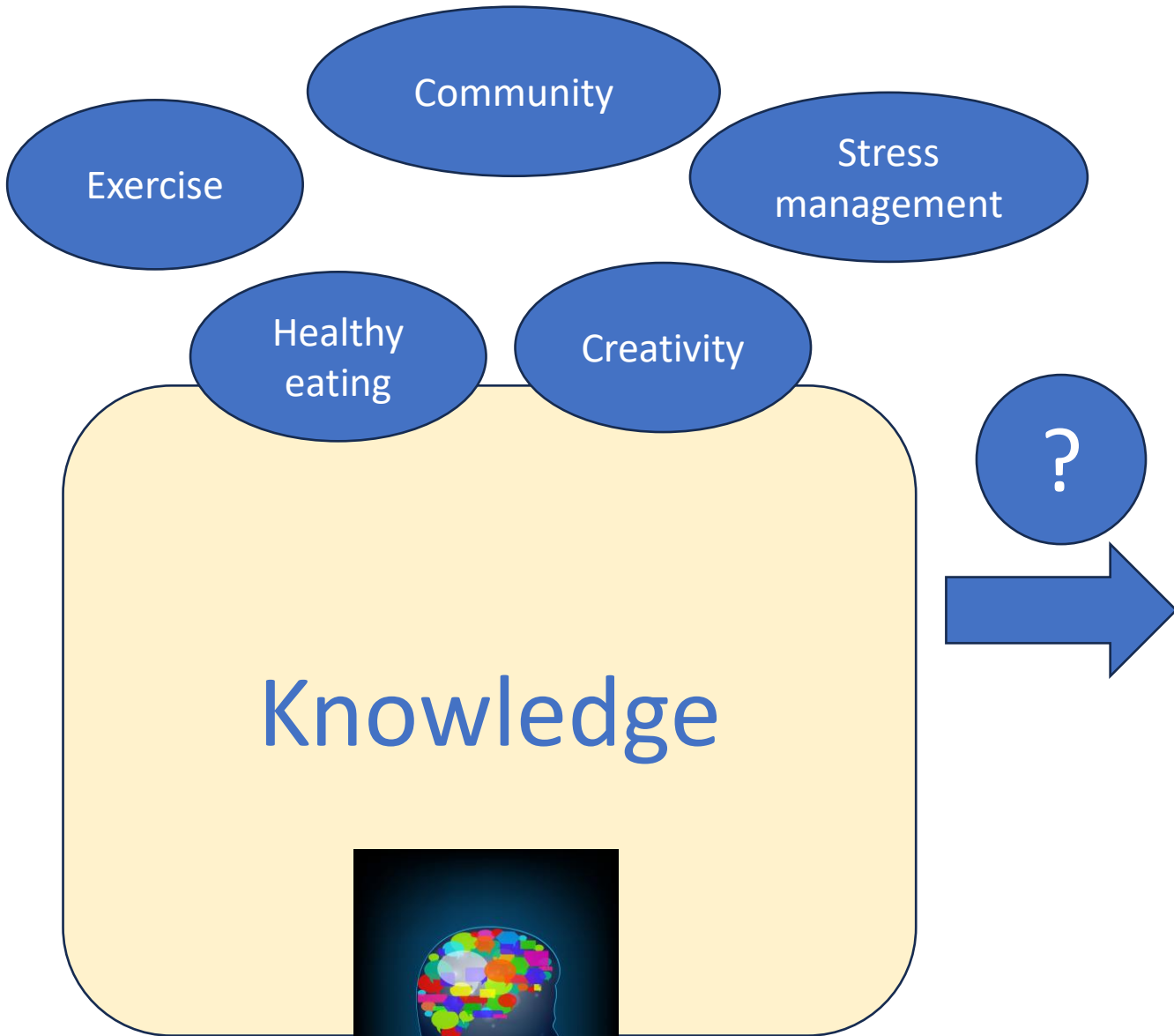
In individuals with Parkinson's the risk of dying during the follow up period of the study was lower if they were among the top quarter for

Diet (~ -40%)

Exercise (~ -50%)

Diet and Exercise (~ -65%)

Reverse causation cannot be excluded, need clinical trials





Current Programming

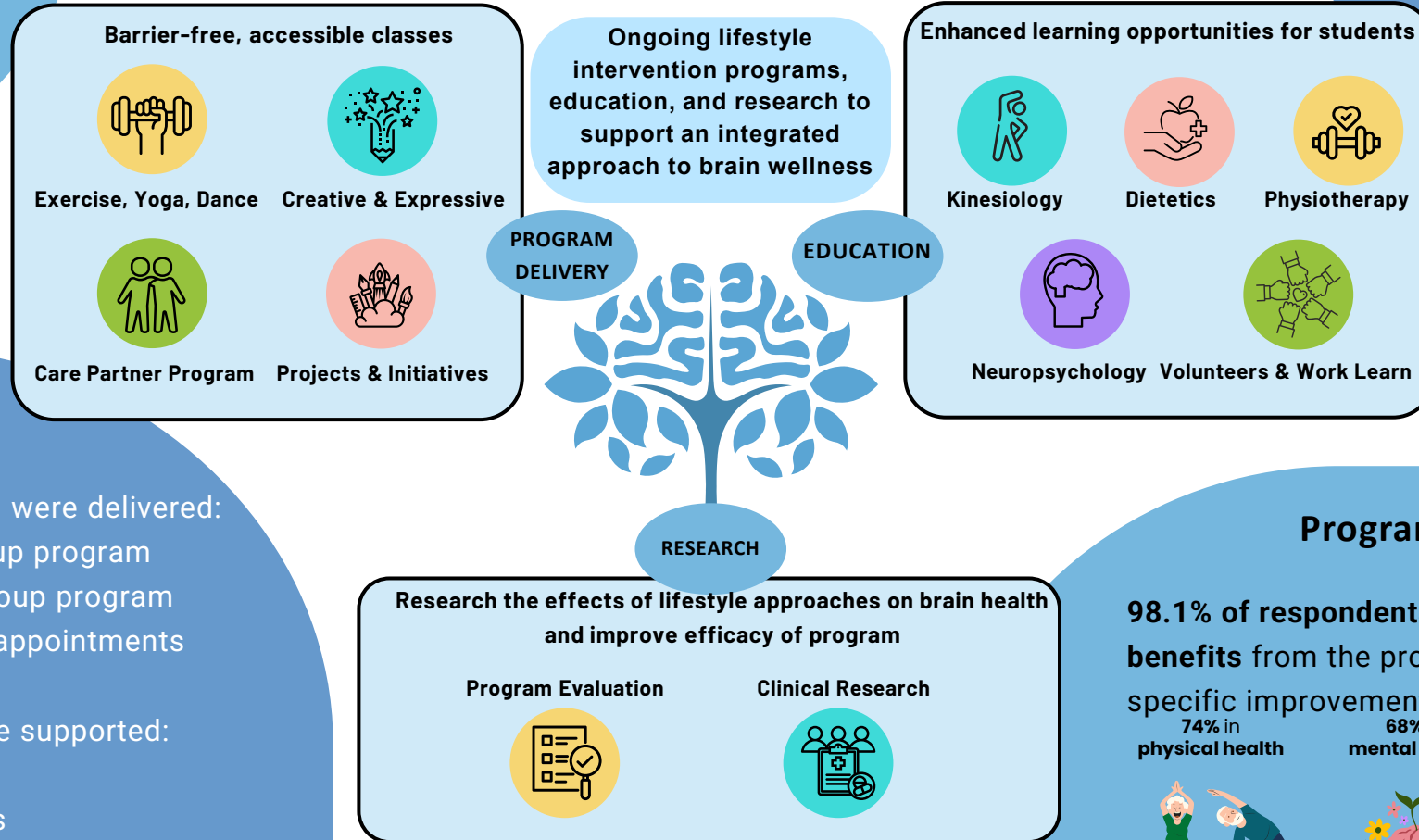
- 40 weekly/bi-weekly online classes
- 32 weekly in-person classes
- Monthly in-person workshops
- Monthly educational webinars



BC Brain Wellness Program: Outreach and Knowledge Translation

Since 2019...

- 9,000+ hours of programming
- 3,000+ participants
- 1,200+ assessments



In

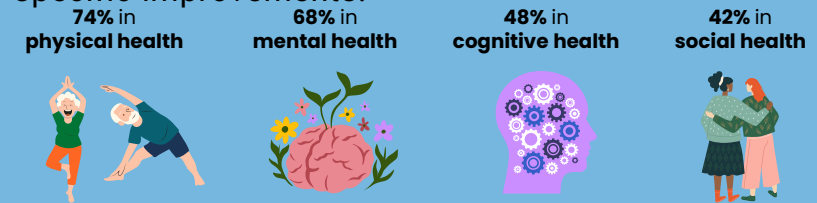
2025

- **3,356 hours of programming** were delivered:
 - 1,368 hours of online group program
 - 520 hours of in-person group program
 - 1,469 hours of individual appointments
- **1,260 unique individuals** were supported:
 - 1,117 online participants
 - 143 in-person participants
- **33,667 check-ins** were recorded:
 - 27,952 in virtual group class
 - 3,517 in in-person group class
 - 424 assessments
 - 884 kinesiology service
 - 676 in educational webinars

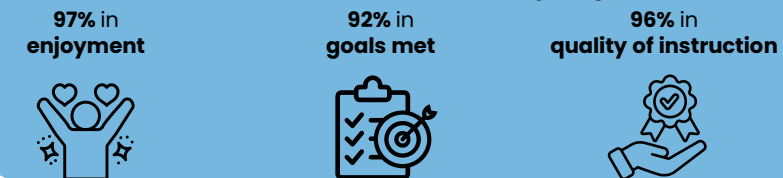


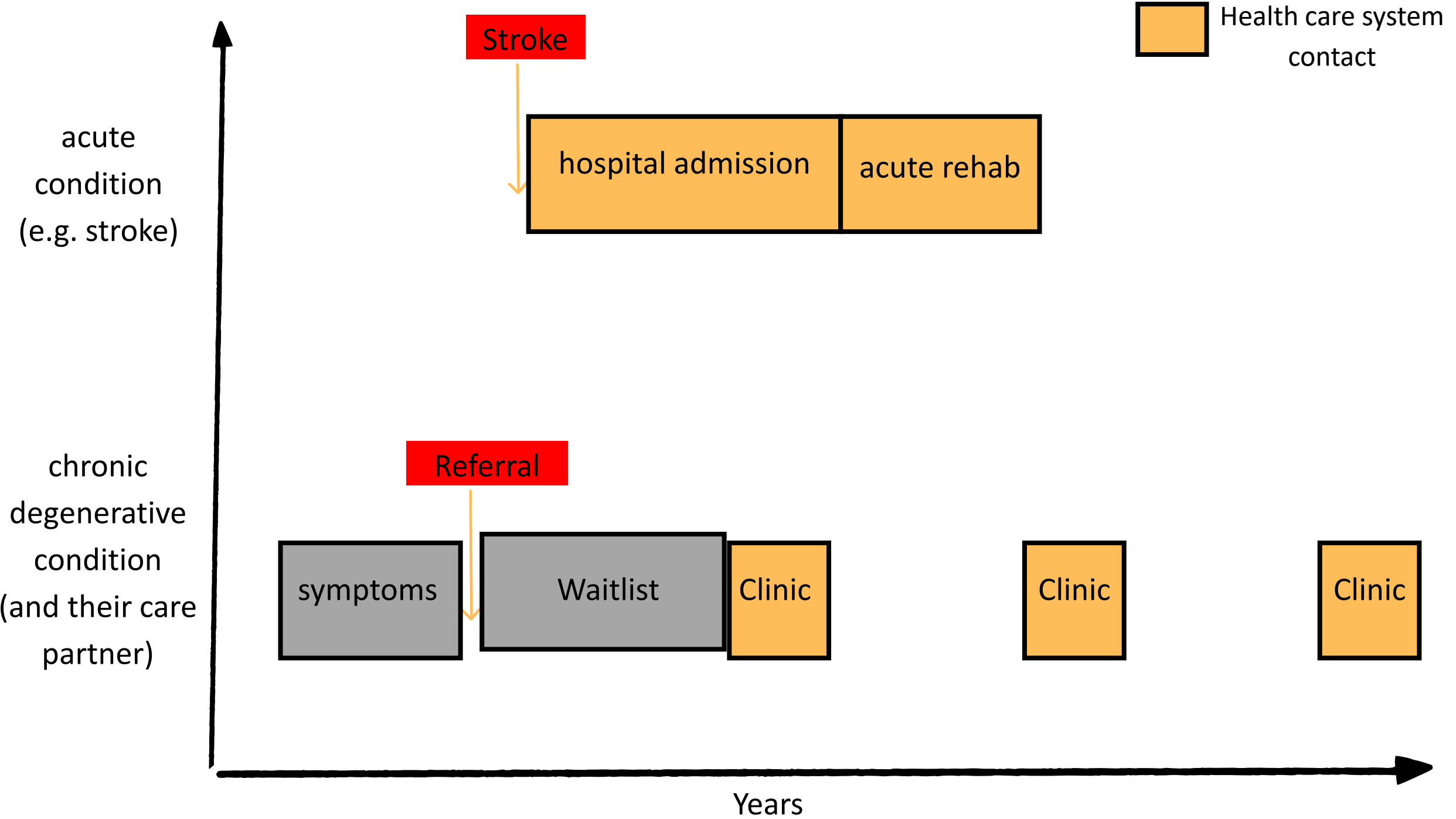
Program Feedback

98.1% of respondents to our survey reported overall benefits from the program, with the following specific improvements:



Satisfaction scores were consistently high:





Stroke

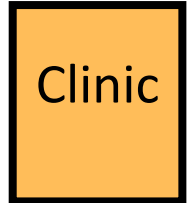
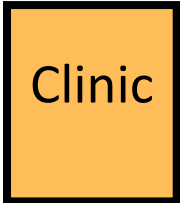
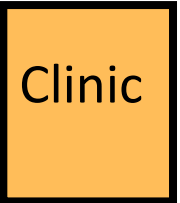
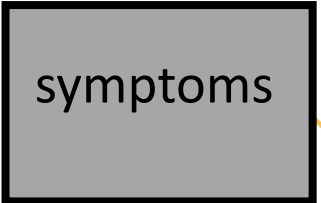
Health care system contact

acute condition (e.g. stroke)

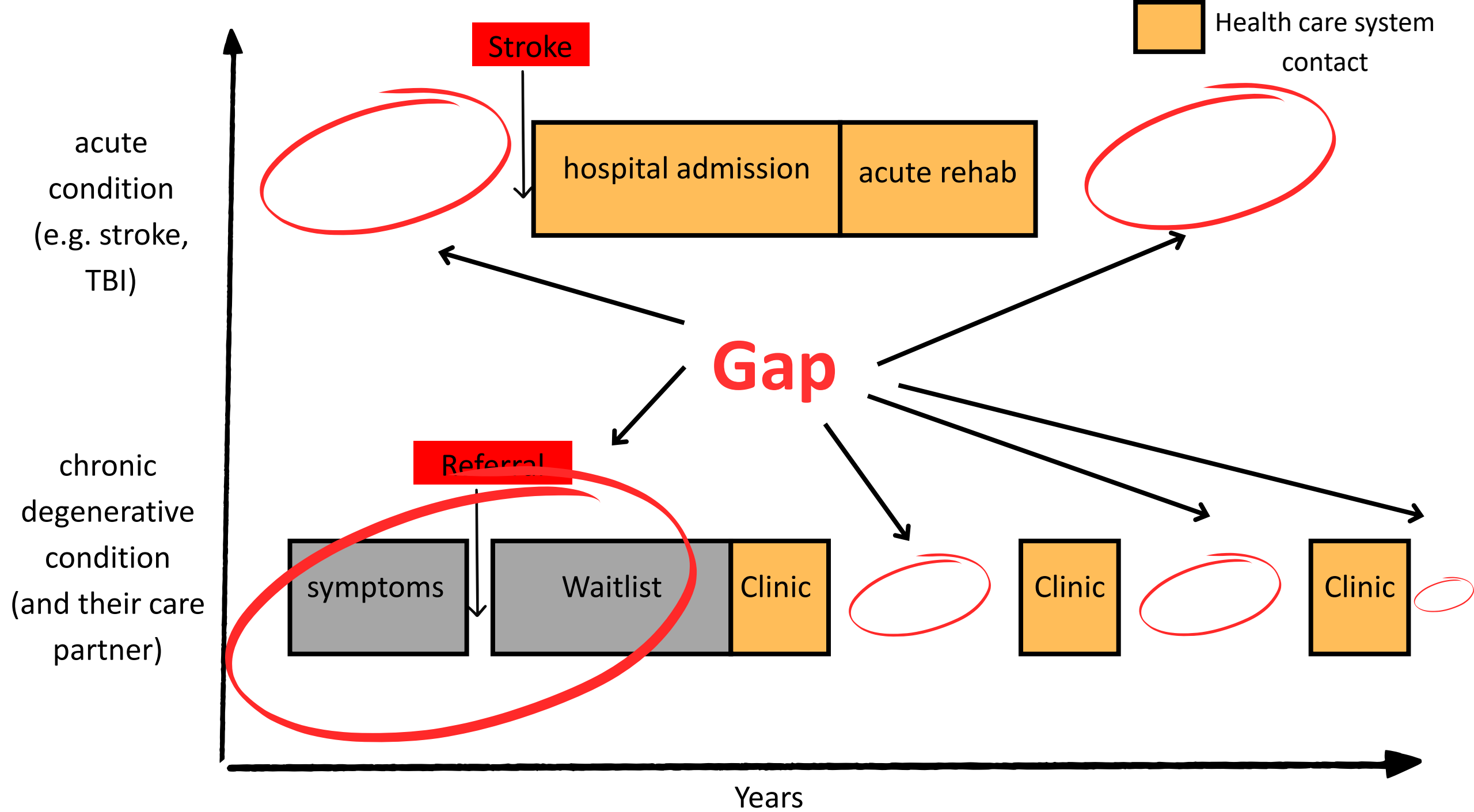


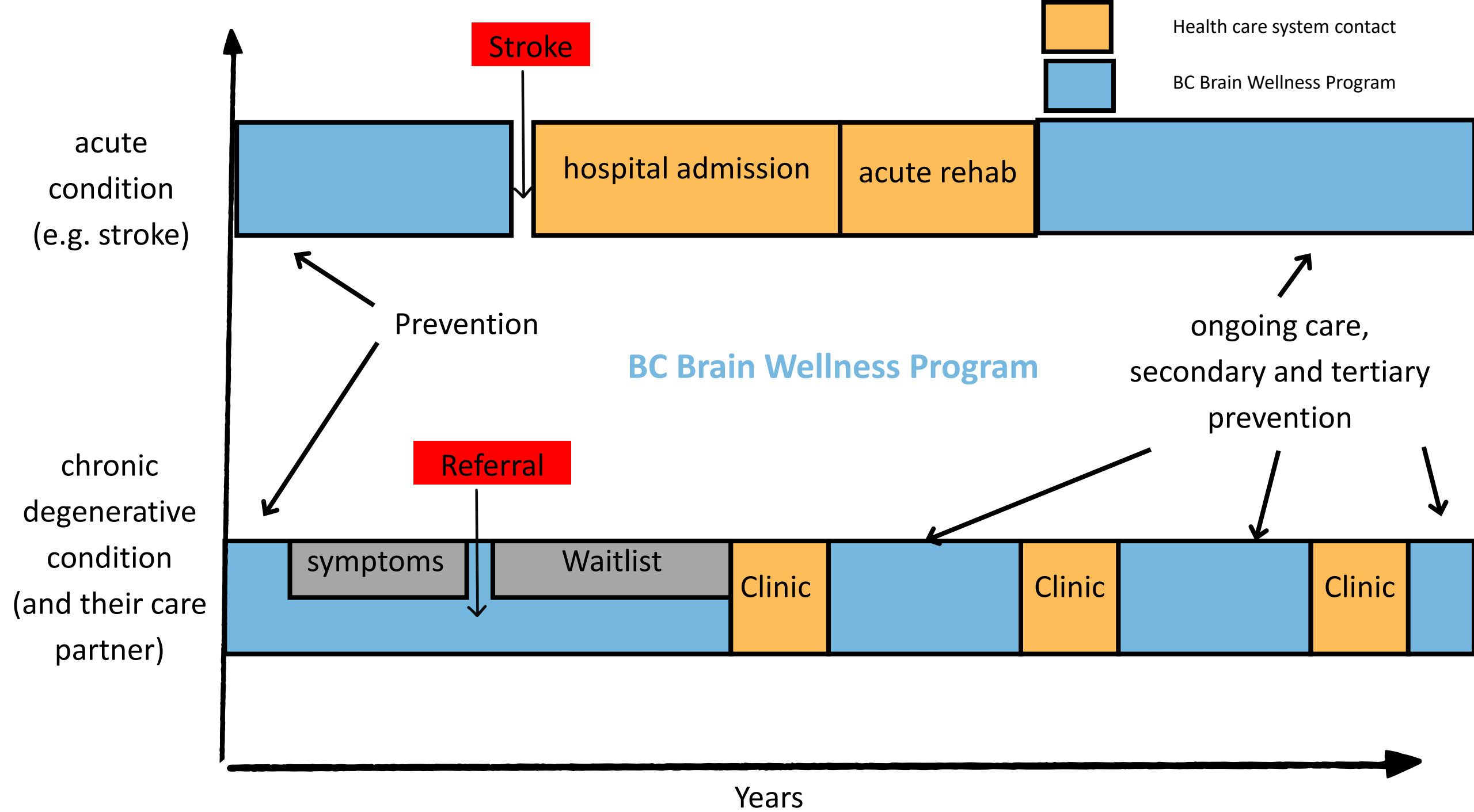
Referral

chronic degenerative condition (and their care partner)



Years







Future of healthcare: proactive, personalized, empowering



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Conclusions for building a true health care system

Lifestyle interventions

- empower individuals to take action for their own health
- they can create community
- they transcend medical silos.
- they address current gaps in the system.
- they have excellent potential to lower cost and
- they can increase healthspan.

In a proactive, integrated, data-driven, personalized and person-centred health care system lifestyle interventions are foundational.

Research team & collaborators

- Samantha Schaffner, Joyce Lam, Amirali Ali, Mikey Jose, Kira Tosefsky, Adam Lemkow, Rob Cloke, Kyler Pressman-Cyna, Matthew Leung, Matteo Paventi, Annie Kuan, Jeffrey Yu, Madeleine Powell, Yolanda Wang, Jeffrey Kelly, Solenne Villemer, Alandra Moosmann Mendez, Raihan Hassen, Agnes Kwok, Tom Watson, Sahib Dhaliwal, Olivia Brigden, Elaine Chan, Evi Dorsch, Max Honey, Romina Bernitt
- BC Brain Wellness Program: Sally Stelling, Alisa Hashimoto, Elaine Book, Cynthia Friesen, Kristina Sachs-Barrable, Susie Stewart, Darius Darabi, Alex Barber-Cross, Diana Bratu, Lily Gu, Jessie Jiang, Matt Kore, Marcia Richardson, Khushi Sharma and many others
- Pacific Parkinson's Research Centre: AJ Stoessl, MJ McKeown, S Fereshtehnejad, J Tsui, J Valerio, J Squires, T Rastin, M McKenzie, C Zhang
- Psychiatry: Fidel Vila-Rodriguez, Andrew Howard
- Brett Finlay & lab, Avril Metcalfe-Roach
- Neuroscience and DMCBH Biobank
- Nutrition: Tamara Cohen
- Healthy Aging, epigenetics: Michael Kobor, Kimberly Schmidt
- C-OPN: Oury Monchi
- Calgary: Davide Martino, Laura Sycuro
- Ottawa: Tiago Mestre, Michael Schlossmacher
- Toronto: Lorraine Kalia, Howard Chertkow, CCNA



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