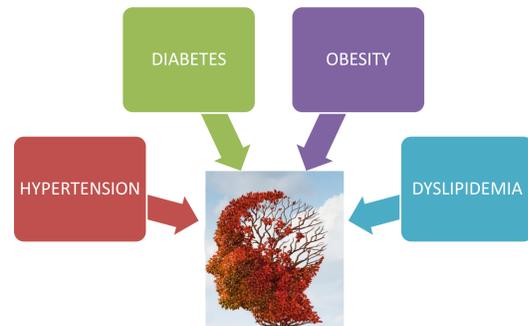


BACKGROUND

- Dementia is a disorder associated with deterioration in memory, thinking, behavior and the ability to perform everyday activities.
- It is the third ranked cause of years of life lost in Canada.
- Among Canadian patients over age 65, the prevalence in the whole population was 8%¹, and in community-dwelling patients was 7.3%².
- People at high risk of cardiovascular diseases (CVD) are also at high risk of dementia.
 - Control of CVD risk factors could reduce 25-30% of dementia
 - 10% reduction in hypertension, diabetes and smoking could reduce prevalence of dementia by 8.3%



- Existing knowledge is out-of-date.
- Published studies had small samples, short follow-up periods
- No finding about causation between risk factors and dementia.
- In Canada, there is little research into dementia prevention in primary care, where dementia is normally first diagnosed.

HYPOTHESES

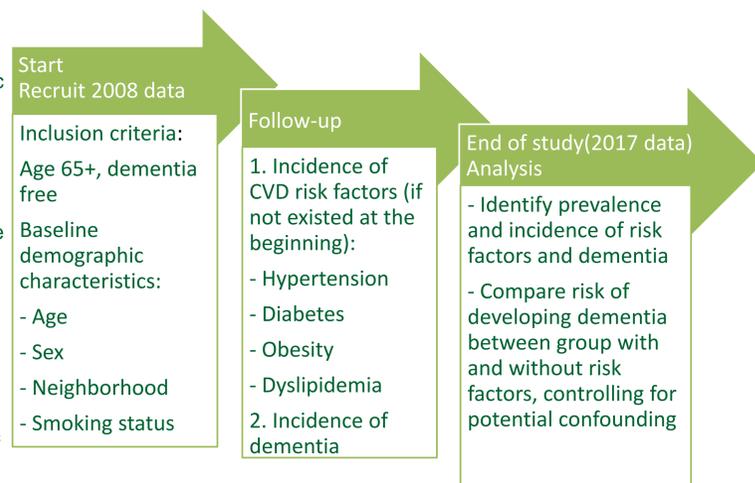
1. Modifiable CVD risk factors (hypertension, diabetes, obesity and dyslipidemia) are associated with the development of dementia.
2. The rates of change in risk of dementia are associated with duration of exposure to risk factors.

OBJECTIVES

- Determine the incidence of dementia among community-dwelling Canadian seniors attending primary care;
- Compare the risk of developing dementia in seniors with and without CVD risk factors;
- Identify the association between an index diagnosis of dementia and physical health indicators;
- Recommend novel strategies in primary care for preventing and delaying the onset of dementia.

METHODS

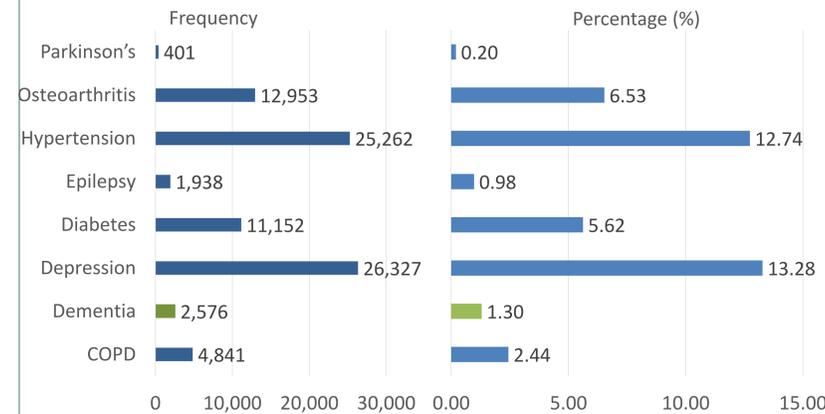
- This study uses a retrospective closed cohort design with data extracted from primary care Electronic Medical Records (EMRs), by the Canadian Primary Care Sentinel Surveillance Network (CPCSSN).
- All patients with CPCSSN data from 2008, who satisfy inclusion criteria are included and followed-up for ten years.
- Using results of the Rotterdam cohort³, sample size for our study is 4000 incident dementia cases (power 0.8, CI 95%). We expect a minimum of 8,000 cases with at least 5 years of follow-up data in the 2017 CPCSSN dataset.



CPCSSN DATABASE

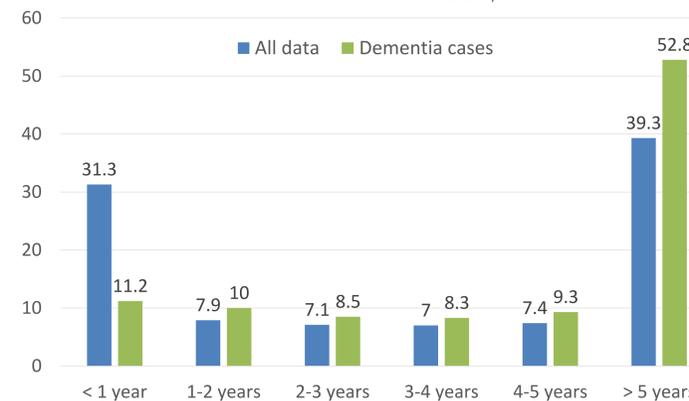
- CPCSSN is the first Canadian multi-disease Electronic Medical Record (EMR) surveillance system. It is the only Canadian national platform for chronic disease surveillance.
- Clinical information in EMRs from seven provinces and the North West territories is extracted, standardized and stored in a high security environment.
- CPCSSN 2012 has 4,500 persons with dementia (7.7% of older than 65; 1% of national records). Currently, CPCSSN includes 1.5 million patients.
- Southern Alberta Primary Care Research Network (SAPCRen) CPCSSN database, which weights about 10% of the national databases, is used to explore data and examine methods in a pilot cohort study.

FREQUENCY AND PERCENTAGE OF DISEASES (those have approved case definition) IN SAPCRen - CPCSSN, 2015



- 50% of people with dementia have been recorded continually in CPCSSN for more than 5 years. Hence, we expect a minimum of 8,000 dementia cases with at least 5 years of follow-up data in the 2017 CPCSSN dataset.

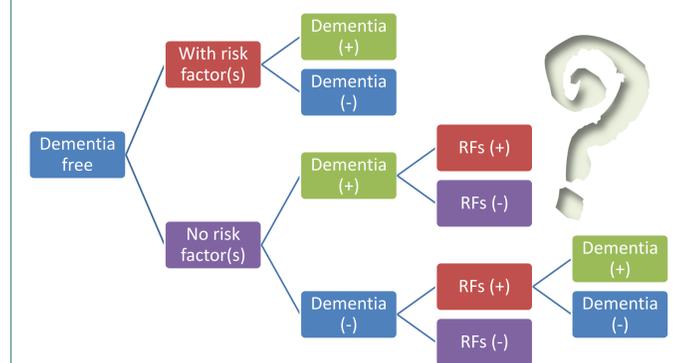
CONTINUITY OF PATIENTS IN SAPCRen - CPCSSN, 2015



- Validation of dementia, hypertension and diabetes case definitions were obtained by comparing CPCSSN data against the gold standard (primary chart abstraction)⁴.

	Sensitivity % (95% CI)	Specificity % (95% CI)
Dementia	96.8 (93.3–100.0)	98.1 (97.5–98.7)
Hypertension	84.9 (82.6–87.1)	93.5 (92.0–95.1)
Diabetes	95.6 (93.4–97.9)	97.1 (96.3–97.9)

POTENTIAL SIGNIFICANCE



- To our knowledge, this study is the first to present rigorous analysis of the outcomes of CVD risk factors on dementia incidence in community-dwelling seniors in primary care settings in the Canadian population.
- By analyzing available longitudinal EMR data, this study will provide appropriate and contemporary evidence regarding the effects of modifiable CVD risk factors on dementia incidence in seniors.
- Hypertension, diabetes, obesity and dyslipidemia are chosen not only because they are very common risk factors of varied chronic diseases, but also they are accurately measurable in EMR data and are potentially modifiable.
- Lab tests and examinations are recorded continuously by primary care professionals. Diagnosis and treatments are standardized. Exposed and unexposed groups will be followed before the occurrence of outcome. These characteristics make this cohort representative and the study feasible within a PhD program.
- Focusing on primary prevention. Promoting a healthy lifestyle, minimizing of dementia onset and maximizing the quality of life are our goals.
- Findings from our study may provide evidence that at least 23% of new dementia cases in Canadian community can be prevented if seniors are not exposed to CVD risk factors³.

RESEARCH TIMELINE

	2015	2016	2017	2018	2019+
Literature Review					
Protocol/ Ethics approval					
Data analysis					
Dissemi-nation					

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1. McDowell *CMAJ*. 1994;150(6):899–913
2. Drummond, et al. *CMAJ Open*. 2016; 4(2)
3. Bruijn, et al. *BMC Medicine*. 2015;13
4. Williamson, et al. *Ann Fam Med*. 2014, 12(4):367