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Health Services Utilization and Costs Associated with Co-Morbidity in Older Adults with Dementia

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Aging, Community & Health Research Unit (ACHRU)

- PIs: M. Markle-Reid and J. Ploeg
- Based at McMaster University with collaborators across the country
- 8 inter-related projects on managing multimorbidity
- Focus on: dementia, diabetes, and stroke
- Funding: CIHR and Ontario MOHLTC

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Background

- In 2011 there were 747,000 Canadians with dementia; Almost15% of people 65 and older
- Estimated direct (medical) and indirect (lost earnings) is $33 billion/year
- With the demographic transition, these numbers will increase substantially

Alzheimer's Society (2012)

Background

- Older adults are also at higher risk for multi-morbidity (MM)
- MM is associated with increased disability and premature mortality[1], and health services utilization and costs[2]

[1]St John, Can Fam Physician (2014)

[2]Lehnert, Med Care Res Rev (2011)

Background

- Few Canadian population-based studies examining co-morbidity in people with dementia
- Co-morbidity in this cohort can represent risk factors of dementia (e.g., stroke, diabetes, atherosclerosis) and potential consequences (e.g., incontinence, fractures, pneumonia)

Background

- In people with dementia comorbid conditions can accelerate decline
  - Greater cognitive impairment (MMSE scores)[1]
  - Greater functional impairment in Activities of Daily Living[2]
- Dementia may also complicate clinical care for other conditions
  - e.g., May impair ability for self-management and engage in health maintenance activities like stroke rehab
- To effectively target resources and design potential interventions it is important to know how health care utilization and costs for people with dementia are impacted by co-morbidity

[1] Solomon, Int J Geriatr Psychiatry (2011)
[2] Melis, PLOS One (2012)
[3] Callahan, Health Affairs (2014)

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Study Objectives

- To characterize co-morbidity in a cohort of community-dwelling older adults with dementia;
- To determine health system use and costs over 5 years and how they relate to co-morbidity;
- To determine how much health service use is related to dementia vs. other conditions

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Methods: Data

- Linked health administrative data:
  - Registered Persons Database (RPDB)
  - Ontario Health Insurance Plan (OHIP) claims
  - Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD)
  - National Ambulatory Care Reporting System (NACRS)
  - Home Care Database (HCD)

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Methods: Cohort Construction

- Identified all Ontario residents on April 1, 2008 (baseline) who met the following:
  - >65 years
  - Community-dwelling (not in long-term care)
  - Pre-existing diagnosis of dementia
- 5-year look back for co-morbid conditions
- 5-year follow-up for health service use
  - People followed until death or LTC admission

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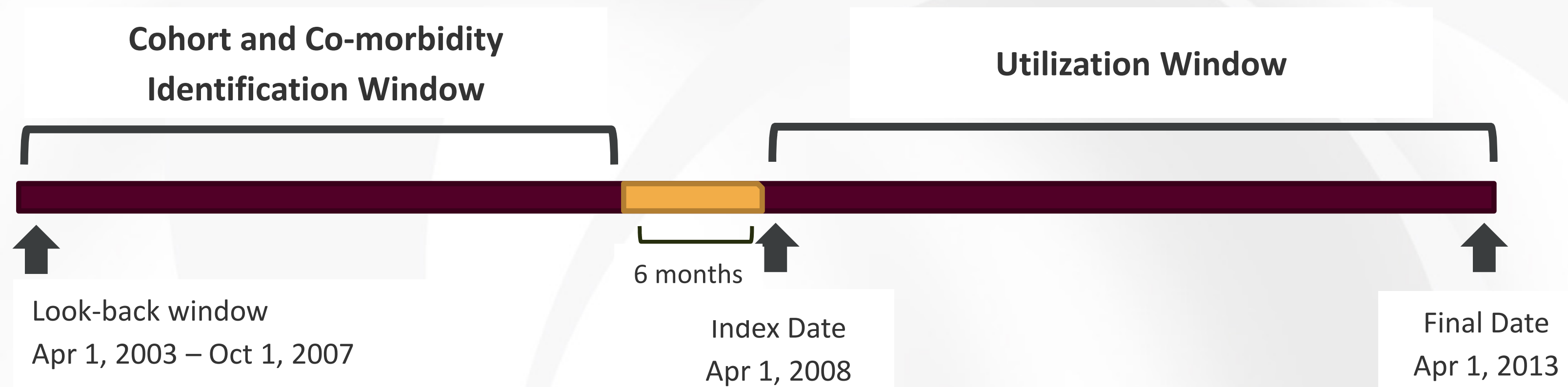
Methods: Dementia Definition

Any of:

- OHIP diagnostic code
- ICD code version 9 or 10 (depending on year) in DAD or NACRS
- Claim in the ODB for a cholinesterase inhibitor

Study Methods



14 Co-morbid Conditions:

Anxiety/Depression	Arthritis
Cancer	COPD
Diabetes	Upper GI Bleed
Hypertension	IHD
Liver Disease	Osteoporosis
IBD	Renal Disease
CVD (excl. Stroke)	Stroke

Utilization:

Physician Visits (GP and Specialist)
ED Visits
Hospital Admissions
Home Care Visits

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Methods: Analysis

- Stratified cohort by baseline co-morbidity
- Estimated annual use of each health services type (dementia-related vs. non dementia-related use)
- Estimated annual per-patient total costs and costs by service type (adjusted to 2012 dollars)

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Cohort Description (N=29,673)

- Prevalence: 6%
- Age:

  65-74: 20.3%

  75-84: 47.6%

  ≥85: 32.1%
- Female: 60.6%
- 3+ co-morbid conditions: 59.6%

  5+: 18.4%

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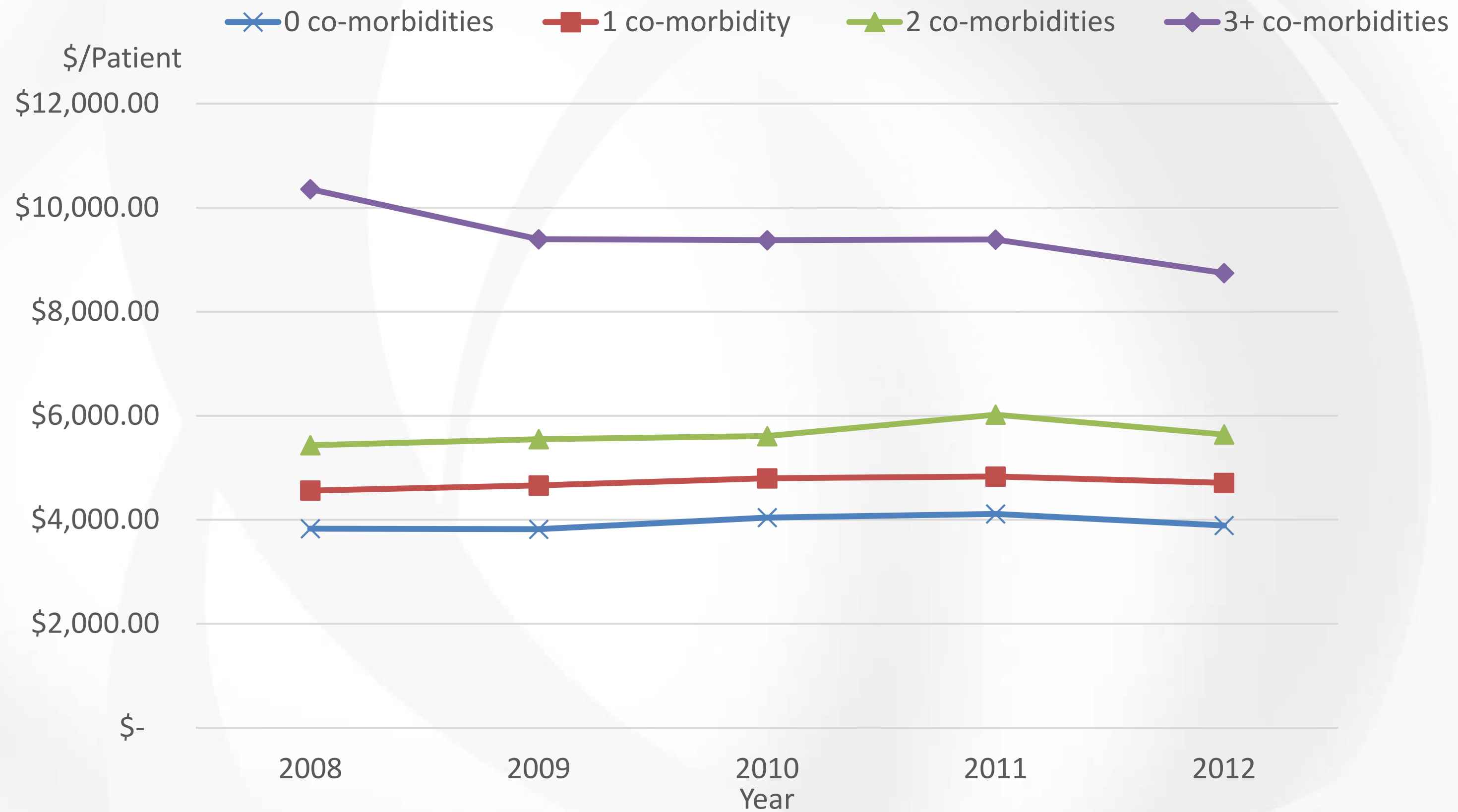
Most Common Diagnoses

- Hypertension (77.8%)
- Arthritis (66.2%)
- COPD (28.4%)
- Diabetes (28.0%)
- Ischemic Heart Disease (23.9%)
- Inflammatory Bowel Disease (22.4%)
- Cancer (17.9%)

Average Per Patient Costs (in $2012)



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Total Health Services Costs (2008)

GP/FP Visits | Specialist Visits | ED Visits | Acute Care | Home Care

$600,000,000
$500,000,000
$400,000,000
$300,000,000
$200,000,000
$100,000,000
$-

Total Costs

$ 13,002,757
45%
23%
7%
17%
8%

$ 54,979,560
45%
21%
7%
18%
8%

$ 114,045,236
40%
25%
8%
19%
8%

$ 531,664,584
31%
38%
10%
15%
6%

0 CC (2008) | 1 CC (2008) | 2 CC (2008) | 3+ CC (2008)

Number of Co-Morbid Conditions

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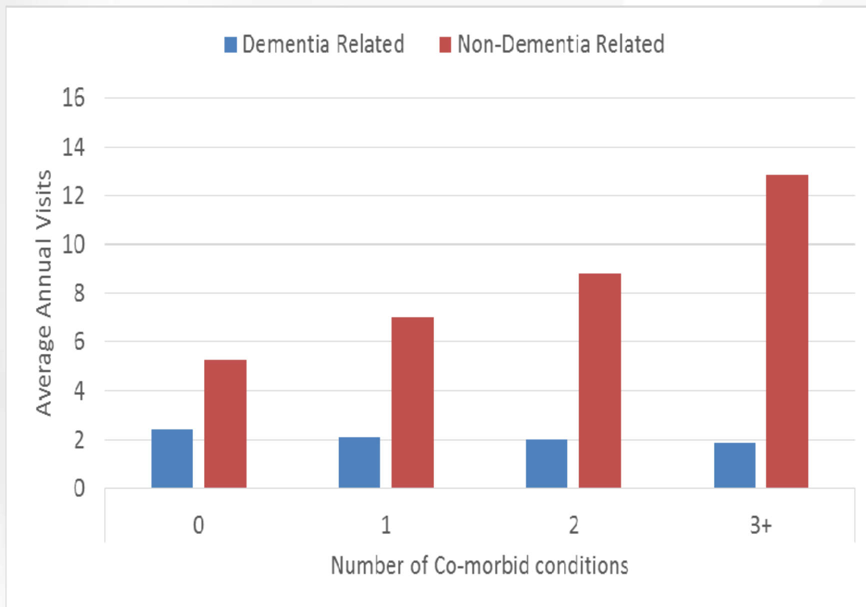
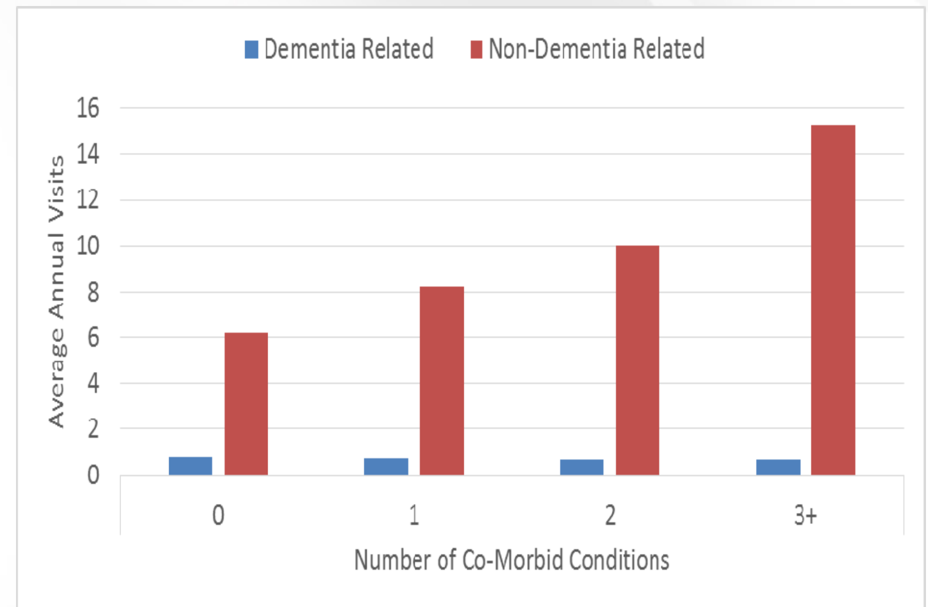
Physician Visits (2008)

GP Visits



Specialist Visits



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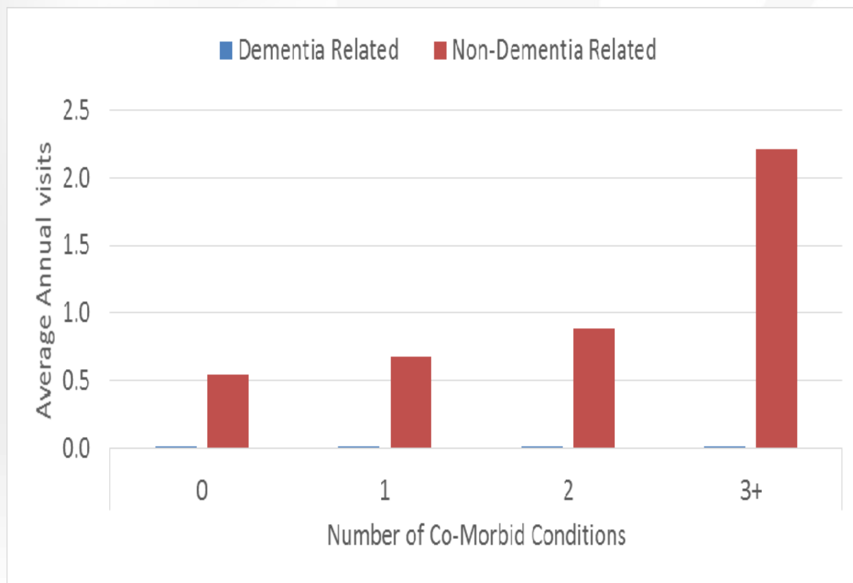
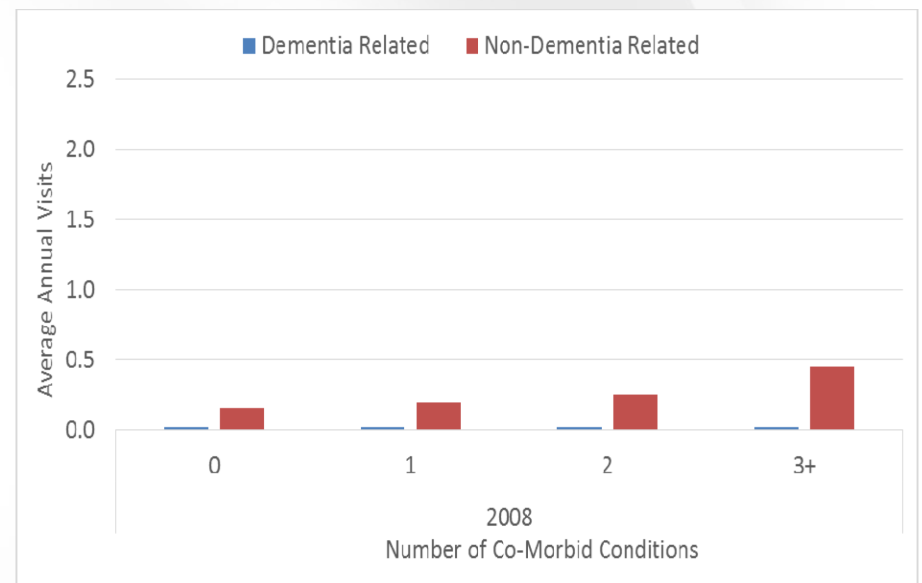
Acute Care Use (2008)

ED Visits



Hospital Visits



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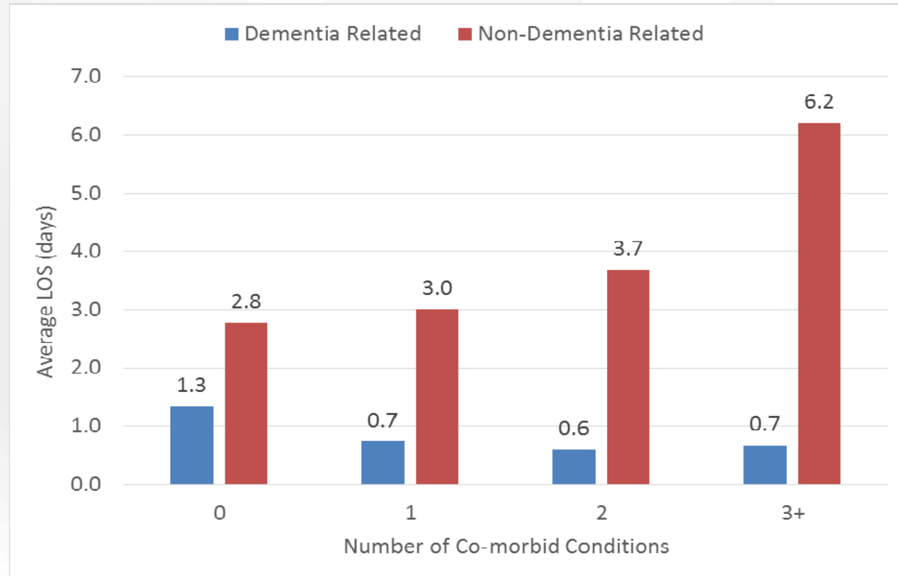
Length of Stay (2008)

Medical & Surgical



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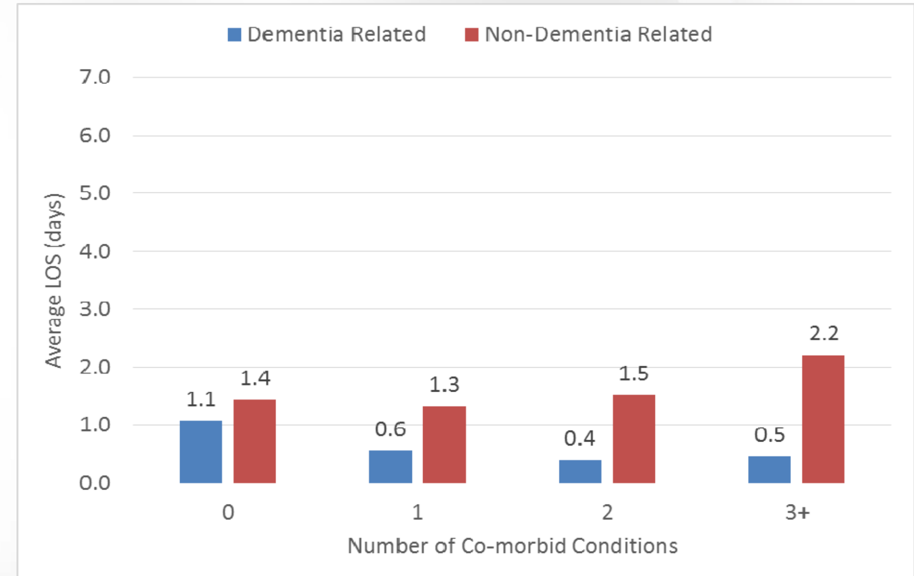

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Limitations

- Included baseline diagnoses only
- Limited to 14 co-morbid conditions
  - To be consistent with other ACHRU studies
  - All common diagnoses
- Co-morbidity count misses potential impact of specific clusters

Summary

- High prevalence of co-morbid conditions
- Use of all health services increased with co-morbidity
  - Persisted over time
- Home care was consistently the biggest cost driver in those with 0-2 co-morbidities; this shifted to acute care for those with 3+ co-morbidities
- Dementia-related utilization did not differ greatly with number of co-morbidity

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Conclusions

- Non-dementia related utilization increased with co-morbidity while dementia-related utilization remained flat
  - It could be that dementia complicates clinical care for other conditions
  - It could be unrelated to dementia
- A holistic approach that moves away from a single disease focus is required in care planning for people with dementia

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