Clinical Aphasiology Conference 2017

Health care utilization and costs in people with stroke – with and without aphasia – in Ontario, Canada

– Poster Handout –

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Health care utilization and costs in people with stroke — with and without aphasia — in Ontario, Canada

Data from the first Canadian study comparing a cohort with a known diagnosis of aphasia with a general stroke population

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BACKGROUND

Access to population data is essential for health system planning and policy development. However, it is very challenging to identify data related to health system usage and cost for the population with stroke and aphasia.

RESEARCH QUESTIONS

This exploratory analysis examines **whether people with aphasia access health care in the same manner and at the same intensity as a general stroke cohort**, looking at 1) **the pattern** and 2) **the costs** of health care use.

METHOD

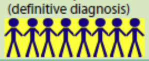
We defined a cohort with a known diagnosis of aphasia – through clinical verification by speech-language pathologists from the Aphasia Institute – and, using linked administrative databases housed at the Institute for Clinical Evaluative Sciences (ICES), compared this cohort with the general stroke population in relation to demographics, co-morbidities and health care use.

***ICES** is an independent, non-profit organization that uses Ontario population-based health information to produce knowledge on a broad range of issues. It is widely used to make health care and policy decisions.* (http://www.ices.on.ca/About-ICES)

1 Identified – Cohort of patients with aphasia (definitive diagnosis)

Source: Community

n = 434



2 Matched – up to 1:4

Patients with aphasia | Control patients with stroke

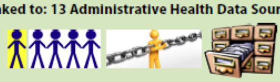
Source: ICES' administrative data holdings

n = 176 = n = 660

MATCHING CRITERIA:
- age, sex, health region of residence (based on postal code);
- stroke date (+/- 14 days);
- stroke type (ischemic vs. haemorragic)

INCLUSION CRITERIA:
- If stroke date on or after April 1, 2006
- If stroke date match found, +/- 14 days
- For control cohort: Stroke diagnoses of:
  - *Subarrachnoid haemorrage, Intracerbral haemorrhage, Cerebral infarction, Central retinal artery occlusion, Stroke (not specified as haemorrhage or infarction)*
- For control cohort: Discharged home from acute care after stroke

3 Linked to: 13 Administrative Health Data Sources



Pre-stroke assessment: 5-year look-back period from date of stroke, to assess health care utilization in both aphasia cohort and stroke cohort.

Post-stroke assessment: Health care utilization and costs, outcomes and comorbidities assessed after stroke, for all sectors, and for full length of data available (from date of stroke to March 31, 2015).

RESULTS

BASELINE CHARACTERISTICS – AT TIME OF STROKE

SIMILARITIES: On matched criteria
- age, sex, health region of residence
- stroke date (+/- 14 days)
- stroke type (ischemic vs. haemorragic)

SIMILARITIES: Other
- **Rates of co-morbid conditions** (per condition/vascular risk factors) e.g.: diabetes, dementia, hypertension, previous cancer diagnosis, Parkinson's
- **Charleson comorbidity index**
- **Patient proportion per income quintile**

STATISTICALLY SIGNIFICANT DIFFERENCES:	APHASIA COHORT	CONTROL COHORT
- **Living situation:** (in 2 yrs prior to stroke)		
• **Home**	26.7 %	63.2 %
• **Home with assisted services**	5.1 %	28.5 %
• **Residential / institutional care**	68.2 %	8.3 %
- **Comorbidities:** (in 5 yrs prior to stroke)		
• **Number with 1+ comorbidities**	69.9 %	57.7 %
• **Previous stroke**	36.4 %	15.9 %
• **Depression (severe)** (Note: Method did not capture mild/moderate depression treated in community)	6.3 %	2.4 %

HEALTH CARE USAGE – POST-STROKE

SIMILARITIES:
- Rates of emergency department visits
- Rates of hospitalizations
- Mean length-of-stay in hospital

DIFFERENCES:	APHASIA COHORT	CONTROL COHORT
Rates of physician visits (per patient per year)	69.95	36.53

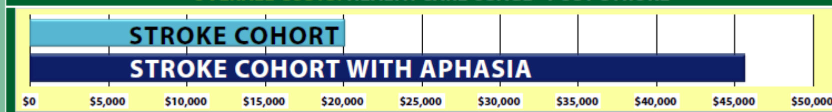
MORTALITY RATE – POST-STROKE

	APHASIA COHORT	CONTROL COHORT
- **Mortality rate** (per person-years of follow-up time)	0.01	0.07

HOME CARE SERVICE USAGE – POST-STROKE

DIFFERENCES:	APHASIA COHORT	CONTROL COHORT
- **Had homecare visit (any type)** (% of patients)	48.3 %	31.5 %
- **Rate of homecare visits** (per patient per year)	60.36	25.60
- **Rate of homecare visits (by type)** (per patient per year)		
• Personal / Homemaking services	53.64	20.29
• Case management	2.28	1.11
• Nursing visits	1.96	2.97
• Physiotherapy	1.01	0.49
• Occupational therapy	0.71	0.49
• Speech-language therapy	0.64	0.12
• Other services (rate range)	0 – 0.05	0 – 0.06

OVERALL COSTS: HEALTH CARE USAGE– POST-STROKE

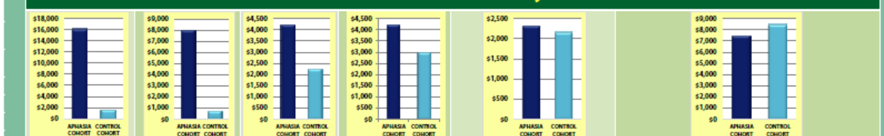


AVERAGE STRATIFIED COSTS of HEALTH CARE USAGE – by DEMOGRAPHICS – POST-STROKE

LEGEND: APHASIA COHORT CONTROL COHORT

Age | Sex | Neighbourhood income quintile | Living situation

AVERAGE STRATIFIED COSTS of HEALTH CARE USAGE – by COMPONENT COSTS – POST-STROKE



Complex and Continuing Care | **Inpatient rehabilitation** | **Home care services** | **Physician Visits** | **Aggregated components:** OHIP (Ontario Health Insurance Plan) non-physician claims; Drug costs; Assisted device program | **Aggregated components:** OHIP lab claims; Inpatient Hospitalizations; Visits to: Emergency Department, Dialysis & Cancer clinics; Mental health admissions

DISCUSSION & CONCLUSION

- People with post-stroke aphasia have increased use of health care services and higher costs compared with a control population with stroke.
- The higher cost for the aphasia cohort supports the findings of Ellis (2012).
- This appears to be attributable in part to costs associated with complex and continuing care, rehabilitation, use of home care and physician visits.
- Further research is needed to determine whether these differences are due to baseline differences (e.g., in functional status, stroke severity, or language barriers inherent in aphasia), which may contribute to different patterns of health care service use.
- In contrast to Bersano et. al. (2009), we did not find that post-stroke aphasia was associated with higher rates of mortality in the short- and long-term after stroke. This may have been due to limitations in study methodology but requires further investigation.
- Next steps could include increasing the cohort size, expanding the number of variables to compare for health care usage, identifying better 'control' variables for comparison purposes, and/or using different data from either community-based or administrative databases.
- This pilot study contributes to the literature by providing descriptive results stimulating new hypotheses and providing insights to improve future research.

STUDY LIMITATIONS

- There is no definitive way to identify an aphasia diagnosis through Ontario healthcare databases.
- The comparison stroke cohort probably included people with aphasia, meaning that differences between the groups might be underestimated.
- This study did not validate whether each of the individuals in the aphasia cohort had been truly "identified" with the ICD codes for aphasia in the administrative databases. This study did not explore how many of the individuals in the general stroke cohort had aphasia ICD codes.
- Mortality differences between the two groups likely reflect differences in severity between the groups.
- Starting with 434 individuals with aphasia, the inclusion/exclusion criteria of the matching process narrowed to 176 individuals for comparison with the control group. Individuals with multiple strokes within a 28-day period did not have these multiple strokes "recorded" during the comparison process.

REFERENCES

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