

Appendix 1 (as supplied by the authors): Supplementary materials

Table A1: Research Ethics Board Approvals

#	Institution Name
Teaching Sites	
1	Sunnybrook Health Sciences Centre
2	University Health Network: Toronto General Site
3	University Health Network: Toronto Western Site
Large sites (> 200 AF visits / year)	
4	Lakeridge Health Corporation: Oshawa Site
5	Trillium Health Centre: Mississauga Site
6	Southlake Regional Health Centre
7	William Osler Health Centre: Civic Site
8	Mackenzie Health
9	Trillium Health Centre: Credit Valley Site
Intermediate sites (100-200 AF visits / year)	
10	Markham Stouffville Hospital: Markham Site
11	William Osler Health Centre: Etobicoke
12	Lakeridge Health Corporation: Bowmanville Site
Small sites (< 100 AF visits / year)	
13	Trillium Health Healthcare: West Toronto
14	Markham Stouffville Hospital: Uxbridge Site
15	Lakeridge Health Corporation: Port Perry

Table A2. Administrative databases used in the study

<p>The Canadian Institute for Health Information (CIHI) National Ambulatory Care Reporting System (NACRS) is a Canada-wide dataset that contains over 300 variables pertaining to an emergency department visit. Hospital reporting to NACRS is mandatory in Ontario, thus it includes all emergency department visits made in the province of Ontario. The CIHI databases use the <i>International Classification of Diseases, Version 10 (ICD-10)</i> to code diagnoses.¹</p>
<p>CIHI's Discharge Abstract Database (DAD) includes hospitalizations (up to 25 hospital diagnoses), as well as comorbidities, procedures, and demographic data on all hospitalizations in Ontario. The CIHI databases use the <i>International Classification of Diseases, Version 10 (ICD-10)</i> to code diagnoses.¹</p>
<p>The Ontario Health Insurance Plan (OHIP) holds fee claims made by physicians in any setting (e.g. for the purposes of the current study, hospital, <u>we included</u> office, home, long-term care facility, and phone claims) for medically necessary care.²</p>
<p>Prescription drug coverage is provided to all Ontarians with a medical card number (OHIP number) age 65 and older, as well as select groups under age 65 years. The Ontario Drug Database (ODB) contains the date of prescription fill, the dose and quantity dispensed for all qualifying Ontarians.²</p>
<p>The Registered Persons Database (RPDB) provides demographic and mortality data (including out-of-hospital deaths).³</p>
<p>The ICES Physician Provider Database holds information about Ontario's physicians, including specialty, age, year of graduation from medical school, etc. It compiles information from several sources, including the Ontario Health Insurance Plan, the Corporate Provider Database (which comes from the Ontario Ministry of Health and Long-Term Care)⁴, and the Ontario Physician Human Resource Data Centre database.⁵ The latter performs annual surveys of a random sample of one third of physician offices in Ontario to determine physician specialty, in addition to using other information sources.</p>

References

1. Canadian Institute for Health Information. Canadian Coding Standards for Version 2012, ICD-10-CA and CCI. 2012:5-15. https://secure.cihi.ca/free_products/canadian_coding_standards_2012_e.pdf. Accessed 12/17/2015.
2. Goel V, Williams JI, Anderson GM, et al. A Summary of studies on the quality of health care administration databases in Canada. Patterns of health care in Ontario: the ICES practice atlas. 2012:339-345. <http://www.ices.on.ca/~media/Files/Atlases-Reports/1996/Patterns-of-health-care-in-Ontario-2nd-edition/Full%20report.ashx>. Accessed Sept 6, 2012.
3. Iron K, Zagorski BM, Sykora K, et al. Living and Dying in Ontario: An Opportunity for Improved Health Information. 2009. http://www.ices.on.ca/file/Living_and_dying_in_Ontario_March19-08.pdf. Accessed Sept 6, 2012.
4. Ontario e. Provider Registry. 2011. https://www.ehealthontario.on.ca/images/uploads/pages/documents/ProviderRegistry_PIA.pdf. Accessed Feb 28, 2017.
5. OPHRDC. Ontario Physician Human Resources Data Centre. 2014. <https://www.ophrdc.org/Public/Report.aspx?owner=pio>. Accessed Sept 12, 2014.

Table A3. Secondary outcome event ICD-10 codes*

Strokes
I60-62, I690, I691, I692, I63 (excluding I63.3), I64, H34.1
Bleeding events
Gastrointestinal: I850, I983, K225, K250/252/254/256, K260/262/264/266, K270/272/274/276, K280/282/284/286, K290, K661, K920, K921, K922 Intracranial Hemorrhage: I60, I61, I620, I621, I629 Genitourinary: N020-029, R310, R311, R318 Respiratory: R040, R041, R042, R048, R049 Other: R58

*Hospitalizations with these codes, excluding events that occurred *after* admission (e.g. post-operative)

Table A4. Who prescribed OAC prescriptions in the emergency department

Prescriber		OAC Prescription Given (%)	
		n=402 (18.9)	
ED physician			
ED physician prescribed an OAC		296 (73.6)	
ED physician prescribed warfarin		229/296 (77.4)	
Number of days	Median (IQR)	7 (3-21)	
ED physician prescribed Dabigatran		50/296 (16.9)	
Number of days	Median (IQR)	30 (28-30)	
ED physician prescribed Rivaroxaban or Apixaban		17/296 (5.7)	
Number of days	Median (IQR)	30 (26-30)	
Consultant physician			
Consultant prescribed OAC, in patients who were seen by a consultant		106/341 (31.2)	
Consultant prescribed warfarin		59/106 (55.7)	
Consultant prescribed dabigatran		32/106 (30.2)	
Consultant prescribed rivaroxaban or apixaban		15/106 (14.2)	
All ED prescriptions			
ED warfarin prescribed		288 (71.6)	
ED dabigatran prescribed		82 (20.4)	
ED rivaroxaban or apixaban prescribed		32 (8.0)	
ED ASA or clopidigrel prescribed		380 (17.8)	

ED: emergency department; OAC: oral anticoagulant; N/A: not applicable; IQR: Interquartile range; ASA: aspirin

Table A5. Balance between inverse probability of treatment weighted (IPTW) cohorts

Characteristic		OAC Prescription Given, %	No OAC Prescription Given, %	Standardized difference
Age	Mean \pm SD	76.5 \pm 15.4	76.0 \pm 8.2	0.068
	Median (IQR)	76.0 (71.0-81.0)	75.0 (70.0-81.0)	
Sex	Female	61.8	59.0	0.058
Rural residence		2.1	2.1	0.001
Income quintile	1	14.1	14.6	0.014
	2	16.7	17.6	0.023
	3	17.8	19.6	0.045
	4	22.2	24.7	0.060
	5 (highest)	29.2	23.5	0.129
Came from	Home	70.1	72.9	0.062
	Other*	29.9	27.1	0.062
Past Medical History				
Atrial fibrillation/flutter		24.9	26.6	0.039
Heart failure		11.3	10.4	0.027
Stroke or TIA		1.2	1.1	0.013
Coronary artery disease		17.9	19.5	0.039
Valvular disease		1.7	1.7	0.007
Hypertension		73.1	75.6	0.057
COPD		7.3	6.1	0.046
Diabetes Mellitus		17.6	18.0	0.010
Renal Failure or dialysis		2.3	1.4	0.063
Falls		3.3	2.0	0.085
Major bleeding event resulting in hospitalization: GI bleed, ICH, other		5.5	6.6	0.038
Dementia		1.9	1.8	0.003
Smoker	Current	4.20	3.88	0.017
	Previous	5.9	6.6	0.028
	Never	89.9	89.5	0.011
CHADS2	0	10.6	10.2	0.015
	1	35.0	36.3	0.027
	2	39.2	38.3	0.018
	3+	15.1	15.2	0.002
HAS-BLED score 1 or 2 (vs 3)		41.3	44.1	0.058
Medications on presentation				
Clopidigrel		3.2	4.4	0.064
Aspirin		37.8	38.7	0.017
NSAIDs		7.0	8.6	0.058

Emergency Department Care				
Palpitations		48.9	52.2	0.066
Triage heart rate	Median (IQR)	117.0 (89.0-138.0)	113.0 (89.0-137.0)	0.049
Cardioverted		46.0	47.7	0.034
Creatinine > 200 mmol/L		1.0	1.0	0.008
Discharge rhythm	NSR	49.5	53.1	0.072
	AF	44.9	41.4	0.070
	Other /Unknown	5.6	5.4	0.006
Seen by a consultant		18.0	16.7	0.035

SD: standard deviation; IQR: interquartile range; TIA: Transient ischemic attack; COPD: chronic obstructive pulmonary disease; GI: gastrointestinal; ICH: intracranial hemorrhage; NSAID: non-steroidal anti-inflammatory drug
 * doctor's office

Table A6. Mortality and stroke outcomes by emergency department OAC prescription provision, after propensity-score weighting

	OAC Rx Given	No OAC Rx Given	HR	95% CI		p
Mortality						
180-day	3.1%	3.0%	1.03	0.43	2.45	0.95
1-year	5.0%	5.0%	1.01	0.53	1.91	0.99
2-year	9.0%	8.9%	1.02	0.65	1.61	0.93
Hemorrhagic stroke						
180-day	0.0%	0.1%	0.00	0.00	0.00	0.99
(Died)	(3.1%)	(2.9%)				
1-year	0.3%	0.2%	1.71	0.18	16.40	0.64
(Died)	(5.0%)	(4.8%)				
2-year	0.3%	0.2%	1.71	0.18	16.40	0.64
(Died)	(9.0%)	(8.7%)				
Ischemic stroke						
180-day	1.1%	0.6%	1.86	0.53	6.53	0.33
(Died)	(2.5%)	(2.9%)				
1-year	1.1%	0.9%	1.28	0.39	4.27	0.69
(Died)	(4.5%)	(4.7%)				
2-year	1.3%	2.0%	0.64	0.23	1.79	0.39
(Died)	(8.3%)	(8.3%)				
Any stroke^a						
180-day	1.1%	0.7%	1.56	0.46	5.31	0.48
(Died)	(2.5%)	(2.9%)				
1-year	1.4%	1.0%	1.35	0.47	3.91	0.58
(Died)	(4.5%)	(4.6%)				
2-year	1.6%	2.2%	0.72	0.28	1.83	0.49
(Died)	(8.3%)	(8.1%)				
Bleeding event^a						
180-day	1.2%	0.47%	2.51	0.80	7.92	0.12
(Died)	(3.1%)	(2.9%)				
1-year	1.9%	1.0%	1.89	0.78	4.55	0.16
(Died)	(4.8%)	(4.8%)				
2-year	2.5%	1.7%	1.46	0.72	2.95	0.297
(Died)	(3.1%)	(2.9%)				

OAC: oral anticoagulant; Rx: prescription; HR: hazard ratio; CI: confidence intervals

^a See Table A3, above, for codes

Figure A1. In patients who filled a first OAC prescription post-ED visit, unadjusted time to discontinuation (i.e. a 30 day gap) by group within 365 days after first prescription fill

