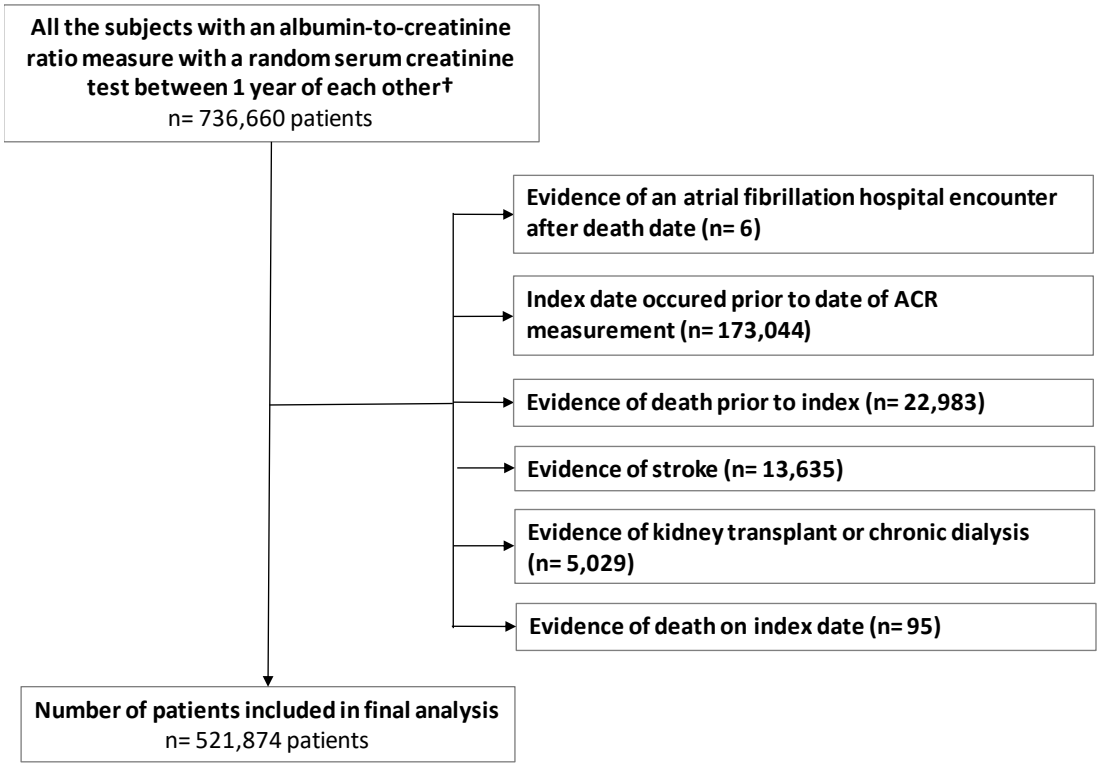
Online Supplement

Supplementary Figures & Tables

Figure 1. Study cohort creation



ACR albumin to creatinine ratio

Table 1. REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) statement checklist

	Item No	STROBE items	RECORD items	Reported
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract. (b) Provide in the abstract an informative and balanced summary of what was done and what was found.	(1.1) The type of data used should be specified in the title or abstract. When possible, the name of the databases used should be included. (1.2) If applicable, the geographic region and time frame within which the study took place should be reported in the title or abstract. (1.3) If linkage between databases was conducted for the study, this should be clearly stated in the title or abstract.	Abstract
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported.		Introduction
Objectives	3	State specific objectives, including any prespecified hypotheses.		Introduction
Methods				
Study design	4	Present key elements of study design early		Methods: Design and Setting

		in the paper.		
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection.		Methods: Design & Setting, Study Cohort
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up. (b) For matched studies, give matching criteria and number of exposed and unexposed.	(6.1) The methods of study population selection (such as codes or algorithms used to identify subjects) should be listed in detail. If this is not possible, an explanation should be provided. (6.2) Any validation studies of the codes or algorithms used to select the population should be referenced. If validation was conducted for this study and not published elsewhere, detailed methods and results should be provided. (6.3) If the study involved linkage of databases, consider use of a flow diagram or other graphical display to demonstrate the data linkage process, including the number of individuals with linked data at each stage.	Methods: Study Cohort, Exposure & Outcomes, Statistical Analyses Results
Variables	7	Clearly define all	(7.1) A complete list of	Methods:

		outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable.	codes and algorithms used to classify exposures, outcomes, confounders, and effect modifiers should be provided. If these cannot be reported, an explanation should be provided.	Exposure & Outcomes Supplementary Table 2
Data sources/ measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group.		Methods: Data Sources
Bias	9	Describe any efforts to address potential sources of bias.		Discussion
Study size	10	Explain how the study size was arrived at.		Results
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why.		Methods
Statistical methods	12	(a) Describe all statistical methods, including those used to control for		

	confounding. (b) Describe any methods used to examine subgroups and interactions. (c) Explain how missing data were addressed. (d) If applicable, explain how loss to follow-up was addressed. (e) Describe any sensitivity analyses.		Methods: Statistical Analyses
Data access and cleaning methods	N/A	(12.1) Authors should describe the extent to which the investigators had access to the database population used to create the study population. (12.2) Authors should provide information on the data cleaning methods used in the study.	
Linkage	N/A	(12.3) State whether the study included person-level, institutional-level, or other data linkage across two or more databases. The methods of linkage and methods of linkage quality evaluation should be provided.	

Results

Participants	13	(a) Report numbers of individuals at each stage of study--e.g. numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analyzed. (b) Give reasons for non-participation at each stage. (c) Consider use of a flow diagram.	(13.1) Describe in detail the selection of the persons included in the study (i.e., study population selection), including filtering based on data quality, data availability, and linkage. The selection of included persons can be described in the text and/or by means of the study flow diagram.	Results, Supplementary Figure 1
Descriptive data	14	(a) Give characteristics of study participants (e.g. demographic, clinical, social) and information on exposures and potential confounders. (b) Indicate number of participants with missing data for each variable of interest. (c) Summarize follow-up time (e.g. average and total amount).		Results
Outcome data	15	Report numbers of outcome events or		Results

		summary measures over time.	
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g. 95% confidence interval). Make clear which confounders were adjusted for and why they were included. (b) Report category boundaries when continuous variables were categorized. (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period.	Results
Other analyses	17	Report other analyses done (e.g. analyses of subgroups and interactions, and sensitivity analyses).	Results
Key results	18	Summarize key results with reference to study objectives.	Discussion

Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias.	(19.1) Discuss the implications of using data that were not created or collected to answer the specific research question(s). Include discussion of misclassification bias, unmeasured confounding, missing data, and changing eligibility over time, as they pertain to the study being reported.	Discussion
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence.		Discussion
Generalizability	21	Discuss the generalizability (external validity) of the study results.		Discussion
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on		Acknowledgments

	which the present article is based.		
Accessibility of protocol, raw data, and programming code	N/A	(22.1) Authors should provide information on how to access any supplemental information such as the study protocol, raw data, or programming code.	Supplements

Reference
1. Benchimol EI, Smeeth L, Guttmann A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM; RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) statement. 2015. PLoS Med. 12(10):1-22.

Table 2: Administrative data definitions

Variable	Data Source	Definition
Atrial fibrillation	Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD) CIHI National Ambulatory Care Reporting System (NACRS)	International Classification of Disease (ICD) ICD 9: 4273 ICD 10: I48
Stroke	CIHI-DAD CIHI-NACRS	Ischemic stroke ICD 9: 436, 4340, 4341, 4349, 3623 ICD 10: I630, I631, I632, I633, I634, I635, I638, I639, I64, H341 Subarachnoid, intracerebral and other non-traumatic intracranial hemorrhage ICD 9: 430, 431, 432 ICD 10: I600, I601, I602, I603, I604, I605, I606, I607, I609, I61, 162
Congestive heart failure	CIHI-DAD Ontario Health Insurance Plan (OHIP)	ICD 9: 425, 5184, 514, 428 ICD 10: I500, I501, I509, I255, J81 Canadian Classification of Diagnostic, Therapeutic and Surgical Procedures (CCP) CCP: 4961, 4962, 4963, 4964 Canadian Classification of Health Interventions (CCI) CCI: 1HP53, 1HP55, 1HZ53GRFR, 1HZ53LAFR, 1HZ53SYFR OHIP Fee: R701, R702, Z429 OHIP Diagnosis: 428
Major hemorrhage	CIHI-DAD	ICD 9: 430, 431, 432, 5307, 5310, 5312, 5314, 5316, 5320, 5322, 5324, 5326, 5330, 5332, 5334, 5336, 5340, 5342, 5344, 5346, 5780, 5781, 5693, 5789

		ICD 10: I600, I601, I602, I603, I604, I605, I606, I607, I609, I61, I62, I850, I9820, I983, K2210, K2211, K2212, K2214, K2216, K226, K228, K250, K252, K254, K256, K260, K262, K264, K266, K270, K272, K274, K276, K280, K282, K284, K286, K290, K3180, K31811, K6380, K920, K921, K5520, K625, K922
Myocardial infarction	CIHI-DAD CIHI-NACRS	ICD 9: 410 ICD 10: I21, I22
Coronary artery disease (excluding angina)	CIHI-DAD CIHI-NACRS OHIP	ICD 9: 412, 410, 411 ICD 10: I21, I22, Z955, T822 CCI: 1IJ50, 1IJ76 CCP: 4801, 4802, 4803, 4804, 4805, 481, 482, 483 OHIP Fee: R741, R742, R743, G298, E646, E651, E652, E654, E655, Z434, Z448 OHIP Diagnosis: 410, 412
Peripheral vascular disease	CIHI-DAD CIHI-NACRS OHIP	ICD 9: 4402, 4408, 4409, 5571, 4439, 444 ICD 10: I700, I702, I708, I709, I731, I738, I739, K551 CCP: 5125, 5129, 5014, 5016, 5018, 5028, 5038, 5126, 5159 CCI: 1KA76, 1KA50, 1KE76, 1KG50, 1KG57, 1KG76MI, 1KG87, 1IA87LA, 1IB87LA, 1IC87LA, 1ID87, 1KA87LA, 1KE57 OHIP fee: R787, R780, R797, R804, R809, R875, R815,

		R936, R783, R784, R785, E626, R814, R786, R937, R860, R861, R855, R856, R933, R934, R791, E672, R794, R813, R867, E649
Coronary artery bypass graft	CIHI-DAD OHIP	CCI: 1IJ76 CCP: 4811, 4812, 4813, 4814, 4815, 4816, 4817, 4819 OHIP fee: R742, R743, E654, E645, E652, E646
Chronic obstructive pulmonary disease	CIHI-DAD	ICD 9: 491, 492, 496 ICD 10: J41, J43, J44
Diabetes mellitus	CIHI-DAD CIHI-NACRS OHIP	ICD 9: 250 ICD 10: E10, E11, E12, E13, E14 OHIP fee: Q040, K029, K030, K045, K046 OHIP Diagnosis: 250
Hypertension	CIHI-DAD CIHI-NACRS OHIP	ICD 9: 401, 402, 403, 404, 405 ICD 10: I10, I11, I12, I13, I15 OHIP Diagnosis: 401, 402, 403

Table 3: Number of events and adjusted stroke risk with atrial fibrillation across eGFR levels (no atrial fibrillation as referent).

Kidney Function (ml/min/1.73m^2)	**Crude Number of Events (%)**		**Hazard ratio (95%CI)***
	AF	**No AF**	**AF**
eGFR Category	N (%)	N (%)	
eGFR > 90	381 (5.0)	189 (2.5)	2.15 (1.81-2.55)
eGFR 60-90	1376 (7.0)	632 (3.2)	2.26 (2.06-2.48)
eGFR 45-60	531 (7.8)	280 (4.1)	1.97 (1.70-2.28)
eGFR 30-44	302 (7.9)	158 (4.1)	2.00 (1.65-2.42)
eGFR < 30	75 (6.3)	57 (4.8)	1.38 (0.99-1.92)

Abbreviations: eGFR estimated glomerular filtration rate, AF atrial fibrillation, N number, % percentage, ml millilitre, min minute, m metre, CI confidence interval

*sub-distribution hazard ratio accounting for the competing risk of death

Table 4: Number of events and adjusted stroke risk with atrial fibrillation across ACR levels (no atrial fibrillation as referent).

Kidney Function (mg/g)	**Crude Number of Events(%)**		**Hazard ratio (95%CI)***
	AF	**No AF**	**AF**
ACR Category	N (%)	N (%)	
ACR <3	1575 (6.1)	735 (2.9)	2.23 (2.04-2.43)
ACR 3-30	877 (8.2)	438 (4.1)	2.09 (1.86-2.35)
ACR >30	213 (8.0)	143 (5.4)	1.61 (1.31-1.99)

Abbreviations: ACR albumin to creatinine ratio, AF atrial fibrillation, mg milligram, g gram, CI confidence interval
*sub-distribution hazard ratio accounting for the competing risk of death

Table 5: Crude number of events for stroke by atrial fibrillation status, eGFR and ACR level with eGFR > 90 ml/min/1.73m^2/ACR <3 mg/g and absence of atrial fibrillation as referent.

Kidney Function (eGFR in ml/min/1.73m^2, ACR in mg/g) **N(%)**	**No Atrial Fibrillation**			**Atrial Fibrillation**		
	ACR<3	**ACR 3-30**	**ACR>30**	**ACR<3**	**ACR 3-30**	**ACR>30**
eGFR > 90	108(2)	52(3)	29(7.4)	227(4.2)	128(7.3)	26(6.7)
eGFR 60-90	369(2.7)	216(4.3)	47(5.1)	863(6.3)	431(8.5)	82(8.8)
eGFR 45-60	157(3.8)	91(4.4)	32(5.5)	298(7.2)	184(8.8)	49(8.5)
eGFR 30-44	80(4)	56(4.2)	22(4.5)	153(7.6)	109(8.1)	40(8.2)
eGFR < 30	21(4.7)	23(4.7)	13(5)	34(7.6)	25(5.1)	16(6.1)

Abbreviations: eGFR estimated glomerular filtration rate, ACR albumin to creatinine ratio, N number