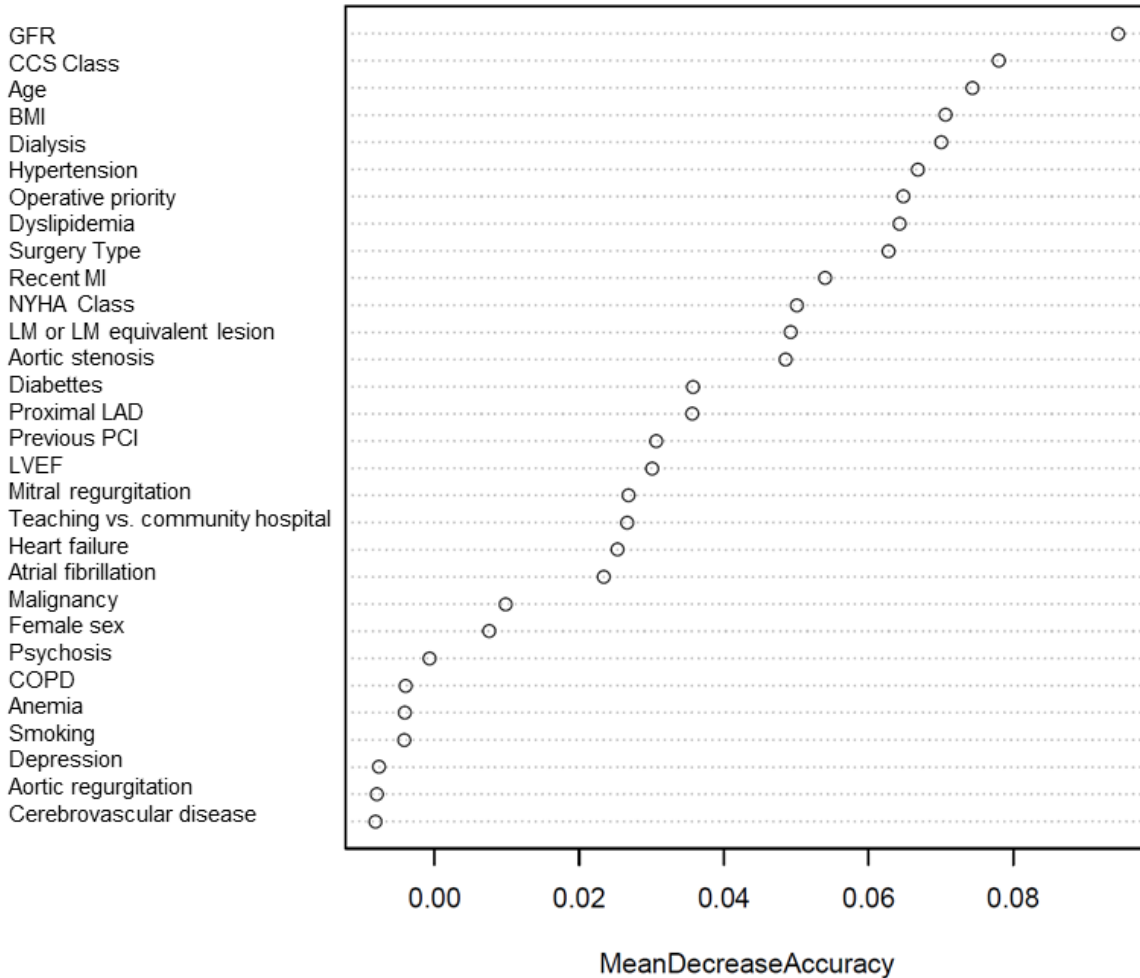


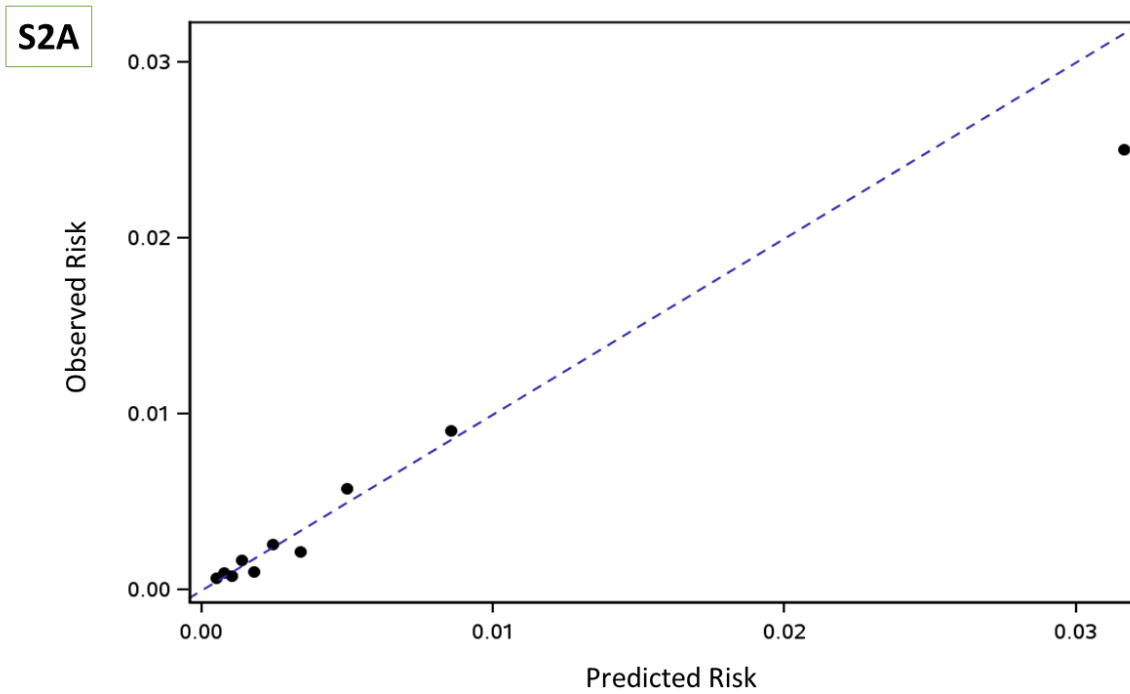
Appendix 1: Supplemental material

Supplemental Figure S1. Top 30 covariates from random forests using the mean decrease in accuracy method.

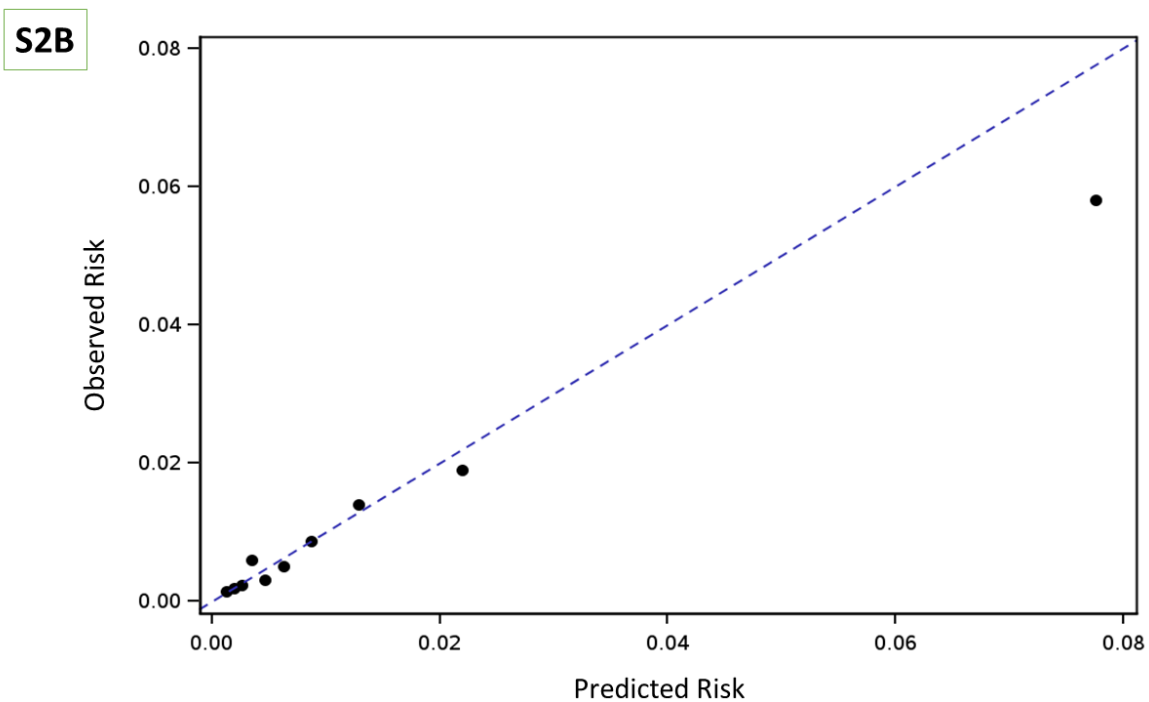
Legend: The mean decrease in accuracy is a measure of by how much removing a variable decreases the accuracy of prediction, as well as by how much including a variable would increase predictive accuracy.



Supplemental Figure S2a. Calibration plots of observed vs. expected waitlist mortality rates according to decile of expected rate at 30 days.

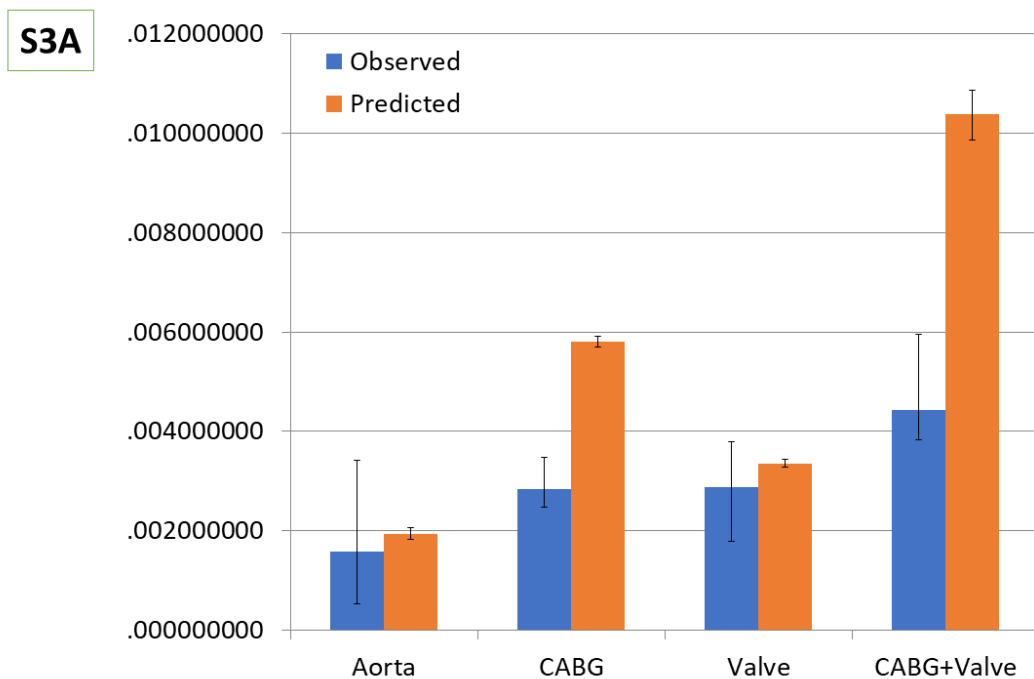


Supplemental Figure S2b. Calibration plots of observed vs. expected waitlist mortality rates according to decile of expected rate at 90 days.



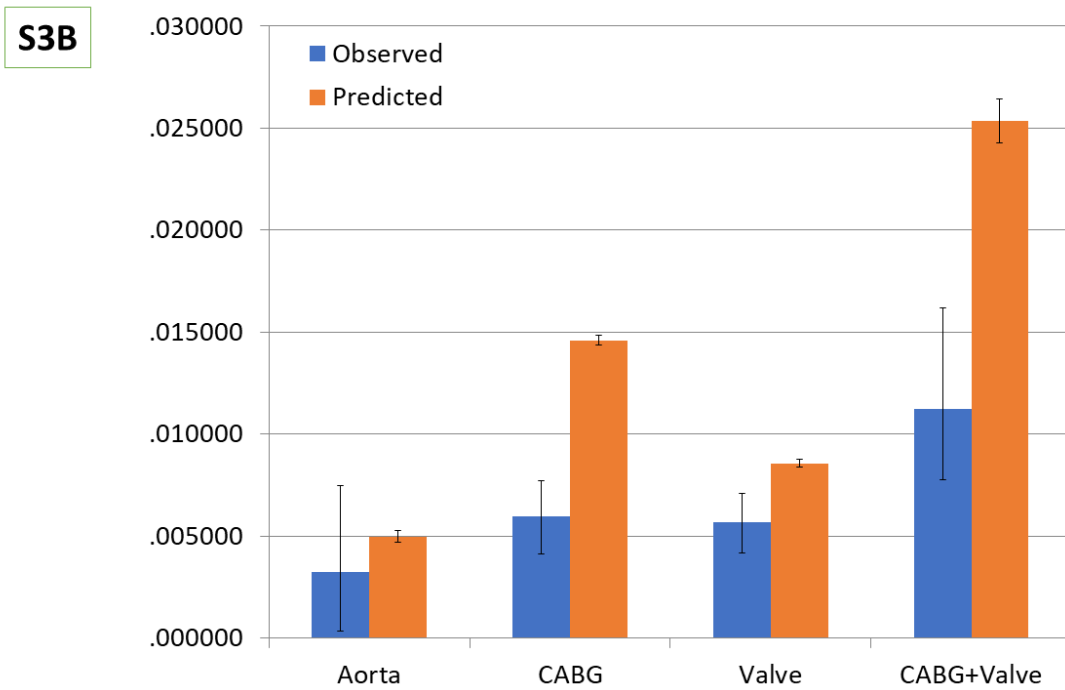
Supplemental Figure S3a. Observed vs. expected waitlist deaths by type of cardiac surgery at 30 days.

Legend: The error bars indicate 95% confidence intervals and were obtained through 200 bootstraps.



Supplemental Figure S3b. Observed vs. expected waitlist deaths by type of cardiac surgery at 90 days.

Legend: The error bars indicate 95% confidence intervals and were obtained through 200 bootstraps.



Supplemental Table S1. Multivariable predictors of waitlist death in the logistic model that imputed unknown operative priority.

Variable	Model β -Coefficient	Wald Chi-Square	P-value
Demographics			
Age, yr	0.0309	24.2855	<.0001
Female sex	0.0421	0.0932	0.7602
Comorbidities			
CCS classification			
0	NA	NA	NA
1	-0.0688	0.0877	0.7671
2	-0.0660	0.0887	0.7659
3	-0.1050	0.2008	0.6541
4	0.4066	1.5561	0.2122
Low-risk ACS	-0.2022	0.6820	0.4089
Intermediate-risk ACS	0.0600	0.0663	0.7968
High-risk ACS	0.6361	5.5885	0.0181
LM or LM equivalent disease	0.2378	2.3020	0.1292
Left ventricular ejection fraction			
$\geq 50\%$	NA	NA	NA
35-49%	0.7009	21.4972	<.0001
20-35%	0.9267	24.5732	<.0001
< 20%	1.0397	9.2154	0.0024
Heart failure	0.5625	15.4619	<.0001
Atrial fibrillation	-0.5342	11.0024	0.0009
Dialysis	1.3167	47.0915	<.0001
Psychosis	1.6746	8.0561	0.0045
Operative characteristics			
Surgery type			
CABG	NA	NA	NA
Valve	0.9931	22.7598	<.0001
CABG + Valve	1.0354	34.4080	<.0001
Thoracic Aorta	0.7872	3.5428	0.0598

Abbreviations: OR = odds ratio; CI = confidence interval; CCS = Canadian Cardiovascular Society; ACS = acute coronary syndrome; LM = left main coronary artery; CABG = coronary artery bypass grafting

Supplemental Table S2. Multivariable predictors of waitlist death in the time-to-event model.

Variable	Model β -Coefficient	HR (95% CI)	P-value
Demographics			
Age, yr	0.031	1.03 (1.02-1.04)	<.0001
Female sex	0.051	1.05 (0.8-1.38)	0.71
Comorbidities			
CCS classification			
0	NA	Reference	NA
1	-0.1267	0.88 (0.56-1.39)	0.5865
2	-0.0867	0.92 (0.59-1.42)	0.696
3	0.0112	1.01 (0.64-1.6)	0.9619
4	1.0332	2.81 (1.46-5.4)	0.002
Low-risk ACS	0.8134	2.26 (1.31-3.89)	0.0034
Intermediate-risk ACS	1.0746	2.93 (1.68-5.1)	0.0001
High-risk ACS	1.4399	4.22 (1.89-9.42)	0.0004
LM or LM equivalent disease	0.3967	1.49 (1.09-2.03)	0.013
Left ventricular ejection fraction			
$\geq 50\%$	NA	Reference	NA
35-49%	0.6889	1.99 (1.47-2.69)	<.0001
20-35%	0.9002	2.46 (1.69-3.58)	<.0001
< 20%	1.0494	2.86 (1.43-5.69)	0.0029
Heart failure	0.5334	1.7 (1.3-2.24)	0.0001
Aortic stenosis	0.4514	1.57 (1.11-2.23)	0.0117
Dialysis	1.3329	3.79 (2.61-5.51)	<.0001
Psychosis	1.6378	5.14 (1.64-16.15)	0.005
Recent MI	0.6842	1.98 (1.35-2.91)	0.0005
Operative characteristics			
Surgery type			
CABG	NA	Reference	NA

Valve	0.2065	1.23 (0.73-2.06)	0.4332
CABG + Valve	0.2908	1.34 (0.84-2.14)	0.2246
Thoracic Aorta	-0.3909	0.68 (0.27-1.68)	0.3998
Operative priority			
Unknown	0.9869	2.68 (1.72-4.18)	<.0001
Emergent	0.8304	2.29 (0.98-5.37)	0.0557
Urgent	0.1368	1.15 (0.76-1.73)	0.5148
Semi-urgent	0.091	1.1 (0.71-1.69)	0.6819
Elective	NA	Reference	NA

Abbreviations: HR = hazard ratio; CI = confidence interval; CCS = Canadian Cardiovascular Society; ACS = acute coronary syndrome; LM = left main coronary artery; COPD = chronic obstructive pulmonary disease; CABG = coronary artery bypass grafting

Supplemental Table S3. Variables, their definitions and associated diagnostic codes.

Variable	Data Source	Codes
Age	RPDB	bdate
Sex	RPDB	sex
Rurality	RPDB	rural
Adherence to recommended wait time	CCN	real wait time is computed as the time between acceptance and removal, if real wait time<=recommended wait then adhere=1, else 0
Type of surgery	CCN	Aorta: WaitTimeProcedure_wtlstentry="W.CAR.SURG.AO", CABG: WaitTimeProcedure_wtlstentry="W.CAR.SURG.CABG", CABG+Valve: WaitTimeProcedure_wtlstentry="W.CAR.SURG.CABGV", Valve: WaitTimeProcedure_wtlstentry in ("W.CAR.SURG.VO", "W.CAR.SURG.OTHV")
CCS	CCN	Cath_CcsAcclsClass_cref
NYHA	CCN	Cath_NYHeartAssociationCD
Operative priority	CCN	PriorityLevelCD
Recommend maximum wait time	CCN	CSCCalculatRecommendMaxWaitTime
Cardiogenic shock	CCN	OffList_Cath_CardiogenicShockCD Cath_CardiogenicShockCD
Left ventricle ejection fraction	CCN	Cath_LvFunctionCD, Surgery_Lvef
Endocarditis	CCN	Cath_InfectiveEndocarditisCD, Cath_ActiveEndocarditisCD
Body mass index	CCN	Cath_PatientHeight Cath_PatientWeight
Glomerular filtration rate	CCN	Cath_CreatinineLevel
Atrial fibrillation	DAD	ICD10: I48,
	CCN	Surgery_AtrialFibrillationCD
Alcohol abuse	DAD	ICD10: 'F10','E52','G621','I426','K292','K700','K703','K709','T51','Z502','Z714','Z721'
Anemia	DAD	ICD10: 'E222','E86','E87','D500'
Congestive heart failure	CHF	diagdate
	CCN	Cath_HistoryOfChfCD
	DAD	ICD10: 'I500','I501','I5090'
COPD	COPD	diagdate
	CCN	Cath_CopdCD
Cerebrovascular disease	DAD	ICD10: I60", "I610", "I611", "I612", "I613", "I614", "I615", "I616", "I618", "I619", "I630", "I631", "I632", "I633", "I634", "I635", "I638", "I639", "H341", "I64", "G450", "G451", "G452", "G453", "G458", "G459", "H340"
	CCN	Cath_CvdCD
Dementia	DEMENTIA	diagdate
	DAD	ICD10: 'F00','F01','F02','F03','F051','G30','G311'

Depression	DAD	ICD10: 'F204','F313','F314','F315','F32','F33','F341','F412','F432'
Diabetes	ODD	diagdate
	CCN	Cath_DiabetesCD
	DAD	ICD10: 'E100','E101','E109','E110','E111','E119','E120','E121','E129','E130','E131','E139','E140','E141','E149','E102','E103','E104','E105','E106','E107','E108','E112','E113','E114','E115','E116','E117','E118','E122','E123','E124','E125','E126','E127','E128','E132','E133','E134','E135','E136','E137','E138','E142','E143','E144','E145','E146','E147','E148'
DAD, NACRS	CCI: "1PZ21HQBR","1PZ21HPD4"	
Dialysis	CCN	Cath_DialysisCD
	OHIP	feecode: "R850", "R849", "G323", "G326", "G330", "G331", "G332", "G333", "G860", "G861", "G862", "G863", "G864", "G865", "G866", "G325"
	DAD, NACRS	CCI: "1PZ21HQBR","1PZ21HPD4"
HTN	HYPERS	diagdate
	CCN	Cath_HypertensionCD
	DAD	ICD10: 'I11','I12','I13','I15','I1-'
Dyslipidemia	CCN	Cath_HyperlipidemiaCD
Recent MI	CCN	Cath_RecentMiCD="Y"
Peripheral vascular disease	DAD	ICD10: 'I70', 'I71', 'I731', 'I738', 'I739', 'I771', 'I790', 'I792', 'K551', 'K558', 'K559', 'Z958', 'Z959'
	CCN	Cath_PvdCD
Primary Cancer	DAD	ICD10: 'C00','C00','C01','C02','C03','C04','C05','C06','C07','C08','C09','C10','C11','C12','C13','C14','C15','C16','C17','C18','C19','C20','C21','C22','C23','C24','C25','C26','C30','C31','C32','C33','C34','C37','C38','C39','C40','C41','C43','C45','C46','C47','C48','C49','C50','C51','C52','C53','C54','C55','C56','C57','C58','C60','C61','C62','C63','C64','C65','C66','C67','C68','C69','C70','C71','C72','C73','C74','C75','C76','C81','C82','C83','C84','C85','C88','C90','C91','C92','C93','C94','C95','C97','C96'
Psychosis	DAD	ICD10: 'F20','F22','F23','F24','F25','F28','F29','F302','F312','F315'
Liver disease	DAD	ICD10: 'B18','I85','I864','I982','K70','K711','K713','K714','K715','K717','K72','K73','K74','K760','K762','K763','K764','K765','K766','K767','K768','K769','Z944'
Redo sternotomy	CCN	Cath_PreviousCabgProcedureCD, Surgery_PriorSternotomyCD
Metastatic cancer	DAD	ICD10: 'C77','C78','C79','C80'
LM_comb	CCN	proximalLAD and Circumflex disease (native or graft), or left main disease
Mitral valve regurgitation	CCN	ReferralMitralRegurgitationIND="Y"
Aortic valve regurgitation	CCN	ReferralAorticRegurgitationIND="Y"
Aortic valve stenosis	CCN	ReferralAorticStenosisIND="Y" or ReferralPrimaryReasonCD="S" or ReferralSecondaryReasonCD="S"
Smoking	CCN	Cath_HistoryOfSmokingCD

Appendix 1, as supplied by the authors. Appendix to: Sun LY, Wijeyesundera HC, Lee DS, et al. Derivation and validation of a clinical risk score to predict death while awaiting cardiac surgery in Ontario, Canada: a population-based study. *CMAJ Open* 2022. DOI:10.9778/cmajo.20210031. Copyright © 2022 The Author(s) or their employer(s). To receive this resource in an accessible format, please contact us at cmajgroup.cmajca

Teaching vs. community hospital	CCN/INST	AcceptanceSiteNumber(aminst)
Previous PCI	CCN	Cath_PreviousPciCD
	OHIP	feecode: "G298"

RPDB = Registered Persons Database; CCN= CorHealth Ontario clinical registry; DAD = Discharge Abstract Database; COPD = Ontario COPD database (an ICES-derived cohort); HYPER = Ontario Hypertension database (an ICES-derived cohort); DEMENTIA = Ontario dementia database (an ICES-derived cohort); ODD = Ontario Diabetes Database (an ICES-derived cohort); OHIP = Ontario Health Insurance Plan; INST = Institutions database