Supplemental Online Content

de Mestral C, Gomez D, Wilton AS, et al. A population-based analysis of diabetes-related care measures, foot complications, and amputation during the COVID-19 pandemic in Ontario, Canada. *JAMA Netw Open.* 2022;5(1):e2142354. doi:10.1001/jamanetworkopen.2021.42354

eAppendix 1. Database, Coding Definitions, and Supporting References

eAppendix 2. Count of Adults with Diabetes and Total Person-Weeks per Time Period

This supplemental material has been provided by the authors to give readers additional information about their work.

eAppendix 1. Database, Coding Definitions, and Supporting References

Population-based Databases	Description			
Registered Persons Database (RPDB)	Records of demographics and vital statistics for all Ontario Residents ¹			
Discharge Abstract Database (DAD)	Records of all hospitalizations in Ontario acute care hospitals ¹			
Same Day Surgery (SDS)	Records of all same day surgeries and invasive procedures in Ontario ¹			
Ontario Health Insurance Plan Claims Database (OHIP)	Records of all physician service claims in Ontario ¹			
National Ambulatory Care Reporting System (NACRS)	Records of all emergency department visits in Ontario ¹			
Continuing Care Reporting System Database	Records of all admissions to publicly-funded long-term care (a.k.a. nursing home) facilities in Ontario ¹			
Ontario Diabetes Database	Disease-specific ICES-derived cohort ^{1,2}			
Ontario Hypertension Database	Disease-specific ICES-derived cohort ^{1,3}			
Ontario Congestive Heart Failure Database	Disease-specific ICES-derived cohort ^{1,4}			
Ontario Chronic Obstructive Pulmonary Disease Database	Disease-specific ICES-derived cohort ^{1,5}			

eAppendix 1. Database, Coding Definitions, and Supporting References (continued)

Diagnosis, Measure or Intervention	Database	Codes	Supporting References	
Diabetes Mellitus	Ontario Diabetes	Diagnosis date that precedes the index time period	2	
(Type 1 or 2)	Database	Diagnosis date that precedes the index time period	2	
Major Amputation	DAD	<u>CCI:</u> 1VC93, 1VG93, 1VQ93	6	
Comprehensive Diabetes	OHIP	Physician Service Fee:	7, 8	
Management Assessment	Orm	Primary care: K030, Q040; Endocrinologist or	7,0	
Widningement Assessment		general internal medicine specialist: K045, K046		
Glycated Hemoglobin	OHIP	Laboratory Service Fee:	9	
(A1c) Measurement	0	L093	J	
Diabetic Foot Ulcer,	DAD	ICD-10:	10	
Osteomyelitis or	NACRS	Diabetic foot ulcer with or without gangrene:	10	
Gangrene	IVACIO	E10.51, E10.70, E10.71, E11.51, E11.70, E11.71,		
Gungrene		E13.51, E13.70, E13.71, E14.51, E14.70, E14.71		
		Osteomyelitis of the foot: M86.17, M86.27, M86.37,		
		M86.47, M86.67, M86.87, M86.97		
		Atherosclerosis of lower extremities with gangrene:		
		170.21		
Open Surgical Lower	DAD	CCI: 1KA57LA, 1KA76MZ, 1KE57LA, 1KE76MZ,	11	
Extremity	SDS	1KG57LA, 1KG76MI, 1KT57LA, 1KT76MZ, 1JM76MI		
Revascularization				
Endovascular Lower	DAD	CCI: 1KA50GQ-BD, 1KA57GQ, 1KE35, 1KE50GQ,	11	
Extremity	SDS	1KE57GQ, 1KG35, 1KG50GQ, 1KG57GQ, 1KT50GQ,		
Revascularization		1KT57GQ		
Minor Amputation	DAD	CCI: 1WA93, 1WE93, 1WI93, 1WJ93, 1WK93,	6	
	SDS	1WL93, 1WM93, 1WN93		
Patient Characteristics				
Age & Sex	RPDB	-	-	
Neighbourhood of	RPDB	-	12,13	
residence Income				
Quintile, Rurality and				
Northern Region – LHINs				
13 and 14				
Long-term Care	CCRS	Admitted to long-term care facility at beginning of	14	
Residence		given time period		
Hypertension	Ontario	Diagnosis date that precedes the index time period	3	
	Hypertension			
	Database			
Congestive Heart Failure	Ontario Heart	Diagnosis date that precedes the index time period	4	
	Failure Database			
Chronic Obstructive	Ontario COPD	Diagnosis date that precedes the index time period	5	
Pulmonary Disease	Database			

Coronary Artery Disease	DAD (5-year	<u>ICD-10:</u>	15		
	lookback)	120, 121, 122, 123, 124, 125			
Chronic Kidney Disease	DAD (5-year	ICD-10:	16		
	lookback)	I12, I13, N08.3, N18, E10.2, E11.2, E13.2, E14.2			
Peripheral Artery Disease	DAD (5-year	ICD-10:	6,11		
	lookback)	170.0, 170.2, 170.8, 170.9, 173.9, 174.0, 174.3, 174.4,			
		174.5, 174.8, 174.9, 179.2, E10.50, E10.51, E10.70,			
		E10.71, E11.50, E11.51, E11.70, E11.71, E13.50,			
		E13.51, E13.70, E13.71, E14.50, E14.51, E14.70,			
		E14.71			

Abbreviations: ICD-10-CA, International Statistical Classification of Diseases, Tenth Revision, Canadian Version; CCI, Canadian Classification of Health Interventions; DAD, Discharge Abstract Database; SDS, Same Day Surgery; OHIP, Ontario Health Insurance Plan; NACRS, National Ambulatory Care Reporting System; RPDB, Registered Persons Database; CCRS, Continuing Care Reporting System; LHIN – Local Health Integrated Network

eAppendix 1 References:

- 1. ICES Data Dictionary. https://www.ices.on.ca/Data-and-Privacy/ICES-data/Data-dictionary (accessed June 7, 2021)
- 2. Hux JE, Ivis F, Flintoft V, Bica A. Diabetes in Ontario: determination of prevalence and incidence using a validated administrative data algorithm. Diabetes Care. 2002; 25:512–516
- 3. Tu K, Chen Z, Lipscombe LL; Canadian Hypertension Education Program Outcomes Research Taskforce. Prevalence and incidence of hypertension from 1995 to 2005: a population-based study. CMAJ. 2008;178(11):1429-1435.
- 4. Schultz SE, Rothwell DM, Chen Z, Tu K. Identifying cases of congestive heart failure from administrative data: a validation study using primary care patient records. Chronic Dis Inj Can. 2013;33(3):160-166.
- 5. Gershon AS, Wang C, Guan J, Vasilevska-Ristovska J, Cicutto L, To T. Identifying individuals with physcian diagnosed COPD in health administrative databases. COPD. 2009;6(5):388-394.
- 6. Hussain MA, Al-Omran M, Salata K, Sivaswamy A, Forbes TL, Sattar N, Aljabri B, Kayssi A, Verma S, de Mestral C. Population-Based Secular Trends in Lower Extremity Amputation for Diabetes and Peripheral Artery Disease. CMAJ 2019:191(35): E655
- 7. Kiran T, Victor JC, Kopp A, Shah BR, Glazier RH. The relationship between financial incentives and quality of diabetes care in Ontario, Canada. Diabetes Care. 2012 May;35(5):1038-46.
- 8. Ontario Health Insurance Plan. Schedule of Benefits for Physician Services Schedule of Benefits. https://www.health.gov.on.ca/en/pro/programs/ohip/sob/physserv/sob_master20210314.pdf
- 9. Ontario Health Insurance Plan. Schedule of Benefits for Laboratory Services. https://www.health.gov.on.ca/en/pro/programs/ohip/sob/lab/lab_mn2020.pdf
- 10. Hopkins RB, Burke N, Harlock J, Jegathisawaran J, Goeree R. Economic burden of illness associated with diabetic foot ulcers in Canada. BMC Health Serv Res. 2015;15(1):13.
- 11. Jacob-Brassard J, Al-Omran M, Stukle TA, Mamdani M, Lee DS, de Mestral C. Validation of diagnosis and procedure codes for revascularization for peripheral artery disease in Ontario Administrative Databases. Clin Invest Med 2021; 44(2):E36-43
- 12. Wilkins R. Use of postal codes and addresses in the analysis of health data. Health Rep 1993;5:157-77.
- 13. Kralj B. Measuring rurality RIO2008 BASIC: methodology and results. Toronto: Ontario Medical Association; 2009.
- 14. Lane NE, Wodchis WP, Boyd CM, Stukel TA. Disability in long-term care residents explained by prevalent geriatric syndromes, not long-term care home characteristics: a cross-sectional study. BMC Geriatr. 2017; 17:49.
- 15. Tu JV, Chu A, Donovan LR, et al. The Cardiovascular Health in Ambulatory Care Research Team (CANHEART): using big data to measure and improve cardiovascular health and healthcare services. Circ Cardiovasc Qual Outcomes. 2015;8(2):204-212.
- 16. Fleet JL, Dixon SN, Shariff SZ, et al. Detecting chronic kidney disease in population-based administrative databases using an algorithm of hospital encounter and physician claim codes. BMC Nephrol. 2013;14:81.

eAppendix 2. Count of Adults with Diabetes and Total Person-Weeks per Time Period

	TIME PERIODS						
	Jan 1-Mar 10	Mar 11-May 19	May 20-Jul 28	Jul 29-Oct 6	Oct 7-Dec 15	<u>Dec 16-Feb 23</u>	
	Pre-COVID-19	Wave 1	Wave 1	Between Waves	Wave 2	Wave 2	
No. of adults with diabetes – 2020/21	1,478,808	1,488,605	1,489,950	1,496,050	1,504,105	1,512,312	
No. of adults with diabetes – 2019/20 Control Periods	1,432,934	1,441,029	1,451,135	1,461,236	1,469,824	1,478,513	
Total Person-weeks – 2020/21	14,692,328	14,796,514	14,826,149	14,864,998	14,952,812	15,033,917	
Total Person-weeks – 2019/20 Control Periods	14,241,437	14,328,900	14,440,523	14,519,515	14,611,727	14,702,328	