

Appendix 2 (as supplied by the authors): CANHEART Primary Prevention Performance Indicator Definitions

ID	Primary Prevention Indicator Topic Area	Numerator	Denominator	Exclusions	Preferred Data Source	Alternate Data Source(s)	Relevant Clinical Guideline
Smoking (N=2)							
SMK1	Prevalence of smoking	Number of individuals in the denominator who self-reported being/were identified as a current smoker, either daily or occasionally	Number of individuals/primary healthcare patients, 20 years of age and older	None	Survey (e.g., Canadian Community Health Survey (CCHS))	EMR	C-CHANGE (Tobe et al., 2011)
SMK2	Percentage of smokers who received smoking cessation counseling	Number of individuals in the denominator who received smoking cessation counseling	Number of individuals/primary healthcare patients, age 20 and older, who are current smokers	None	Administrative Databases (Physician Services, e.g., Ontario Health Insurance Plan (OHIP))	Survey (e.g., CCHS)	C-CHANGE (Tobe et al., 2011)
Obesity (N=2)							
WHT1	Prevalence of obesity	Number of individuals in the denominator who had a measured or self-reported body mass index ≥ 30 kg/m ²	Number of individuals/primary healthcare patients age 20 and older	Individual was pregnant at the time of body-mass index measurement	Survey (e.g., CCHS)	EMR	2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children (Lau et al., 2007 CMAJ)
WHT2	Percentage of patients with height and weight measured	Number of individuals in denominator who had their height and weight measured by a healthcare professional	Number of individuals/primary healthcare patients age 20 and older	None	EMR	N/A	2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children (Lau et al., 2007 CMAJ)
Hypertension (N=4)							
HTN1	Prevalence of hypertension	Number of patients in the denominator who have a diagnosis of hypertension OR elevated blood pressure (≥ 140 mmHg systolic or ≥ 90 mmHg diastolic) OR who self-report having hypertension	Number of individuals/primary healthcare patients 20 years of age and older	None	Administrative Databases (Validated Disease Algorithms, e.g., Ontario Hypertension Database)	EMR, Survey (e.g., CCHS)	CHEP 2016 Guidelines (Leung et al., CJC)

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HTN2	Percentage of patients who had their blood pressure measured	Number of patients in the denominator who have had their blood pressure measured by a healthcare professional	Number of primary healthcare patients age 20 years of age and older	None	EMR	Survey (e.g., CCHS)	CHEP 2016 Guidelines (Leung et al., CJC)
HTN3A	Percentage of patients with hypertension taking ≥ 1 anti-hypertension medication	Number of patients in the denominator who were prescribed/self-report taking at least one anti-hypertension medication	Number of primary healthcare patients with hypertension, 20 years of age and older	None	Administrative Databases (Prescription Medication Claims, e.g., Ontario Drug Benefit Database, Validated Disease Algorithms, e.g. Ontario Hypertension Database)	EMR, Survey (e.g., CCHS)	CHEP 2016 Guidelines (Leung et al., CJC)
HTN3B	Mean number of antihypertensive medications taken among patients with treated hypertension	Mean number of antihypertensive medications taken among patients in the denominator	Number of primary healthcare patients with hypertension, 20 years of age and older taking at least one antihypertensive medication	None	Administrative Databases (Medication Claims, e.g., Ontario Drug Benefit Database, Validated Disease Algorithms, e.g. Ontario Hypertension Database)	EMR	CHEP 2016 Guidelines (Leung et al., CJC)
HTN4A	Measured blood pressure control (<140mmHg systolic and <90 mmHg diastolic) among patients with hypertension	Number of patients in the denominator who had a blood pressure measure <140mmHg systolic and <90mmHg diastolic	Number of primary healthcare patients with hypertension, 20 years of age and older	Patients with a diagnosis of diabetes (these patients should be treated to attain blood pressures of <130mmHg systolic and <80mmHg diastolic)	EMR	N/A	CHEP 2016 Guidelines (Leung et al., CJC)

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HTN4B	Emergency Department visit rate for hypertension among patients with hypertension	Number of Emergency Department visits for hypertension by patients in denominator	Number of primary healthcare patients with hypertension, 20 years of age and older	None	Administrative Databases (Emergency Medical Services, e.g., NACRS, Validated Algorithms, e.g. Ontario Hypertension Database)	N/A	CHEP 2016 Guidelines (Leung et al., CJC) Rationale: Surrogate measure of blood pressure control
Diabetes (N=6)							
DIA1	Prevalence of diabetes	Number of patients in the denominator who have a diagnosis of diabetes (Type I or Type II) based on a validated administrative data algorithm, recorded primary healthcare provider diagnosis in the EMR, or self-report	Number of primary healthcare patients age 20 and older	None	Administrative Databases (Validated Algorithms, e.g. Ontario Diabetes Database)	EMR, Survey (e.g., CCHS)	Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)
DIA2	Percentage of patients age 40 and older who had a full fasting blood glucose or HbA1c screening test in the past 36 months	Number of patients in the denominator who have had a fasting blood glucose screening or HbA1c screening within the past 36 months	Number of primary healthcare patients age 40 and older	Patients with a previous diagnosis of diabetes	Administrative Databases (Physician Claims, e.g., OHIP, Validated Algorithms, e.g. Ontario Diabetes Database-for exclusion criteria)	EMR, Survey (e.g., CCHS)	Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)
DIA3	Percentage of patients with diabetes taking anti-diabetic medications	Number of patients in the denominator who are taking anti-diabetic medications (oral agents or insulin)	Number of primary healthcare patients with diabetes (type I or type II), age 20 and older	None	Administrative Databases (Medication Claims, e.g., Ontario Drug Benefit Database, Validated Algorithms, e.g., Ontario Diabetes Database)	Survey (e.g., CCHS)	Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)

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DIA4	Percentage of patients with diabetes age 55 and older taking angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs)	Number of patients in the denominator who are taking ACE-inhibitors or ARBs	Number of primary healthcare patients with diabetes (Type I or Type II), age 55 and older	None	Administrative Databases (Medication Claims, e.g., Ontario Drug Benefit Database, Validated Algorithms, e.g., Ontario Diabetes Database)		Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)
DIA5	Percentage of patients with diabetes age 40 and older taking statin medication	Number of patients in the denominator who were prescribed statins	Number of primary healthcare patients with diabetes (Type I or Type II), age 40 and older	None	Administrative Databases (Medication Claims, e.g. Ontario Drug Benefit, Validated Algorithms, e.g. Ontario Diabetes Databases)	EMR	Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)
DIA6	Percentage of patients with diabetes with hemoglobin A1c controlled (HbA1c $\leq 7\%$)	Number of patients in the denominator whose most recent HbA1c measurement (within the past 12 months) was $\leq 7\%$	Number of primary healthcare patients age 20 and older with diabetes (Type I or Type II)	Diabetics with no HbA1c measurement, or those with limited life expectancy and high levels of functional dependency (for whom less stringent HbA1c targets of 7.1% to 8.5% may be used)	Administrative Databases (Medication Claims, e.g. Ontario Drug Benefit, Validated Algorithms, e.g. Ontario Diabetes Database, Laboratory Data)	EMR	Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)
Dyslipidemia (N=4)							
LIP1	Prevalence of high lipid levels (e.g., total cholesterol ≥ 5.2 mmol/L)	Number of patients in the denominator who had a blood test for total cholesterol where total cholesterol value was ≥ 5.2 mmol/L	Number of primary healthcare patients age 20 and older	None	Administrative Data (Laboratory Databases)	EMR	Canadian Cardiovascular Society 2012 Dyslipidemia Guidelines (Anderson et al., 2013 CJC)

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LIP2	Percentage of men age 40 and older and women age 50 and older who have had a full lipid profile in the past 5 years	Number of patients in the denominator who had a full fasting lipid profile measured within the past 5 years	Number of primary healthcare patients age 40 and older (men) and 50 and older (women)	None	Administrative Databases (Physician Services, e.g., Ontario Health Insurance Plan (OHIP))	N/A	Canadian Cardiovascular Society 2012 Dyslipidemia Guidelines (Anderson et al., 2013 CJC)
LIP3	Percentage of high-risk primary prevention patients taking statins (e.g. LDL >5.0 mmol/L, high Framingham risk score, age ≥65)	Number of patients in the denominator who were prescribed/self-report taking statins	Number of high risk (defined by Framingham risk score ≥ 20%, patients with LDL >5.0 mmol/L, diabetic patients, or other definition of cardiovascular risk) primary healthcare patients age 20 and older	None	Administrative Databases (Medication Claims, e.g., Ontario Drug Benefit Database, Validated Algorithms, e.g. Ontario Diabetes Database, Laboratory Databases)	EMR, Survey (e.g., CCHS)	Canadian Cardiovascular Society 2012 Dyslipidemia Guidelines (Anderson et al., 2013 CJC); Canadian Diabetes Association Clinical Practice Guidelines (Cheng et al., 2013 Can J Diabetes)
LIP4	Percentage of patients taking statins who have their lipid levels controlled (LDL-C ≤2mmol/L)	Number of patients in the denominator with most recent blood test showing LDL-C ≤2 mmol/L	Number of primary healthcare patients age 20 and older taking statins	None	Administrative Databases (Medication Claims, e.g., Ontario Drug Benefit Database, Laboratory Databases)	EMR	Canadian Cardiovascular Society 2012 Dyslipidemia Guidelines (Anderson et al., 2013 CJC)
Atrial Fibrillation (N=3)							
AFIB1	Prevalence of atrial fibrillation	Number of patients in the denominator with diagnosis of atrial fibrillation/hospitalization or ED visit for atrial fibrillation	Number of primary healthcare patients age 20 and older	None	Administrative Databases (Hospitalization, e.g., CIHI-DAD, Physician Claims, e.g., OHIP, Emergency Medicine, e.g., NACRS)	EMR	Canadian Stroke Best Practice Recommendations, 2012-2013 (Lindsay et al., Canadian Heart and Stroke Foundation)

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AFIB2	Percentage of patients with atrial fibrillation on anticoagulant therapy (warfarin or direct oral anticoagulant)	Number of patients in the denominator prescribed Warfarin or direct oral anticoagulant	Number of primary healthcare patients age 20 and older with atrial fibrillation	None	Administrative Databases (Hospitalization, e.g., CIHI-DAD, Physician Claims, e.g., OHIP, Emergency Medicine, e.g., NACRS, Medication Claims, e.g., Ontario Drug Benefit Database)	EMR	Canadian Stroke Best Practice Recommendations, 2012-2013 (Lindsay et al., Canadian Heart and Stroke Foundation)
AFIB3	Percentage of time in therapeutic range (INR 2-3) among patients with atrial fibrillation on warfarin	Number of patients in the denominator whose average INR test results was 2-3	Number of primary healthcare patients age 20 and older with atrial fibrillation on warfarin with at least one INR test result	None	Administrative Databases (Hospitalization, e.g., CIHI-DAD, Physician Claims, e.g., OHIP, Emergency Medicine, e.g., NACRS, Medication Claims, e.g., Ontario Drug Benefit Database, Laboratory Databases)	EMR	Canadian Stroke Best Practice Recommendations, 2012-2013 (Lindsay et al., Canadian Heart and Stroke Foundation)
Access to Primary Care (N=2)							
PC1	Percentage of individuals who have visited a primary healthcare provider	Number of patients in the denominator who have visited a primary healthcare provider	Number of primary healthcare patients age 20 and older	None	Administrative Databases (Physician Services, e.g. OHIP)		
PC2	Mean number of primary healthcare visits per year (e.g. for hypertension, diabetes, etc.)	Number of visits to primary healthcare providers per year	Number of primary healthcare patients age 20 and older	None	Administrative Databases (Physician Services, e.g. OHIP)	EMR	

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Outcome Indicators (N=5)							
O1	Acute myocardial infarction rate (per 1,000 person-years)	Number of hospitalizations for acute myocardial infarction among patients in the denominator	Person-years of follow-up among individuals 20 years of age and older	None	Administrative Data (Hospitalization e.g., CIHI-DAD, other databases for denominator population, e.g. Registered Persons' Database)	N/A	
O2	Stroke (ischemic/hemorrhagic) rate (per 1,000 person-years)	Number of hospitalizations for acute stroke (ischemic or hemorrhagic stroke) among patients in the denominator	Person-years of follow-up among individuals 20 years of age and older	None	Administrative Data (Hospitalization e.g., CIHI-DAD, other databases for denominator population, e.g. Registered Persons' Database)	N/A	
O3	Congestive heart failure (requiring hospitalization) rate (per 1,000-person-years)	Number of hospitalizations for heart failure among patients in the denominator	Person-years of follow-up among individuals 20 years of age and older	None	Administrative Data (Hospitalization e.g., CIHI-DAD, other databases for denominator population, e.g. Registered Persons' Database)	N/A	
O4	Revascularization (percutaneous coronary intervention (PCI) or coronary artery bypass graft surgery (CABG)) rate (per 1,000 person-years)	Number of revascularization procedures performed among patients in the denominator	Person-years of follow-up among individuals 20 years of age and older	None	Administrative Data (Hospitalization e.g., CIHI-DAD, other databases for denominator population, e.g. Registered Persons' Database)	N/A	

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O5	Cardiovascular and/or all-cause mortality rate (per 1,000 person-years)	Number of deaths/cardiac deaths among patients in denominator	Person-years of follow-up among individuals 20 years of age and older	None	Administrative Databases (Cause of Death Databases, e.g. Ontario Registrar General Death Database, other databases for denominator population, e.g. Registered Persons' Database)	N/A	