

## **About the Data: Adult Health and Disease (AHD) - Chronic Illness and Multiple Chronic Conditions**

**2018/19, 2016/17, 2014/15** (AHD - archived)

Last Updated: December 31, 2020

### **Adult Health and Disease and Multiple Chronic Conditions: 2018/19, 2016/17**

The 2018/19 data are provided at the following levels of geography:

- City of Toronto
- Ontario Neighbourhoods
  - 158 City of Toronto Neighbourhoods
  - 108 Neighbourhoods in Central LHIN (LHIN 8)
  - 94 Neighbourhoods in Hamilton Niagara Haldimand Brant
  - 37 Neighbourhoods in South West
  - 38 Neighbourhoods in Erie St. Clair
- 76 Ontario Sub-Regions:
- 14 Ontario Local Health Integration Networks (LHINs)
- 5 Ontario Health Interim and Transitional Regions
- Province of Ontario

The 2016/17 data are provided at the following levels of geography:

- City of Toronto
- Ontario Neighbourhoods
  - 140 Toronto Central and City of Toronto Neighbourhoods (LHIN 7)
  - 104 Neighbourhoods in Central LHIN (LHIN 8)
- 76 Ontario Sub-Regions:
- 14 Ontario Local Health Integration Networks (LHINs)
- Province of Ontario

#### **A. Diabetes, Asthma, High Blood Pressure (HPB), Chronic Obstructive Pulmonary Disease (COPD) and Mental Health and Addiction-related Visits**

### **Introduction**

This document provides an overview of methods used to generate data for rates of selected chronic diseases: Diabetes, Asthma, High Blood Pressure (HPB), Chronic Obstructive Pulmonary Disease (COPD) and Mental Health and Addiction-related Visits in Toronto and Ontario, Canada.

### **Data sources**

2019 Denominator: Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB), population aged 20+, 35+, 0+ who were alive and

living in the Ontario on April 1, 2019 (2018/19 data).

2016 Denominator: Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB), population aged 20+, 35+, 0+ who were alive and living in the Ontario on April 1, 2016 (2016/17 data).

Exclusions: We excluded people with no health system contact for the previous ten years as many of those people would no longer be alive and living in Ontario.

*(Note: This criteria for previously reported data on Adult and Health Diseases: 2014/15 was based on excluding individuals with no health system contact in last 5 years, but in order to make our data compatible with ICES reporting, we changed that to 10 years. This could affect comparison of the reported estimates in the two time periods, especially for younger age groups)*

Numerator: The proportion of people with the chronic illnesses: Diabetes, High Blood Pressure (HBP), Asthma and Chronic Obstructive Pulmonary Disease (COPD), were derived from validated, disease registries maintained by ICES. These databases were created using hospital discharge abstracts from the Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD), including same day surgery, and physician service claims from the Ontario Health Insurance Plan (OHIP) database.

Mental Health and Addiction-related conditions are defined by the occurrence of a doctor's visit for a symptom related to mental health.

See the information that provides further details regarding the definitions for each of the chronic illnesses listed and validation methods (Page 7: "**NOTE**" and "**ABOUT THE ICES-DERIVED VALIDATED DISEASE REGISTRIES**").

## B. Multiple Chronic Conditions

### Introduction

This document provides an overview of methods used to generate data for:

1. Rates for individuals with two or more chronic health conditions (2+ Chronic Conditions)
2. Rates for individuals with four or more chronic health conditions (4+ Chronic Conditions)

2+ Chronic Conditions: captures individuals with two or more chronic health condition and provides an indication of general health needs

4+ Chronic Conditions: captures individuals with four or more chronic health conditions and provides an indication of complex health care needs

## Denominator: Data sources

2019 Denominator 2+ Chronic Conditions: Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB), population aged 20+ who were alive and living in the Ontario: on April 1, 2019 (2018/19 data).

2016 Denominator 2+ Chronic Conditions: Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB), population aged 20+ who were alive and living in the Ontario on April 1, 2016 (2016/17 data).

2019 Denominator 4+ Chronic Conditions 2015/17: Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB), population aged 0+ who were alive and living in the Ontario on April 1, 2019 (2017/19 data).

2016 Denominator 4+ Chronic Conditions: Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB), population aged 0+ who were alive and living in the Ontario on April 1, 2016 (2015/17 data).

Exclusions: We excluded people with no health system contact for the previous ten years as many of those people would no longer be alive and living in Ontario.

## Numerator: Data sources

### 1. Numerator for Rate of individuals with 2 or more Chronic Conditions:

2+ Chronic Conditions: The proportion of people with the 2+ chronic illnesses were derived from validated, disease registries maintained by ICES, which include Asthma, Diabetes, Congestive Heart Failure, Hypertension COPD, Cancer, Rheumatism, and Dementia. These databases were created using hospital discharge abstracts from the Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD), including same day surgery, and physician service claims from the Ontario Health Insurance Plan (OHIP) database.

2018/19 2+ Chronic Conditions: Individuals belonging to denominator group who had records in at least 2 of these ICES derived registries during April 1, 2018-March 31, 2019 observation period were considered in numerator.

2016/17 2+ Chronic Conditions: Individuals belonging to denominator group who had records in at least 2 of these ICES derived registries during April 1, 2016-March 31, 2017 observation period were considered in numerator.

## Data Sources for 2+ Chronic Conditions measure

The following ICES-validated disease datasets were used to identify the numerators for the 2+ chronic conditions:

Ontario Asthma dataset (Asthma)  
Ontario Rheumatoid Arthritis Dataset (ORAD)  
Ontario Diabetes Dataset (ODD)

Congestive Heart Failure (CHF)  
Ontario Hypertension dataset (HYPER)  
Chronic Obstructive Pulmonary Disease (COPD)  
Ontario Cancer Registry (OCR)  
Ontario Dementia Database (DEMENTIA)

2. Numerator for Rate of individuals with 4 or more Chronic Conditions:

2017/19 4+ Chronic Conditions: Individuals belonging to denominator group who had 4+ chronic conditions recorded in their hospital records during fiscal years 2017/18 and 2018/19 (April 1, 2017-March 31, 2019) observation period.

2015/17 4+ Chronic Conditions: Individuals belonging to denominator group who had 4+ chronic conditions recorded in their hospital records during fiscal years 2015/16 and 2016/17 (April 1, 2015-March 31, 2017) observation period.

Data Sources for 4+ Chronic Conditions measure

Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD).

4+ Chronic Conditions were defined based on the definition provided by Health Links to be used among Ontario population (Reference: Ministry of Health and Long-Term Care, Health Analytics Branch, HSIMI Division, "Descriptive analysis of the 'Target Population' for Approved Health Links).

The following conditions were identified based on the diagnosis ICD codes provided in hospital Discharge data only, and individuals with at least 4 of these conditions in their records were considered in numerator for this measure:

- Hemiplegia/Hemiparesis (paralysis on one side of the body)
- Paralysis (Paraplegia or Quadriplegia) and spinal cord injury
- Hypertension
- Ischemic Heart Disease
- Cardiac Arrhythmia
- (Congestive) Heart Failure
- Stroke
- Peripheral Vascular Disease and Atherosclerosis
- Chronic Obstructive Pulmonary Disease
- Asthma
- Influenza
- Pneumonia
- Ulcer
- Hernia
- Crohn's disease/colitis
- Liver disease (cirrhosis, hepatitis etc.)
- Renal Failure
- Arthritis and related disorders
- Osteoporosis including pathological bone fracture
- Low Birth Weight Baby

- Other Perinatal Conditions
- Hip Replacement
- Knee Replacement
- Congenital Malformations
- Amputation (traumatic uses ICD10 codes, non-traumatic uses CCI)
- Fracture
- Brain Injury (including diseases that cause damage to the brain)
- Transplant
- Pain Management
- Palliative care
- Coma

## **Adult Health and Disease: 2014/15** (archived)

### Introduction

This document provides an overview of adult health: chronic disease for the most common chronic diseases among the adult population, male and female:

- ages 20+ for Diabetes, High Blood Pressure (HBP), Asthma, and Mental Health and Addiction-related Visits
- ages 35+ for Chronic Obstructive Pulmonary Disease (COPD)

### The 2014/15 data are provided at the following levels of geography:

- Ontario Neighbourhoods
  - 140 Toronto Neighbourhoods (LHIN 7)
  - 105 Neighbourhoods in Central LHIN (LHIN 8)
- 82 Ontario Health Links
- Ontario Sub-LHINs:
  - 5 Toronto Central LHIN (LHIN 7)
  - 6 Central LHIN (LHIN 8)
- 14 Ontario Local Health Integration Network (LHIN)

### Data Source

Numerator: The proportions of people with the chronic illnesses: Diabetes, High Blood Pressure (HBP), Asthma and Chronic Obstructive Pulmonary Disease (COPD), were derived from validated, disease registries maintained by the Institute for Clinical Evaluative Sciences (ICES). These databases were created using hospital discharge abstracts from the Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD), including same day surgery, and physician service claims from the Ontario Health Insurance Plan (OHIP) database.

Mental Health and Addiction-related conditions are defined by the occurrence of a doctor's visit for a symptom related to mental health.

Denominator: Information regarding persons eligible for health care coverage in Ontario derived from the Ontario Ministry of Health and Long-Term Care (MOHLTC) Registered Persons Database (RPDB).

Exclusions: We excluded people with no health system contact for the previous 5 (five) years as many of those people would no longer be alive and living in Ontario.

Denominator: Population (Alive at April 1, 2015 and date of last contact after April 1, 2010) based on Ontario Ministry of Health and Long-Term Care Registered Persons Database (RPDB) with at least one health claim in the previous five years.

Numerator (Diabetes): is based on prevalence cases reported in ICES Diabetes data base in 2014/15 and derived from the Ontario Diabetes Database (ODD) maintained by the Institute for Clinical Evaluative Sciences (ICES).

Numerator (High Blood Pressure): is based on prevalence cases reported in ICES Hypertension data base in 2014/15.

Numerator (Asthma): is based on prevalence cases reported in ICES Asthma data base in 2014/15.

Numerator (Chronic Obstructive Pulmonary Disease (COPD)): is based on prevalence cases reported in ICES COPD data base in 2014/15.

Numerator (Mental Health and addictions-related Visits): is the number of patients with mental health and addictions-related visits derived from Ontario Health Insurance Plan (OHIP) during the 2014/15 fiscal year.

## **NOTE**

All the chronic disease data are based on physician-diagnosed cases and do not capture individuals who may have a condition, but who have not been diagnosed by a physician. In addition, Community Health Centre (CHC) claims and non-OHIP visits are not available.

Community Health Centres account for approximately 7% of physician claims in the province.

### **A Note About Community Health Centres (CHCs):**

Ontario's Community Health Centres (CHCs) are community governed not-for-profit primary health care organizations. In Ontario, a total of 75 CHCs, 17 located in the Toronto Central LHIN, serve approximately 500,000 people with 250, 000 of these accessing primary care services.

#### **Who do CHCs serve?**

Each of Ontario's CHCs is unique. CHCs offer clinical care that include doctors, nurse practitioners, nurses, dietitians, social workers and other kinds of health providers under one roof. They offer care to those populations that have, for whatever reason, traditionally faced barriers accessing health care. CHCs offer culturally-adapted programs for the needs and preferences of the communities they serve including delivering services in many different languages.

Information about CHCs from <http://aohc.org/> accessed on January 26, 2015. For more information about CHCs, see the link, above.

## **ABOUT THE ICES-DERIVED VALIDATED DISEASE REGISTRIES**

(See the information that provides further details regarding the definitions for each of the chronic illnesses listed and validation methods)

### **Diabetes**

Individuals are considered to have diabetes if they have 2 physician claims (diagnosis code 250) or 1 OHIP fee code (Q040, K029 or K030 – diabetes management, insulin therapy support, diabetic management assessment codes, respectively) claim or 1 hospital admission for diabetes within a two year period. Once a person is considered to have diabetes, they remain a person with diabetes in the database until death. Gestational diabetes is excluded from this definition based on the following algorithm: Whenever there was a hospital record with a diagnosis of pregnancy care or delivery between 120 days before and 180 days after a gestational admission date, the diabetic record was considered to be for gestational diabetes, and it was excluded.

Information on the original algorithm used to define diabetes cases was published in Diabetes Care 2002; 25: 512-516. In this validation study, the algorithm was found to have a sensitivity (the ability of a test to identify people who truly have the disease) of 86% and a specificity (the ability of a test to be negative for people who truly do not have the disease) of 97%.

### Asthma

Individuals are considered to be asthmatic if they have 2 physician claims or one hospital admission (including same day surgery) with an asthma diagnosis within two years. Once a person is considered to be asthmatic, they remain in the asthma database until death.

The asthma algorithm was validated through two chart abstraction studies. The algorithm yielded 89% sensitivity and 72% specificity in children (aged 0-17) and 84% sensitivity and 76% specificity in adults (aged 18+).

Reference: Gershon A.S., Wang C., Vasilevska-Ristovska J., Guan J., Cicutto L., To T. Identifying patients with physician diagnosed asthma in health administrative databases. Canadian Respiratory Journal 2009 Nov-Dec;16(6):183-8.

### High Blood Pressure (Hypertension)

Individuals are considered to have hypertension if they have had: a) one hospital admission with a hypertension diagnosis, or b) an OHIP claim with a hypertension diagnosis followed within two years by either an OHIP claim or a hospital admission with a hypertension diagnosis. The following diagnostic codes are used for diagnosis of hypertension: 401.x, 402.x, 403.x, 404.x, or 405.x (International Classification of Disease, 9<sup>th</sup> revision) or I10.x, I11.x, I12.x, I13.x, or I15.x (International Statistical Classification of Diseases and Related Health Problems, 10<sup>th</sup> revision).

This algorithm was previously demonstrated to identify adults with hypertension with a sensitivity of 72%, specificity of 95%, positive predictive value (the probability that a patient with a positive test result really does have the condition for which the test was conducted) of 87% and negative predictive value (the probability that a patient with a negative test result really is free of the condition for which the test was conducted) of 88%.

Reference: Tu K, Campbell NR, Chen Z, Cauch-Dudek K, McAlister FA. Accuracy of administrative databases in identifying patients with hypertension. Open Medicine 2007 April; 1(1): 18-26.

### Chronic Obstructive Pulmonary Disease (COPD)

Individuals are considered to have COPD if they have one physician diagnosis or

one hospitalization (including same day surgery) for COPD. This health administrative data driven definition of COPD was validated as a prevalence measure, not as an incidence measure. This definition was found to have a sensitivity of 85% and a specificity of 78.4%.

Reference: Gershon AS, Wang C, Guan J, Vasilevska-Ristovska J, Cicutto L, To T. Identifying individuals with physician diagnosed COPD in health administrative databases. J Chronic Obstructive Pulmonary Disease 2009 Oct;6(5):388-94.

### Mental Health Conditions

Indicator also includes both Mental Health and Addictions.

Mental health conditions are defined by the occurrence of a doctor's visit for a symptom related to mental health. A mental health condition was assumed based on physician (OHIP) claims if a person had:

- 1) A general service code (A001, A003, A004, A005, A006, A007, A008, A888, A901, A905) AS WELL AS a mental health diagnostic code (295,296,297,298,300,301,302, 303 (alcohol), 304 (drug dependence), 306,309,311,303,304,897,898,899, 900, 901, 902, 904, 905, 906, 909);
- 2) A mental health service code (K005, K007, K623) AS WELL AS a mental health diagnostic code (as above).

Reference: Steele LS, Glazier RH, Lin E, Evans M. Using Administrative Data to Measure Ambulatory Mental Health Service Provision in Primary Care. Medical Care 2004; 42: 960–965.