

# Prevalence of Comorbidities in COVID-19 Related Hospitalizations and Deaths

Document date: May 5, 2020

COVID-19 hospitalization and mortality information were assessed in a sample of 36 million active patients.<sup>1</sup> Nearly 10 million of those patients have documented hypertension, diabetes, chronic obstructive pulmonary disease (COPD), or moderate/severe asthma as of April 30, 2020. The summarized data were contributed by 31 health systems (300 hospitals) across 18 states. Table 1 shows the prevalence of these conditions in the sample data set as compared to national baselines for adults.

## Condition Prevalence in Adults in Active Patient Population Compared to Adult National Baselines

Comorbidity	Active Patient Population – Ages 19+	National Baseline – Adults
<b>Moderate/Severe Asthma</b>	0.9%	— <sup>2</sup>
<b>Chronic Obstructive Pulmonary Disease (COPD)</b>	4.3%	5.1% <sup>3</sup>
<b>Diabetes (Type 1, 1.5, 2)</b>	10.4%	10.2% <sup>4</sup>
<b>Hypertension</b>	27.5%	29.0% <sup>5</sup>

Table 1: Prevalence of examined conditions in adults in the active patient population as compared to national baselines.

In this sample, 124,783 patients were COVID-19 positive. There are 52,163 (42%) patients who do not yet have a known outcome as of April 30, 2020. These patients may or may not escalate further to hospitalization or death.

The charts below show how the four included comorbidities are distributed across the whole sample, across COVID-19 positive hospitalized patients, and then across COVID-19 related deaths. These subpopulations are not mutually exclusive. For example, a COVID-19 positive patient who was hospitalized then died would appear in all three patient populations. Figure 1 shows these metrics grouped by sex, while Figure 2 shows these metrics grouped by age group.

Generally, the prevalence of COPD, diabetes, hypertension, and various combinations of these comorbidities appears higher in COVID-19 hospitalized patients and COVID-19 deaths than in the overall active patient population. Specifically, the combination of diabetes and hypertension appears to show a proportionally higher representation among hospitalizations and deaths. There does not appear to be much variation in prevalence of comorbidities across sexes. This information may help clinicians understand which of their COVID-19 patients may be at heightened risk for severe illness.

<sup>1</sup> Definitions can be found at the end of the brief.

<sup>2</sup> While there are national baselines for asthma generally, there is not a known national baseline for moderate/severe asthma, which is what is used in this analysis.

<sup>3</sup> Akinbami, Omolara Jean, and Xiang Liu. Chronic Obstructive Pulmonary Disease Among Adults Aged 18 and Over in the United States, 1998-2009. Hyattsville, MD: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, 2011.

<sup>4</sup> Centers for Disease Control and Prevention. "National diabetes statistics report, 2020." Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services (2020).

<sup>5</sup> "Hypertension Prevalence and Control Among Adults: United States, 2015–2016." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 18 Oct. 2017, [www.cdc.gov/nchs/products/databriefs/db289.htm](http://www.cdc.gov/nchs/products/databriefs/db289.htm).

# Distribution of Comorbidities for All Ages

by Sex and Patient Population



Figure 1: Distribution of comorbidities by sex for all active patients, COVID-19 positive hospitalized patients, and COVID-19 related deaths.

# Distribution of Comorbidities

by Age and Patient Population

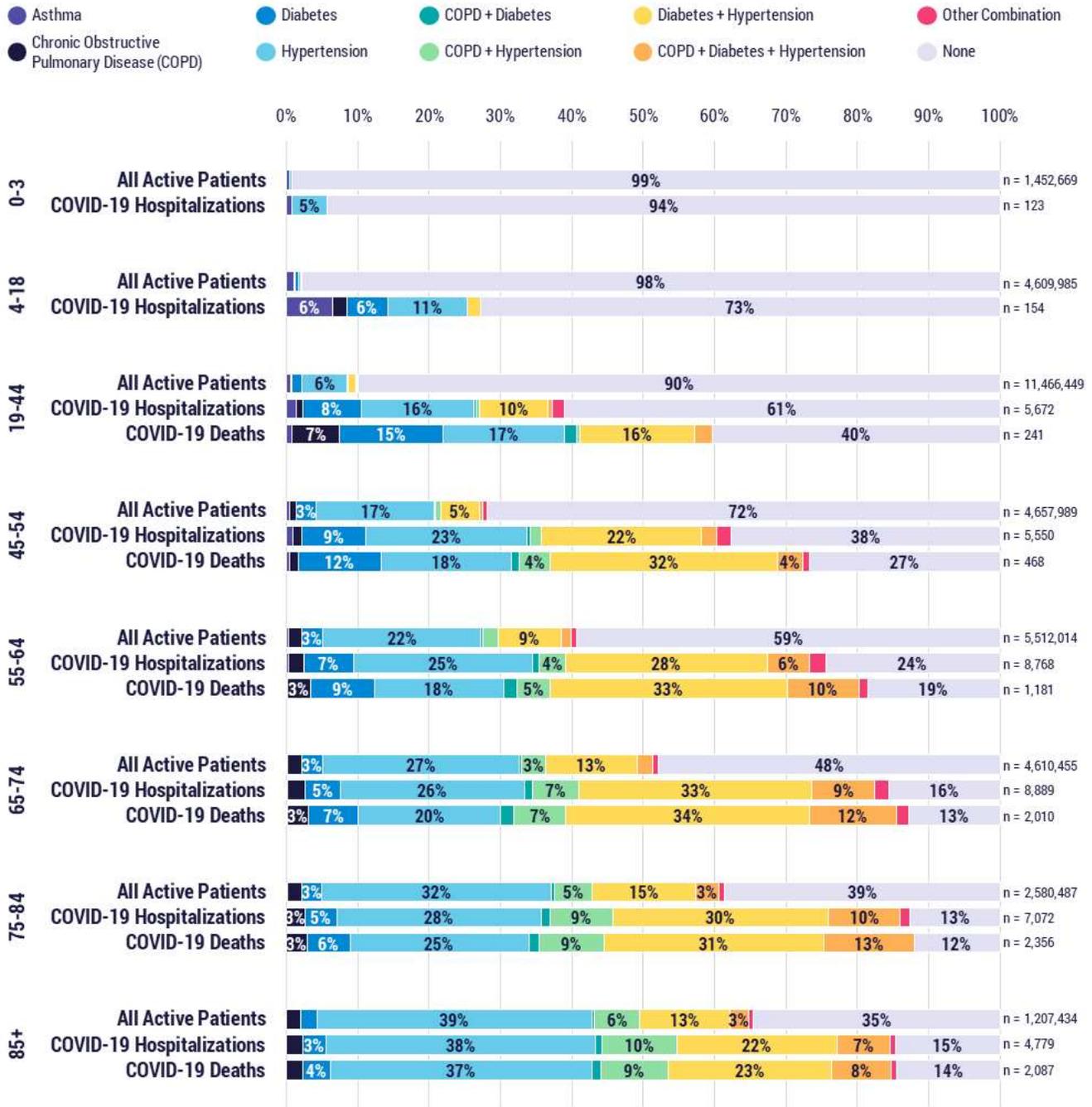


Figure 2: Distribution of comorbidities by age group for all active patients, COVID-19 positive hospitalized patients, and COVID-19 related deaths. COVID-19 related deaths are not shown for patients age 18 years and under due to small sample size (n = 7).

Term	Definition
<b>Active Patient</b>	Patient with a health system visit in the last 2 years.
<b>COVID-19 Patient</b>	Patient with a positive SARS-CoV-2 lab result or a COVID-19 diagnosis. <b>Start Date:</b> The earlier of the earliest positive SARS-CoV-2 lab result collection date or earliest diagnosis noted date
<b>Positive COVID-19 Lab Result</b>	A final result flagged as abnormal for one of the lab components identified by individual health systems for SARS-CoV-2. <b>Positive/Start Date:</b> Date the test was performed
<b>COVID-19 Diagnosis</b>	A patient with one of the following codes in one of the listed diagnosis settings. <b>Diagnosis Code:</b> U07.1 (ICD-10), 840539006 (SNOMED) <b>Diagnosis Setting:</b> Encounter Diagnosis, Billing Diagnosis, Problem List, Hospital Problem, Discharge Diagnosis
<b>COVID-19 Related Admission</b>	A hospital admission during which the patient has a positive SARS-CoV-2 lab test or COVID-19 diagnosis, OR a hospital admission with any respiratory diagnosis which happens within 14 days of the patient's COVID-19 "start date". <b>Respiratory Diagnosis Codes:</b> J00-J99 (ICD-10)
<b>COVID-19 Related Death</b>	A COVID-19 patient with a death date or discharge date with discharge disposition of deceased within 6 weeks of their COVID-19 "start date".
<b>COVID-19 Known Outcome</b>	A patient with a known outcome either was never admitted within 6 weeks of their COVID-19 "start date", was admitted and subsequently discharged from hospital, or died.
<b>Comorbidity Diagnosis</b>	A patient has a comorbidity if the condition exists as an active problem on their problem list with a start date before the current date and without a resolved date, or if there is a relevant encounter or billing diagnosis where the start date is within 2 years of the current date. <b>Hypertension Diagnosis Codes:</b> 38341003 (SNOMED) or any of its child concepts <b>Diabetes Type 1, 1.5, 2 Diagnosis Codes:</b> 46635009 or 44054006 (SNOMED) or any of their child concepts <b>COPD Diagnosis Codes:</b> 13645005 (SNOMED) or any of its child concepts <b>Moderate/Severe Asthma Diagnosis Codes:</b> J45.4, J45.40, J45.41, J45.42, J45.5, J45.50, J45.51, J45.52 (ICD-10)
<b>Patient Sex</b>	Patient's legal sex. Possible values include "Male", "Female", and "Other". Due to low numbers of patients who fell into the "Other" category, it was excluded for clarity.

Document Date: 2020-May-05  
Data Date: 2020-Apr-30

Check for [updates](#) at <https://ehrn.org/wp-content/uploads/COVID-19-Comorbidities-Brief.pdf>