Prior Outpatient Medications and Subsequent COVID-19 Positive Status

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As the COVID-19 pandemic sweeps the globe, there is a rush to find medications that, if taken before COVID-19 is acquired, may be protective against infection. Clinical trials are currently examining drugs in many different classes including antimalarials, antivirals, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, interleukin inhibitors, and more.[*]

Figure 1 shows the percentage of patients who acquire COVID-19 after taking each medication chronically. The classes of medications in this chart below are used to treat other chronic conditions in outpatient settings. We looked at the rate of COVID-19 positivity in active patients who are currently prescribed one or more of these medications prior to being tested for COVID-19. The chart also contains a reference point for the overall rate of COVID-19 positivity for all active patients, which was 0.35% in the data set.

The 30 medications[†] included were selected based on early questions from community researchers and therapeutics being considered for outpatient or inpatient clinical trials. Data are pooled from 31 health systems that represent 300 hospitals, spanning 18 states and covering 36 million active patients, collected on April 30, 2020.

The sample sizes for the number of total patients taking each medication chronically are also included in Figure 1. Many of the medications with the smallest sample sizes appear at either extreme. We expect the COVID-19 positive rate for those medications to change over time as a larger number of patients test positive for COVID-19, either due to spread of the disease or due to increased testing.

The data do not point to an obvious medication with COVID-19 protective effects, but may be useful to researchers who are studying the use of chronic medications.

[*] Centers for Disease Control and Prevention. Information for Clinicians on Investigational Therapeutics for Patients with COVID-19. https://www.cdc.gov/coronavirus/2019-ncov/hcp/therapeutic-options.html. Accessed April 23, 2020.

[†] Several medications are grouped into classes in the chart. TNF inhibitors include etanercept, infliximab, or adalimumab. JAK inhibitors include tofacitinib and fedratinib. Anti-IL6 includes tocilizumab. Anti-IL17 includes brodalumab. Anti-IL17A includes secukinumab and ixekizumab. Anti-IL23 includes guselkumab, risankizumab-rzaa, ustekinumab, and tildrakizumab.

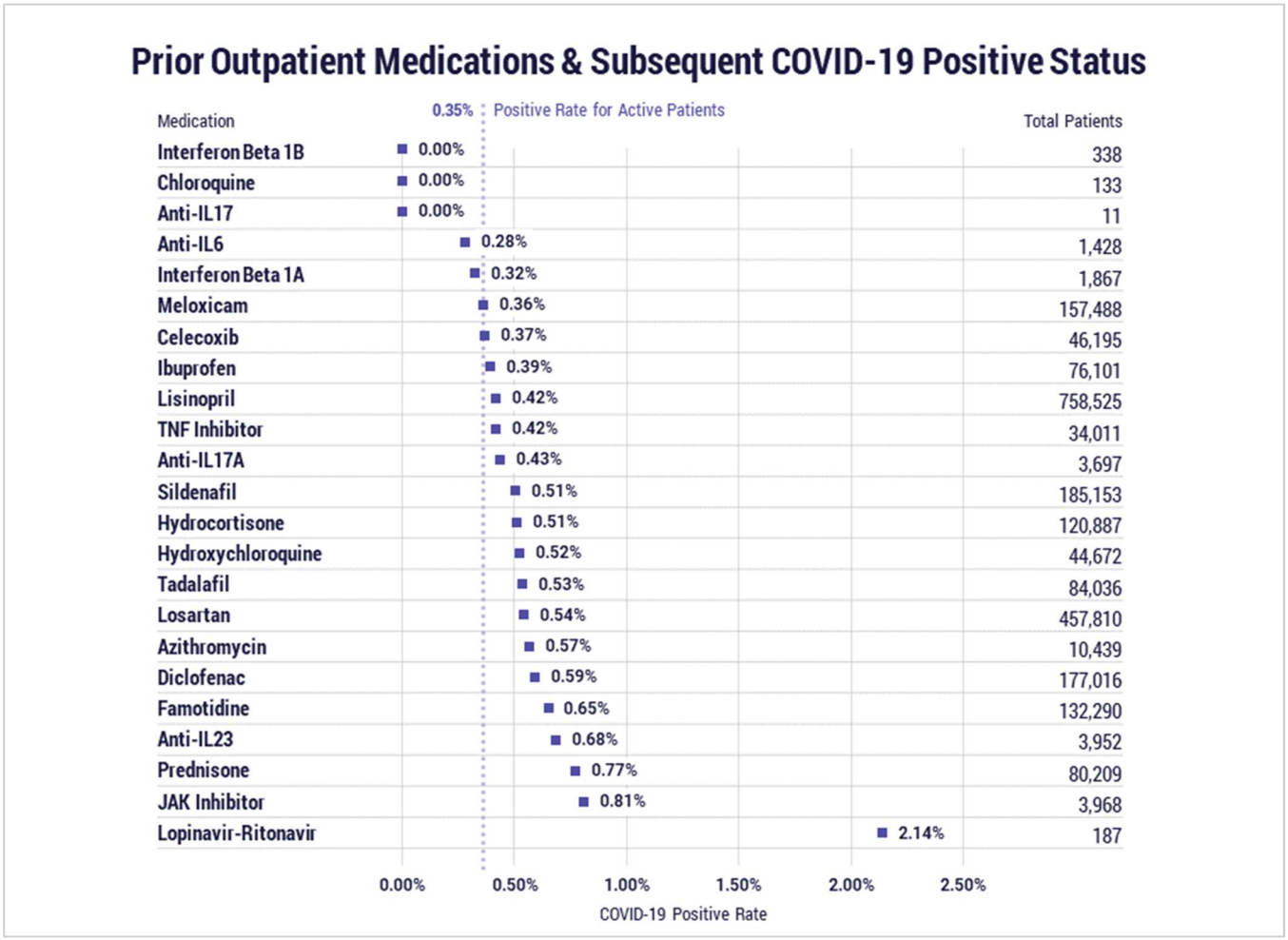

Figure 1: COVID-19 Positive Rate by Medication

Term	Definition
Active Patient	A patient who has interacted with the health system in the past 2 years, indicated by either a face-to-face visit or an order placed on their chart.
COVID-19 Patient	Patient with a positive SARS-CoV-2 lab result or a COVID-19 diagnosis. **Start Date:** The earlier of the earliest positive SARS-CoV-2 lab result collection date or earliest diagnosis noted date
Positive COVID-19 Lab Result	A final result flagged as abnormal for one of the lab components identified by individual health systems for SARS-CoV-2. **Positive/Start Date:** Date the test was performed
COVID-19 Diagnosis	A patient with one of the following codes in one of the listed diagnosis settings. **Diagnosis Code:** U07.1 (ICD-10), 840539006 (SNOMED) **Diagnosis Setting:** Encounter Diagnosis, Billing Diagnosis, Problem List, Hospital Problem, Discharge Diagnosis
Prior Outpatient Medication	Medications must meet the following criteria: • Active on a patient's outpatient medication list at least 14 days prior to their COVID positive date, with either no documented end date or an end date within the 30 days prior to their COVID-19 positive date • At least 2 refills ordered (refills intended to identify chronic use) • Started the medication prior to March 1, 2020 (when COVID-19 incidence began to increase in the United States)

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Check for updates at
www.ehrn.org/wp-content/uploads/Prior-Outpatient-Medications-and-Subsequent-COVID-19-Positive-Status.pdf