

# COVID-19 CORONAVIRUS

## GENERAL PRACTICE SNAPSHOT

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## Changes in medication prescribing in general practice during the COVID-19 pandemic

### INTRODUCTION

Following the release of the Australian Health Sector Emergency Response Plan for Novel Coronavirus<sup>1</sup> in February 2020, the Australian Government introduced a broad range of healthcare measures aimed at curtailing the transmission of COVID-19 whilst maintaining access to essential health services. Additional measures were also introduced to address concerns regarding the availability and supply of medications. On 19 March 2020, the Australian Government Department of Health released a media statement announcing *Limits on dispensing and sales of prescription and over-the-counter medicines*<sup>2</sup>, which required community pharmacies to restrict dispensing of certain types of prescription medications to a 1-month supply and placed controls over the supply of both salbutamol inhalers and paediatric paracetamol. These measures were introduced to curtail a notable increase in the demand for medications and concerns over the ongoing supply and availability of medications during the pandemic due to “stockpiling by pharmacy customers”<sup>2</sup>.

To date there has been limited research into understanding the impact of COVID-19 response measures on medication prescribing in general practice. A preliminary analysis of medication prescribing changes during the pandemic in Victorian and New South Wales (NSW) general practices was undertaken by Outcome Health for the period from January to early May 2020<sup>3</sup>. Their analysis period covered the first wave of COVID-19 and found prescribing variations in specific types of medications (including salbutamol and hydroxychloroquine) which reflected the social context during the period (e.g., bushfires and onset of COVID-19). It is unknown whether these findings persisted during the second wave of COVID-19 or continued throughout the remainder of the year. The purpose of the current

Snapshot is to investigate the impact of COVID-19 on medication prescribing by analysing the period from January to December 2020, encompassing the first wave in NSW and Victoria and second wave in Victoria alone. The analysis focusses on overall prescribing patterns including changes in the number of prescriptions issued, changes in encounters with a prescription and prescribing patterns for selected drug categories, as defined by the World Health Organization (WHO) Anatomical Therapeutic Chemical (ATC) classification system<sup>4</sup>. The ATC system groups medicines into 14

### General practice prescribing during 2020 (compared to 2019)

March script counts	↑↑	33.5%
May script counts	↓↓	18.4%
Anti-infectives for systemic use	↓↓	4.4 per 100 consults

main categories based on their purpose and action e.g., Group B: Blood and blood forming organs; Group D: Dermatologicals; Group M: Musculo-skeletal system etc. and each group is further sub-divided into 2nd, 3rd, 4th and 5th levels based on pharmacological, therapeutic and chemical properties<sup>4</sup>. For the purpose of the current Snapshot, the five most common ATC categories (Nervous system, Cardiovascular system, Anti-infectives for systemic use (including antibiotics), Alimentary tract and metabolism, and Respiratory system) were selected.

## METHODS

**Study sample and data source:** We utilised a large general practice dataset extracted from POLAR, a secure and comprehensive digital health platform that collects de-identified data from consenting general practices across participating Primary Health Networks (PHNs). The platform covers nearly 30% of the Australian population from approximately 800 general practices across five PHNs in Victoria and New South Wales (NSW). The PHNs include two urban (Eastern Melbourne and South East Melbourne) and one mainly rural (Gippsland) PHNs from Victoria, and Central and Eastern Sydney (urban) and South Western Sydney (incorporating rural areas Wingello to Bundanoon) PHNs from NSW<sup>3</sup>. The analysis period was from January 2019 to December 2020.

**Study indicators:** We reported on the following indicators to assess changes in prescribing patterns:

1. Changes in prescription volume (counts) for all medications between 2019 and 2020 regardless of the number of GP consultations.
2. Changes in any medication prescription encounters per 100 GP consultations.
3. Changes in prescription encounters per 100 GP consultations for selected drug classes.

Patients who had multiple consultations per day were counted as one consultation. For indicators 2 and 3, a consultation which had a medication prescribed was considered a prescription encounter. Patients who were prescribed more than one medication per day were counted as one encounter. For indicator 3, we selected the five most common ATC level 1 drug classes. The WHO

classifies medications in a hierarchy with five different levels (levels 1 to 5)<sup>4</sup>. The ATC level 1 has fourteen drug classes<sup>5</sup>. For all indicators, the results were presented as overall and by month.

**Ethical approval:** Ethics approval for the project was provided by Macquarie University Human Research Ethics Committee (52020675617176). Ethics to collect and use general practice data has been obtained by Outcome Health, the data custodians<sup>6</sup>, granted by the Royal Australian College of General Practitioners (RACGP) ethics committee (17-008).

## RESULTS

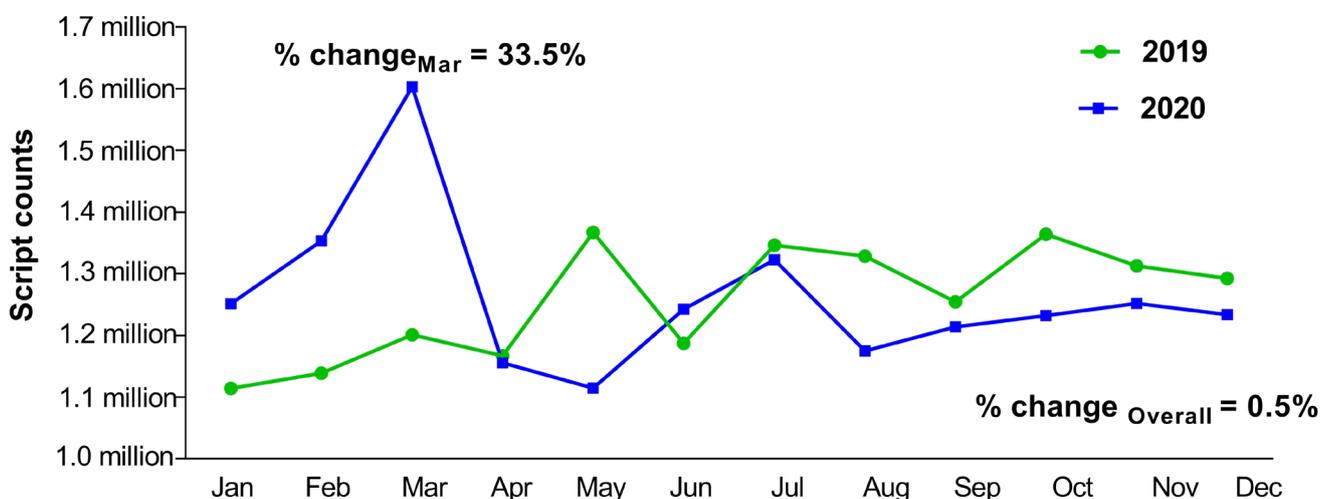
### Description of the sample

A total of 776 practices (440 in Victoria and 336 in NSW) had both medication and general practitioner (GP) consultation data in the POLAR platform in 2019 and 2020. This represented a total of 4,072,337 patients (55.6% female) across the two years. The majority of the patients were from major cities (90.0%).

### 1. Changes in prescription counts

There was a 0.5% increase in total prescription counts in 2020 compared to 2019. This finding is consistent with an analysis of Pharmaceutical Benefits Scheme (PBS) data undertaken by the Australian Institute of Health and Welfare (AIHW) for the shorter period from January-August 2020, which showed a 0.6% increase in the total number of prescriptions dispensed.

There was a large increase in prescription counts in March 2020 by 33.5% and a decrease in May 2020 by 18.4% (Figure 1 and [Table S1](#)). The number of consultations increased in 2020 by 11.5% ( ).



**Figure 1:** Changes in prescription counts by month.



**2. Changes in medication prescription encounters per 100 GP consultations**

The total number of prescription encounters were 8,925,951 in 2019 and 8,725,463 in 2020 (a 2.2% decrease). This means there were fewer prescriptions per GP encounter in 2020 compared to 2019. Figure 2

shows prescription encounters per 100 GP consultations. Overall, there were 5.9 fewer prescription encounters per 100 consultations (from 48.1 in 2019 to 42.2 in 2020). The largest decrease occurred in April with 10.0 fewer prescription encounters per 100 consultations (from 46.4 in 2019 to 36.4 in 2020).

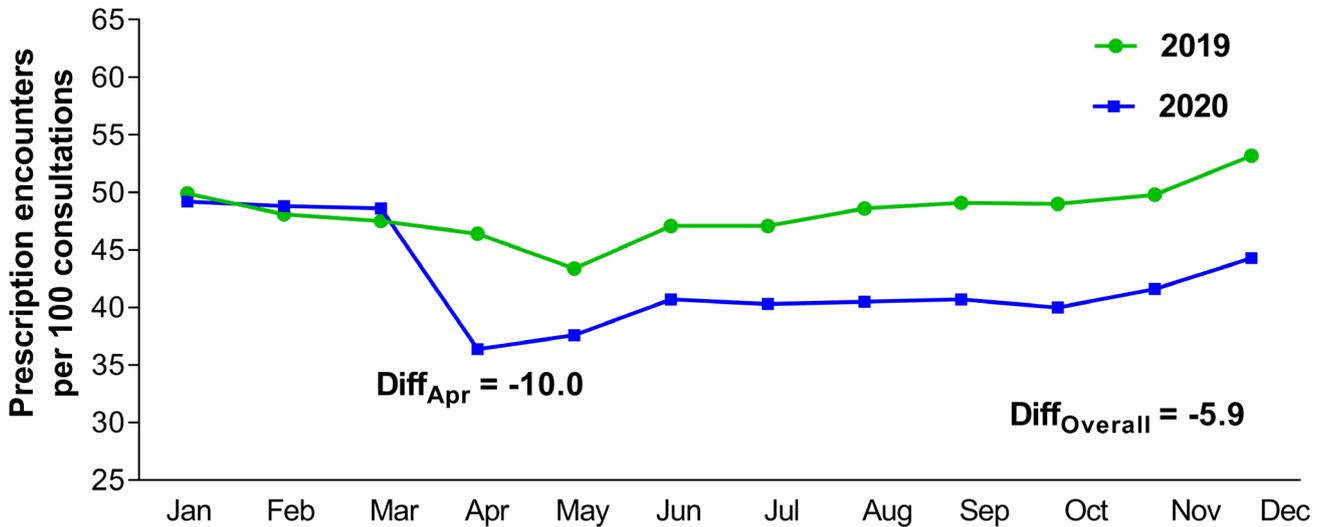


Figure 2. Prescription encounters per 100 consultations by month. Diff=Difference.

**3. Changes in prescription encounters per 100 GP consultations for selected drug classes**

The top 5 ATC level 1 drug classes included medications for the Nervous system, Cardiovascular system, Anti-infectives for systemic use, Alimentary tract and metabolism, and Respiratory system. These drug classes represented 72.9% of the total prescriptions. The largest change in prescribing per 100 consultations was seen

for anti-infectives for systemic use (Figure 3A). Overall, there were 4.4 fewer (from 13.3 in 2019 to 8.9 in 2020) anti-infectives for systemic use encounters per 100 consultations. The peak decrease was seen in September with 7.3 fewer (from 14.4 in 2019 to 7.1 in 2020) prescription encounters per 100 consultations. For other drug classes, there were only some slight differences mainly during the first wave (March-April) (Figure 3B).

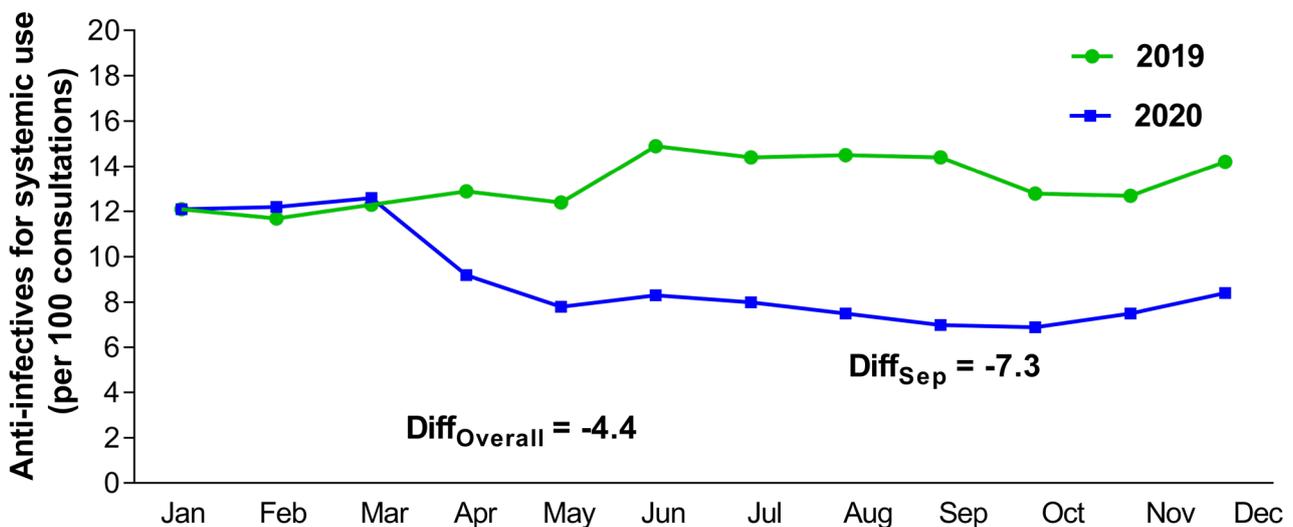
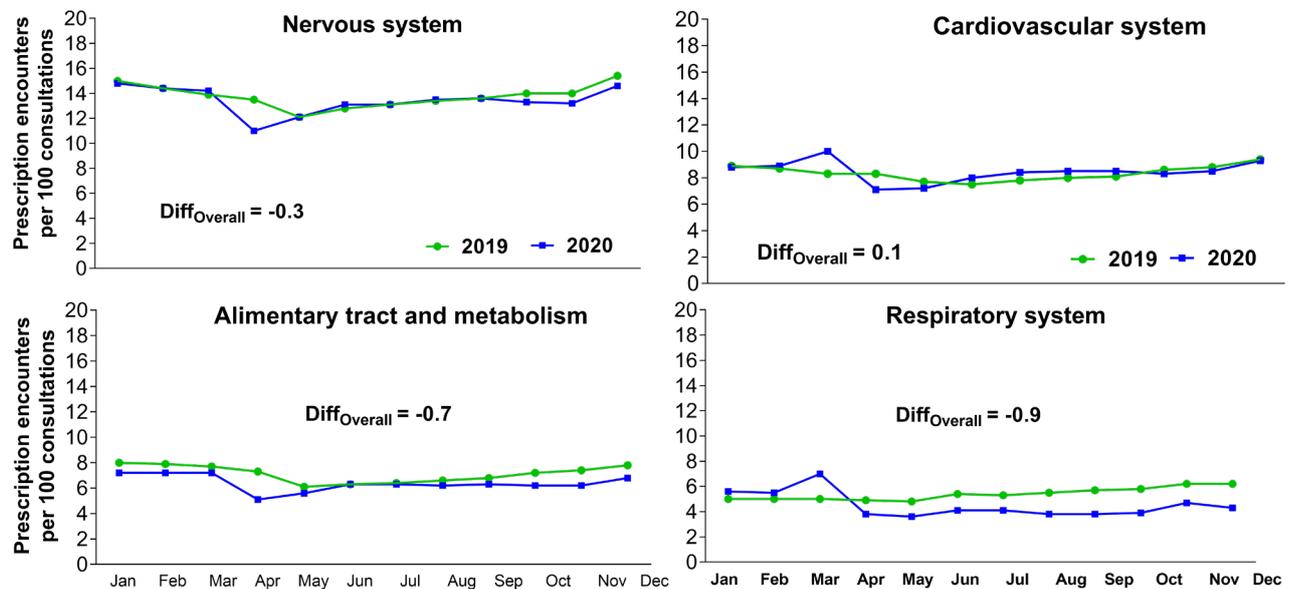


Figure 3A. Prescription encounters per 100 consultations for selected ATC level 1 drug classes by month.





**Figure 3B.** Prescription encounters per 100 consultations for selected ATC level 1 drug classes by month.

## IMPLICATIONS

Whilst the small 0.5% increase in total prescription counts across participating general practices during 2020 may indicate a slight shift in overall prescribing due to the pandemic, the month by month changes provide greater insight into the impact of COVID-19 waves on general practice prescribing, including:

- The notable increase in total prescription counts during March 2020 coincides with the first wave of COVID-19 in Australia and our results extend previous findings<sup>3,7</sup> by identifying another relative increase (from May to July) in prescription counts approaching the second wave of COVID-19 in Victoria. This finding is suggestive of a similar, but smaller scale, trend in increased prescription counts around the time of the second wave of COVID-19.
- Prescription encounters during March 2020 were only slightly higher than March 2019 before decreasing during April 2020. This finding suggests that the spike in the prescription counts during March 2020 was likely a result of a higher volume of prescriptions being issued per consultation at a time when consumers were concerned about maintaining adequate supplies. As our dataset is limited to general practice data, we are unable to indicate what percentage of GP prescriptions were actually

dispensed by pharmacies, however, an increase in the demand for medications during March 2020 led to the Government responding by placing limits on dispensing and sales of high demand medications<sup>2</sup>.

- For the top 5 ATC drug classes, the greatest change in 2020 was a decrease in prescription encounters per 100 consultations for anti-infectives for systemic use, a trend that is not apparent for the remaining 4 drug classes, with only the respiratory system drug class showing a small yet persistent relative decrease. Whilst it may be possible that physical distancing, lockdown, bans on international travel, mandatory mask wearing and increased focus on hand hygiene practices may have resulted in a decrease in health conditions requiring anti-infectives for systemic use, further research is required to fully understand the many potential factors that could have influenced these findings.

These Snapshot findings can be used to inform the development of best practice general practice guidelines for managing prescribing. Our future research will continue to explore these prescribing trends by examining their relationship with other COVID-19 related changes in general practice including, for example, the shift from face-to-face to telehealth<sup>8</sup> consultations.



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## About the project

Since its identification in December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its associated coronavirus disease (COVID-19) has had a devastating effect on communities around the world. Health systems have been forced to make rapid choices about how to prioritise care, manage infection control and maintain reserve capacity for future disease outbreaks. The interruption of normal patterns of health care and the suspension of services has meant that the pandemic has also had a major impact on the detection and treatment of many non-COVID-19 conditions. Electronic general practice data are a valuable resource which can be used to inform population and individual care decision-making.

This project is based on a collaborative relationship involving the Digital Health Cooperative Research Centre, Macquarie University, Outcome Health, Gippsland, Eastern Melbourne and South Eastern Melbourne Primary Health Networks (PHNs), and the Royal College of Pathologists of Australasia Quality Assurance Programs, with participation from Central and Eastern Sydney and South Western Sydney PHNs. It will use an innovative secure and comprehensive digital health platform, Population Level Analysis & Reporting (POLAR) to:

- Generate near real-time reports to identify emerging trends related to COVID-19, its diagnosis, treatment and medications prescribed, and its impact on patients.
- Monitor the impact of interventions/policy decisions.

