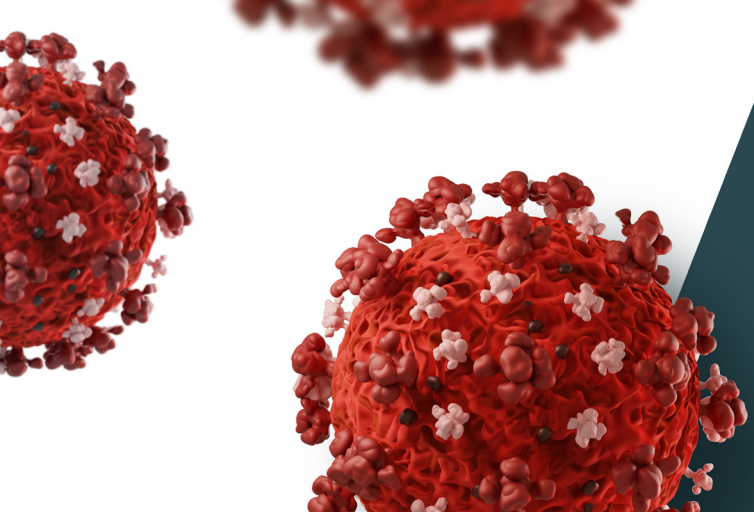

COVID-19 CORONAVIRUS

GENERAL PRACTICE SNAPSHOT

ISSUE 3 12 February 2021

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.

The impact of the COVID-19 pandemic on pathology testing in general practice

INTRODUCTION

Decreasing numbers of face-to-face consultations and increasing uptake of telehealth services are commonly reported impacts of the COVID-19 pandemic on general practice[1-5], an observation that was also reflected in the findings presented by our initial COVID-19 Snapshot issued in December 2020[2]. The results of The Melbourne Institute's 'Taking the Pulse of the Nation' Australian survey found that during the period from 1-6 June 2020, 14% of respondents chose not to see a health professional when they needed to[1]. Whilst these findings may represent the initial effect of COVID-19 restrictions on general practice, there is now increasing concern for the longer term impacts of the pandemic on non-COVID care[1, 6] including the screening, diagnosis, and management of chronic health conditions[7].

One important component of the diagnosis and ongoing management of disease is pathology testing. There are reports of COVID-19 pandemic-associated decreases in the number of non-COVID pathology tests performed during the pandemic period in both Australia[8] and internationally[9]. For instance, the UK Health Foundation reported a 70-80% reduction in the number of tests administered in primary care in England in the first week of lockdown[5]. Studies into the initial changes in the weekly numbers of pathology test orders during the first 38 weeks of the pandemic in New South Wales (NSW) and Victorian general practices has been undertaken by Outcome Health, showing periods of both decline and recovery[7]. Understanding the impact of the pandemic and its associated restrictions on laboratory test requesting in general practice has the potential to guide general practitioners (GPs) in identifying areas in need of action, for example, potentially important or critical missed tests.

This General Practice Snapshot aims to quantify the impact of the pandemic on pathology testing in general practice by comparing test volumes before, during and after the first and second waves in participating NSW and Victorian PHNs.

METHODS

The study population covers nearly 30% of the Australian population, including urban and regional/rural areas from approximately 800 general practices (456 from Victoria and 347 from NSW). The participating Primary Health Networks (PHNs) included two urban (Eastern Melbourne and South Eastern Melbourne) PHNs and a predominantly rural (Gippsland) PHN from Victoria, and Central and Eastern Sydney (urban) and South Western Sydney (incorporating rural areas Wingello to Bundanoon) PHNs from NSW.

Outcome Health, as a data custodian, provides a secure and comprehensive digital health platform which collects data from consenting general practices across the above mentioned PHNs. Ethics approval for the project has been approved by Macquarie University Human Research Ethics Committee (52020675617176). Ethics to collect and use general practice data has been obtained by the data custodians, granted by the RACGP ethics committee (17-008).

The analysis period was from January 2017 to September 2020. Pathology tests included in this analysis were clinical laboratory testing using body fluids and tissues (e.g., full blood count, lipid profile, urinalysis, cultures). As pathology tests can be ordered either as a single (e.g., red blood cell) or a battery of tests (e.g., full blood count), the number of recorded tests results per one request can vary by order. Thus, in this analysis pathology test results were counted as part of one result per patient per day, regardless of the number of recorded test results.

Analyses were performed in three steps. Firstly, we examined the

weekly volume of pathology requests in 2020. The first analysis was to observe the overall volume of pathology testing as well as the volume of testing excluding tests for acute respiratory illness (ARI) such as respiratory viral pathogen PCR and COVID-19 testing (i.e., non-ARI testing). In the second analysis, we compared the weekly volume of non-ARI testing in 2020 with the average (i.e., mean) over the past three years (2017 – 2019). Lastly, we examined the difference in non-ARI testing volume between 2020 and the mean for the past years by patient socio-demographic variables (i.e., age, gender, socioeconomic status [SES], and region of residential location). SES and regional area were identified by linking patient postcode with the public census data such as the Index of Relative Socio-economic Advantage and Disadvantage from Census of Population and Housing: Socio-Economic Indexes for Areas[10] and Australian Statistical Geography Standard from Australian Bureau of Statistics[11].

RESULTS

Overall pathology testing and non-ARI testing

Figure 1 shows the weekly number of pathology tests conducted in 2020. The overall volume of pathology testing and non-ARI testing volume were similar before COVID-19 cases emerged around the 10th week in 2020 (longitudinal data from 2017 are available in Supplemental Figure S1). After the first wave of COVID-19, however, a distinct gap between the overall and non-ARI testing volumes was observed, which suggests an increasing proportion of ARI testing within the overall pathology testing volume. Figure 1 also illustrates that, although the overall volume of pathology testing appeared to recover after the sharp decline during the first wave, the volume of non-ARI testing remained relatively lower than before COVID-19.

The volume of non-ARI testing in 2020 was compared with the mean for the past three years (Figure 2). The testing volume during the weeks of the first wave of COVID-19 (10th – 20th weeks) was much lower than the mean of the previous years; 33.3% (154 tests vs. 231 tests per 1,000 consultations) and 29.0% lower (159 tests vs. 224 tests per 1,000 consultations) in Victoria and NSW, respectively. The second wave (25th – 40th weeks) also had 14.7% (191 vs 224 per 1,000 consultations) and 10.6% (193 vs 216 per 1,000 consultations) drops in non-ARI testing in Victoria and NSW, respectively, although the decline was not as large as the first wave.

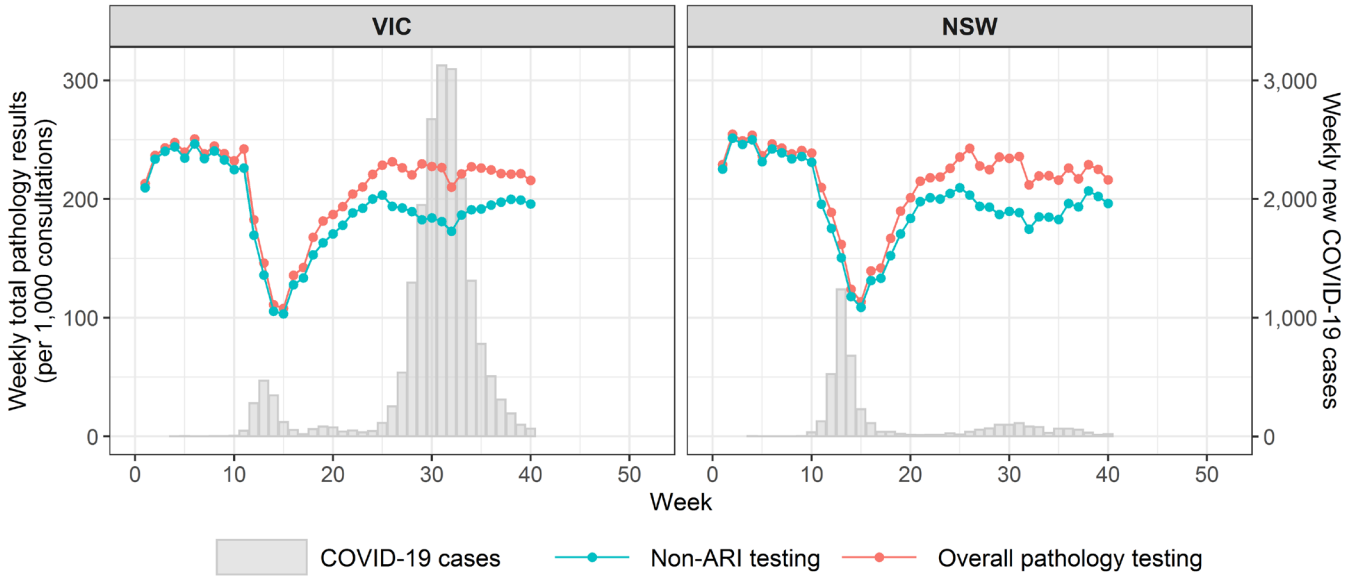

Figure 1. Weekly number of all types of pathology and non-ARI tests in 2020.

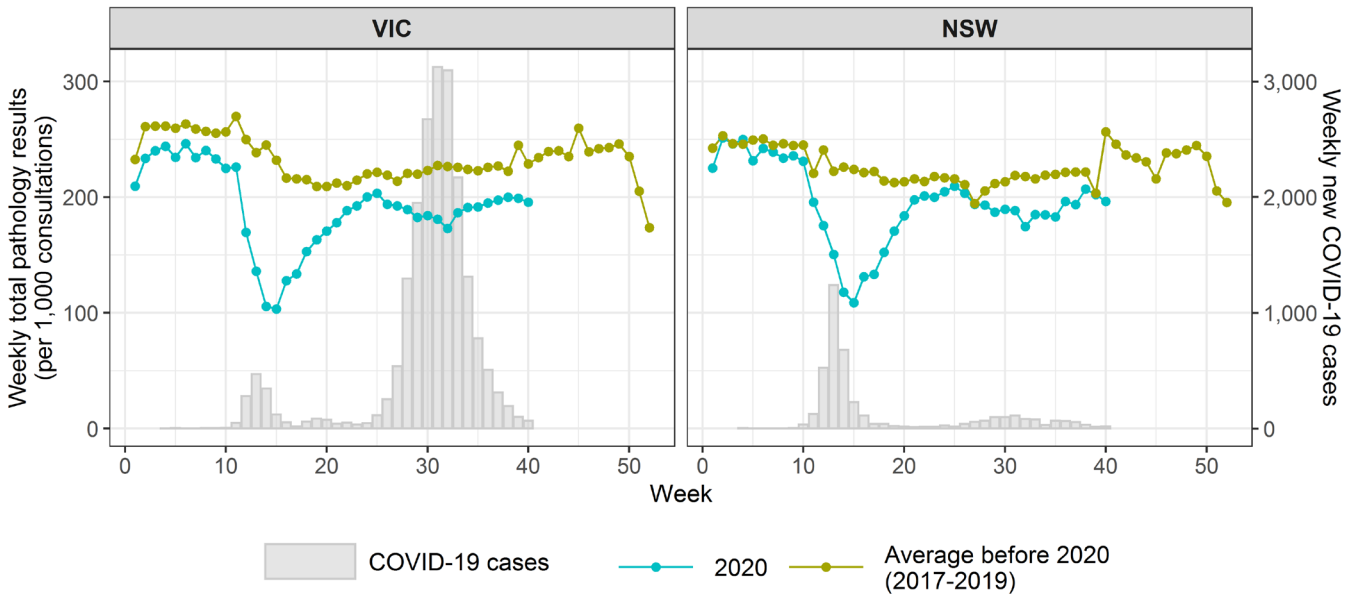

Figure 2: Weekly number of non-ARI tests in 2020 compared to the pre-2020 average.

Socio-demographic characteristics of non-ARI testing

Figure 3 provides patient socio-demographic characteristics of non-ARI testing volumes during the 10th – 40th weeks in 2020, alongside the mean from the past three years. The testing volume in 2020 was lower than in the past years across all socio-demographic factors. There were some important patterns apparent from the analyses. Firstly, the difference in testing volumes between 2020 and past years was larger as patient age increased. For instance, the testing volume in 2020 was 12.8% less than previous years in patients aged 0 - 14 in Victoria whereas the age groups of 25 - 44 and 65 or older had 23.7% and 28.6% declines, respectively. Females also had a larger decline of non-ARI testing in 2020 compared to males (-26.0% in females vs -18.0% in males in Victoria; -15.7% in females vs -10.4% males in NSW). For SES, higher SES had a larger decrease in non-ARI testing than to mid to lower SES in both states.

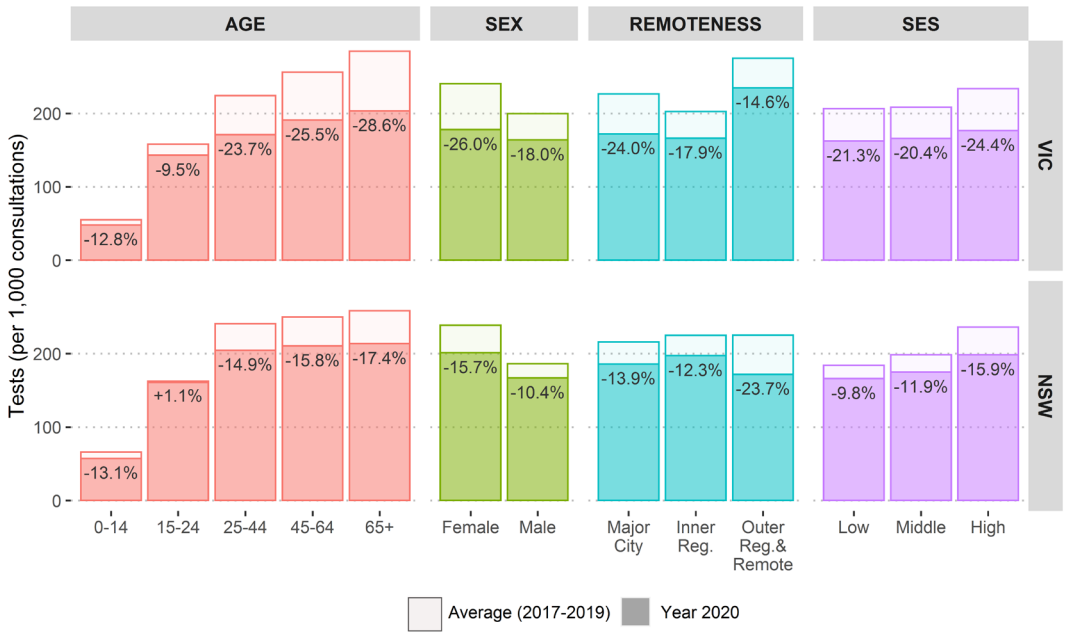

Figure 3: Socio-demographic comparisons of non-ARI testing volumes during 10th – 40th weeks in 2020 and the average over the past three years.

During the first wave, pathology testing volume decreased by 33% in Victoria and 29% in NSW

In Victoria, across weeks 10-40, pathology testing fell by 26% for women and 29% for those aged 65+

IMPLICATIONS

The volume of pathology testing substantially decreased during the first wave of COVID-19 in both Victorian and NSW PHNs. The overall pathology testing volume appeared to have recovered after the first wave decline. This was likely due to the increase in ARI-testing (e.g., influenza, COVID testing) since non-ARI testing volume remained relatively lower than the past years' mean, even after the first wave.

While the possibility of fewer unnecessary tests being undertaken may in part explain the decrease in non-ARI testing during the COVID-19 pandemic, the findings also suggest the underuse of non-ARI tests that are essential for screening, diagnosis and monitoring care in general practice.

The decline in non-ARI testing was more prominent in patients who were older, female, and socioeconomically advantaged.

Further in-depth studies are required to clarify the impacts of the decline in non-ARI testing on patient care in general practice along with its associated factors. Some especially important areas to explore are:

- Impact of COVID-19 on screening and monitoring care in line with best practice clinical guidelines, and subsequent patient outcomes (e.g., HbA1c monitoring tests and glycaemic control in type 2 diabetes, or tests used in targeted screening for cancers such as prostate specific antigen (PSA) testing and diagnosis of these cancers).
- Associations between telehealth consultation and the use of pathology tests to examine the role that telehealth played in the provision of patient care during the pandemic.

These studies will be of great importance to illustrate the impact of COVID-19 on patient care and to identify potentially effective measures to maintain continuity of care in general practice during a crisis like the COVID-19 pandemic.

REFERENCES

1. Zhang Y, Liu J, Scott A. Who is avoiding necessary health care during the COVID-19 pandemic?: Melbourne Institute of Applied Economic and Social Research. Research Insights No. 13/20 2020.

2. Hardie R-A, Sezgin G, Dai Z, Georgiou A. The uptake of GP telehealth services during the COVID-19 pandemic. COVID-19 General Practice Snapshot. Issue 1: 2 November 2020. Sydney: Macquarie University, 2020.

3. Mehrotra A, Chernew M, Linetsky D, Hatch H, Cutler D, Schneider EC. The Impact of the COVID-19 Pandemic on Outpatient Care: Visits Return to Prepandemic Levels, but Not for All Providers and Patients. Commonwealth Fund: The Commonwealth Fund, 2020.

4. Gray DP, Sidaway-Lee K, Harding A, Evans P. Reduction in face-to-face GP consultations. British Journal of General Practice 2020;70(696):328-28.

5. Watt T, Firth Z, Fisher R, Thorlby R, Kelly E. Use of primary care during the COVID-19 pandemic. Secondary Use of primary care during the COVID-19 pandemic 2020. https://www.health.org.uk/news-and-comment/charts-and-infographics/use-of-primary-care-during-the-covid-19-pandemic.

6. Medicines Australia. Don't Wait Mate: Healthcare organisations' message to Australians as patients continue to miss vital health checks, 2020.

7. Pearce C, McLeod A, Gardner K, Supple J, Epstein D, Buttery J. The GP Insights Series no 7: Primary Care and SARS-CoV-2: The first 40 weeks of the pandemic year. www.polargp.org.au, 2020.

8. Nally A. Worried about getting a blood test or pathology sample during coronavirus? Here's what you need to know: ABC News, 2020.

9. Bonislawski A. Lab Test Volumes Plummet as Patients Put Off Care Due to COVID-19. 2020 02 April. https://www.360dx.com/clinical-lab-management/lab-test-volumes-plummet-patients-put-care-due-covid-19#.X8I8OM0zaHs (accessed 28 November 2020).

10. Australian Bureau of Statistics. Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016. Secondary Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016 2018. https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2033.0.55.001~2016~Main%20Features~IRSAD~20.

11. Australian Bureau of Statistics. Australian Statistical Geography Standard (ASGS). Secondary Australian Statistical Geography Standard (ASGS) 2018. https://www.abs.gov.au/websitedbs/D3310114.nsf/home/Australian+Statistical+Geography+Standard+(ASGS).

Suggested citation: Imai C, Thomas J, Hardie R-A, Badrick T, Georgiou A. The impact of the COVID-19 pandemic on pathology testing in general practice. General Practice Snapshot. Issue 3: 12 February 2021. Sydney: Macquarie University. https://doi.org/10.25949/ZX36-8S49