

White Paper series - Part 1

Navigating COVID-19 Impact: An initial assessment of the pandemic's effect on Australian healthcare

IQVIA Australia & New Zealand

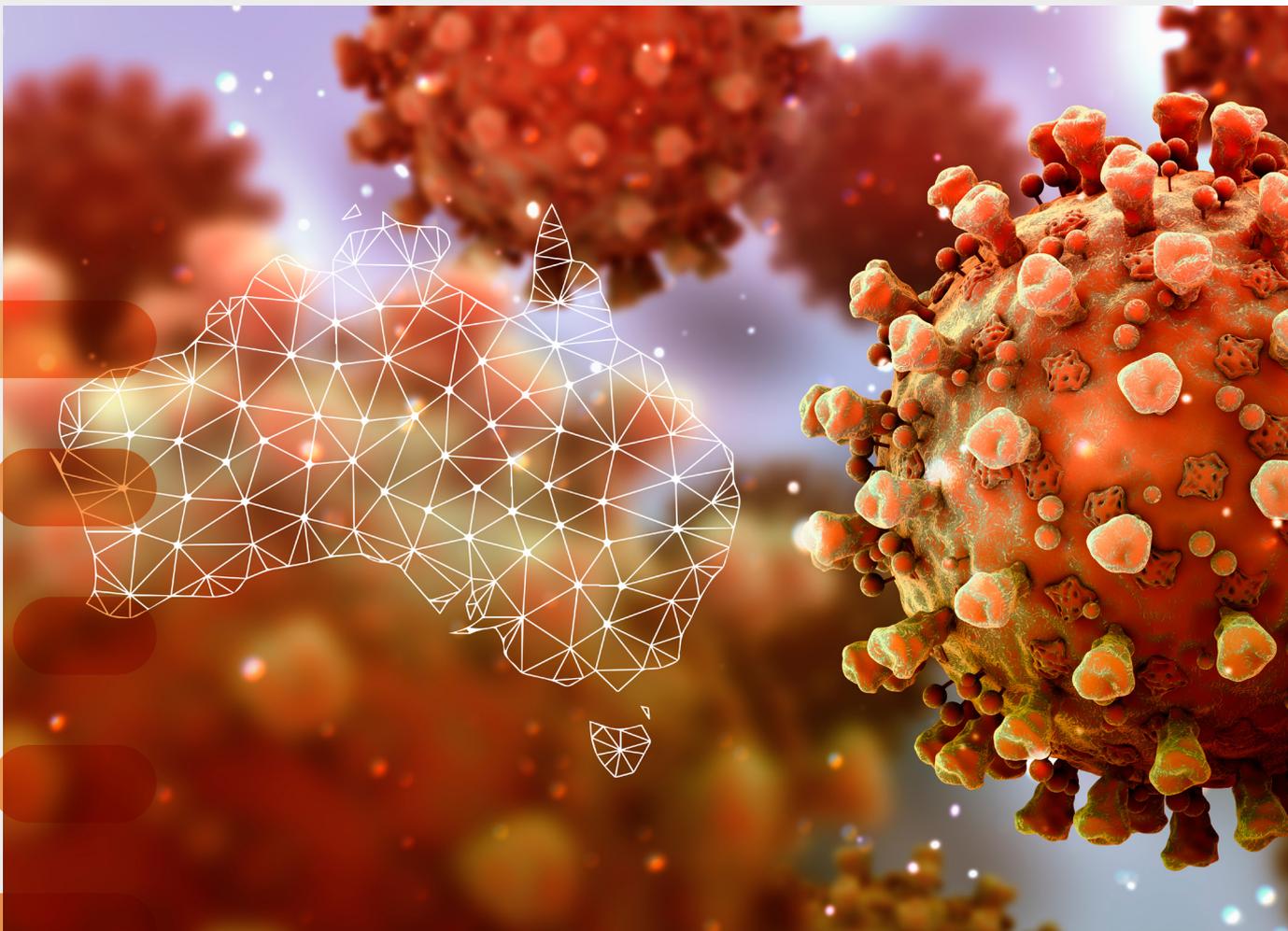
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Background and Objective

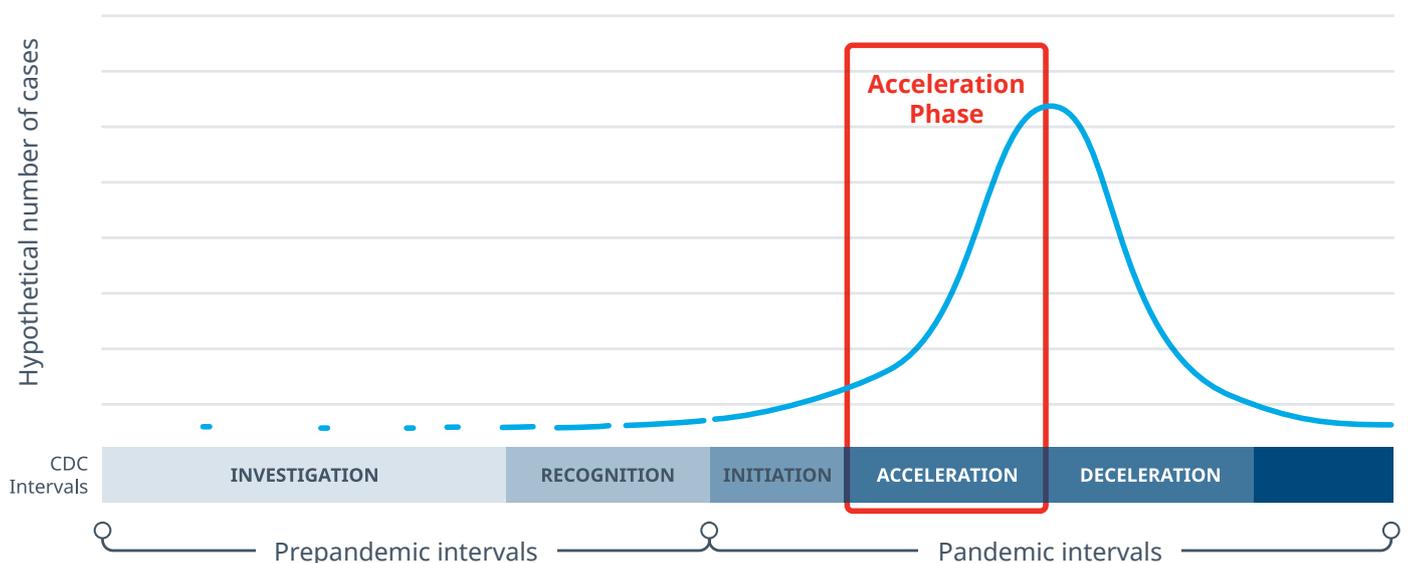
The COVID-19 pandemic represents the most significant challenge that our healthcare system and economy has faced in generations. At this stage the future trajectory is unknown, however it is certain that every aspect of our society will be affected.

This report is the first in a special white paper series from IQVIA that will assess the impact of the pandemic on the healthcare industry in Australia. The analysis and perspectives leverage IQVIA data assets, analytic expertise and infrastructure, as well as primary research and interviews with healthcare professionals and industry experts.

Broadly, this paper reviews the impact of the acceleration phase of the pandemic on the Australian healthcare system. It also provides a detailed focus on the effects on hospitals and clinical trials, the evolving demand for pharmaceutical treatments and non-prescription pharmacy products, and the reported perspective of healthcare professionals on the frontline.

As the pandemic progresses, different challenges will be faced, and it will be imperative for the industry to adapt quickly to protect the health of Australians. Subsequent reports will analyse the longer-term impacts on patients and the healthcare system, as COVID-19 reaches a phase of peak infections; and finally, a period of deceleration in infections as specific social measures, treatments, and potentially vaccines reduce the spread.

PANDEMIC INTERVALS



Introduction

As of 8th April 2020, the World Health Organization (WHO) has reported over 1,317,130 confirmed cases of COVID-19, with the coronavirus SARS-CoV-2 spreading from Wuhan, China to more than 200 countries and causing 74,306 deaths worldwide¹. The number of confirmed cases in recent outbreaks in the USA (363,321 cases), Italy (132,547) and Spain (135,032) have eclipsed the number of reported cases in China (83,157). Additional major outbreaks have occurred, initially in South Korea (10,384 cases) and Iran (62,589 cases), followed by many countries throughout Europe (Germany: 99,225; France: 73,488; UK: 51,612)¹. Importantly, these figures reflect laboratory-confirmed cases, and the extent of testing has varied significantly between countries.

COVID-19 in Australia

In Australia, a total of 5,956 cases have been detected from 313,000 tests as of 8th April 2020, resulting in 45 deaths². Nationally, most detected cases have been acquired overseas (56% of cases in Victoria, 60% in New South Wales and 78% in Queensland)². Transmission to close contacts accounts for the majority of remaining cases, however locally-acquired cases with no identified contacts have occurred in all states, except Tasmania².

New South Wales (NSW) has the largest number of cases with no identified contacts (410; 15% of NSW cases)³. The greatest number of cases have occurred in NSW, however the rate of increase in Victoria (VIC) and Queensland (QLD) throughout most of March mirrored that of NSW, with the case burden in VIC and QLD 3-4 days behind the case numbers of NSW (Figure 1). However, in April the rate of new cases reported in all states and territories appears to have declined.

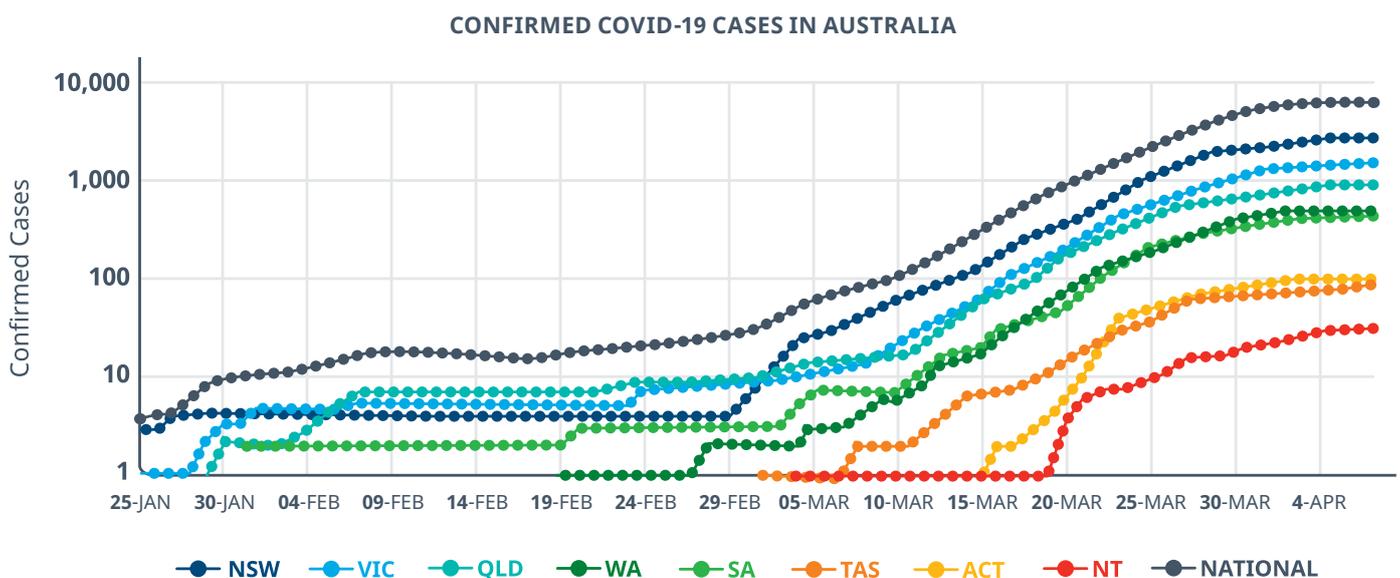


Figure 1: Confirmed COVID-19 cases, nationally and by state.

Source: NSW Health, Victoria Health, Queensland Health, WA Department of Health, SA Health, ACT Health Directorate, NT Government; April 7th 2020.

COVID-19 compared to recent epidemics

COMPARISON OF RECENT INFECTIOUS DISEASE OUTBREAKS IN AUSTRALIA

	SARS (2002-2003)		SWINE FLU (H1N1) (2009)		COVID-19 (2019-2020)	
	GLOBAL	AUSTRALIA	GLOBAL	AUSTRALIA	GLOBAL	AUSTRALIA
Basic Reproduction Number (R0)	1.2-1.32 ⁶		1.4-1.6 ⁷		2.24 – 3.58 ⁸	
Generation Interval	8.4 days ⁹		2.6 days ¹⁰		4 days ⁹	
Confirmed Cases	8096	12* ⁴	1.63M	37,636 ⁵	1,317,130	5,956
Deaths	774	0	19,000	1,317	74,306	45
Case Fatality Rate	9.6%	-	1.1%	0.5%	5.6%	0.76%

Table 1: Recent infectious disease outbreaks affecting Australia, compared to COVID-19

A comparison of the attributes of the ongoing coronavirus outbreak with SARS and the last WHO-declared pandemic, the 2009 'swine flu' influenza A (H1N1), highlights two clear features (Table 1). Firstly, with a higher basic reproduction number, the novel coronavirus is more transmissible than either SARS or swine flu in a naïve population (without intervention to disrupt transmission). Secondly, the generation interval, the average time from disease onset in one case until disease onset in someone they transmit the virus to, is less than half of the generation interval for SARS. Consequently, the novel coronavirus has the potential to be more infectious and spread more rapidly than SARS. Nishiura and colleagues conclude that because the calculated generation interval is close to, or less than, the median incubation period for COVID-19, transmission of the disease is rapid and may be occurring before the onset of symptoms and reducing the effectiveness of case isolation⁹. Therefore, while Australia fared well during the SARS and swine flu epidemics, the novel coronavirus presents an unprecedented public health challenge for the nation.

Australia's response to the pandemic

As Australia's COVID-19 cases have continued to climb, non-essential domestic travel has been prohibited and social distancing measures have been imposed at a national level¹¹. The latest social distancing measures advised people to remain at home except for necessary shopping, medical visits, exercise, or to attend work or education that cannot be completed remotely¹².

The introduction of stricter measures at a national level has created greater consistency in the application of social distancing, yet some fragmentation in requirements remains. While universities and some private schools have transitioned to online teaching¹³, it remains unclear whether public schools in some states will commence the next term with remote or on-site classes. Further, while limits on visitor numbers and visit duration have been introduced for aged care facilities, some aged-care facilities have elected to exclude all non-essential staff and visitors¹⁴.



Some Australian states have declared emergencies and border closures, but there is resistance to implementing more restrictive measures akin to those in place elsewhere, such as closing schools and non-essential shops. However, as cases continue to rise, pressure and the need for increased restrictions is expected to grow.

With an inability to forecast the duration, case rate or mortality of this outbreak in Australia, the scale of economic disruption remains unpredictable. Prior to the implementation of social distancing measures, forecasts of the impact on Australia's 2020 GDP ranged from the OECD estimate of -0.5% to KPMG's estimate of -0.9%^{15,16}. However, with social distancing measures being implemented in Australia, the OECD estimates a 22% decrease in GDP¹⁷.

In this report, we will explore the initial impact of COVID-19 on the Australian healthcare system, with focus on the effects on clinical development, the demand for pharmaceutical prescription and non-prescription products, as well as on healthcare professionals.

Impact on the Healthcare System

Impact on Clinical Development

GLOBAL CLINICAL RESPONSES TO COVID-19

The global need for immediate treatments for COVID-19 has led to a rapid expansion of development in three key areas; therapeutics, vaccines and diagnostics.

The best tool for managing this crisis is a vaccine. Moderna commenced its RNA vaccine trial in March, Inovio will commence trials in April, Regeneron will commence trials mid-year, and Novavax will commence a phase I vaccine study in Australia in the coming weeks.

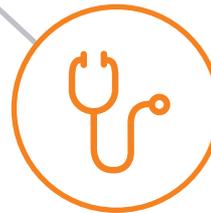
Attempts are underway to re-purpose existing approved or experimental compounds for use against COVID-19.



CLINICAL RESPONSES



A range of other compounds, including antivirals, immune modulators, antibodies, immunoglobulins and anti-inflammatories, are being investigated, however, to date there is no clinical trial data to demonstrate the safety and efficacy for their application to COVID-19. Currently there are more than 300 active clinical treatment trials underway.



Multi-country trials have been initiated, including SOLIDARITY and Discovery, which are investigating the comparison of a number of re-purposed drugs against local standard of care, and are discussed in further detail below.



A recent global regulatory workshop on COVID-19 vaccine development¹⁸ co-chaired by the European Medicines Agency (EMA) and the US Food and Drug Administration (FDA), and including the World Health Organisation (WHO) and the European Commission, indicated that the development of effective therapeutics, and especially vaccines, can be expected to take at least six months, and potentially upwards of eighteen months. Consequently, the majority of current efforts are focused on existing products that may be repurposed to effectively treat COVID-19.

The World Health Organisation's SOLIDARITY trial, is currently the largest COVID-19 study, running to date in thirteen countries worldwide¹⁹.

Coordinated by the WHO Headquarters in Switzerland, this trial focuses on comparing local standard of care alone, or in combination with four re-purposed drugs that the WHO have assessed as having the most promise; the antiviral remdesivir; chloroquine and hydroxychloroquine (indicated for use as treatments for rheumatoid arthritis, inflammatory conditions, and for the suppression and treatment of malaria); a combination of HIV medicines lopinavir and ritonavir; and a separate arm containing lopinavir and ritonavir and interferon-beta. Diagnosed COVID-19 patients at collaborating hospitals will be randomised to one of the four treatment arms and followed for the duration of their hospital stay. Primary outcome measures include all-cause mortality.

The SOLIDARITY trial will be instructive as to the potential of such treatments in a large population sample. While there are limitations to the design, as the trial is not double-blinded, it is designed to collect important data from current and upcoming hospitalisations across multiple countries. The WHO has taken the decision to focus on speed, volume of data and simplicity of design to enroll large numbers of patients. A similar trial, named Discovery, is being planned by the French biomedical research agency, INSERM, and is intending to collect data from approximately 3200 patients in eight European countries.

AUSTRALIA'S CONTRIBUTION TO THE CLINICAL RESPONSE

Australia's contribution to the clinical response to date has focused on leveraging the country's scientific expertise, innovation and infrastructure across three areas of activity:

- 1 Diagnostics and detection** 
- 2 Therapeutics - new and re-purposed** 
- 3 Vaccines** 

Enhanced collaboration between academic institutions, industry and government has been facilitated by the Department of Health, the TGA²⁰ and groups such as the Research and Development Taskforce (RDTF), which is an alliance between joint sponsored Medicines Australia, Medical Technology Association of Australia and AusBiotech²¹.

A number of Australian institutions are investigating the use of existing drugs on COVID-19. Of specific interest to date have been chloroquine and hydroxychloroquine. These drugs have been known for some time to show antiviral activity in in vitro studies, however in vivo success is yet to be determined. Scientific evaluation through clinical trials will be required to assess the potential benefits of these drugs in patients with COVID-19.

An initial trial by the Walter & Eliza Hall Institute is focusing on the use of hydroxychloroquine as a prophylactic treatment to prevent at-risk health care workers from contracting SARS-CoV-2. This will be a large-scale trial across multiple hospitals, currently planned to include 2250 health care workers, but numbers may expand. Notably, there are a number of similar trials, based on the use of chloroquine and hydroxychloroquine alone, occurring in the UK, France, US, Mexico, and India, either as a prophylactic or treatment. Additionally, the combination of chloroquine and HIV medicines lopinavir and ritonavir is being investigated by University of Queensland researchers. However, a Chinese trial recently published in the New England Journal of Medicine (NEJM) involving hospitalised adult patients with confirmed SARS-CoV-2 infection found that no benefit was observed with lopinavir-ritonavir treatment beyond standard care²³.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) has commenced pre-clinical trials for two potential vaccines against COVID-19. The first stage of testing was commenced at CSIRO's high-containment bio-security facility, the Australian Centre for Disease Preparedness, in Geelong in March. This work is part of a strategic partnership with the Coalition for Epidemic Preparedness Innovations (CEPI). In consultation with the World Health Organisation, CEPI has identified vaccine candidates from The University of Oxford (UK) and Inovio Pharmaceuticals Inc. (US) to undergo the first pre-clinical trials at CSIRO, with further candidates likely to follow²⁴.

In January, researchers at the Melbourne-based Doherty Institute for Infection and Immunity, successfully cultured the virus and were the first to make samples available to researchers throughout the world.



IMPACT ON BROADER CLINICAL DEVELOPMENT

As the focus of hospitals shifts to the containment and treatment of COVID-19 patients, there is presently disruption to clinical activities, especially those non-essential to acute care, and as COVID-19 further strains the healthcare system, greater impacts will occur. In addition, the effect of social distancing, and the requirements for patients to stay away from healthcare providers, is necessitating a move to virtual interactions for patients, providers and trial operators.

Many agencies including the UK Medicines and Healthcare products Regulatory Agency (MHRA) and governance bodies, such as ethics committees at site level, in Australia and other countries have advised special consideration of the risk/ benefit of conducting trials in medicines that act as immunosuppressants, for example in early phase healthy volunteer trials, where there is no therapeutic benefit to the volunteer, but taking part in the trials does pose a risk of infection.

PATIENTS' WILLINGNESS TO PARTICIPATE

Based on observations from sites in China, wider Asia, Europe and the US, it is anticipated that fears among

patients of potential COVID-19 infection will lead to a reluctance to attend on-site visits. Even where trials remain active, subjects enrolled in clinical studies may withdraw from these studies or may elect to miss study visits if they are concerned about the risk of exposure to patients with COVID-19. Overall patient visits to hospitals are expected to be reduced, especially for less serious illnesses and elective medical procedures, and this may also delay the identification of potential patients who could be recruited through hospital research units or through out-patient clinics. These factors are likely to have significant impact on timings of study endpoints, analyses and conclusions, and will need to be considered by sponsors.

IMPACT ON RESEARCH STAFF CAPACITY AND FOCUS

The potential large-scale reassignment of personnel and resources to support with the virus response is likely to impact on key members of clinical trial research staff. Study physicians, principal investigators and study nurses may be requisitioned into direct patient care roles, which will affect the available resourcing and ability of the clinical trial units to continue current clinical trial activities.

Clinical trial units (hospital, clinic and commercial units) are enacting containment measures designed to minimise additional spread. However, this is impacting both current trials, with restrictions to patients/ subjects attending visits and essential staff being utilised for clinical management, and new trials, with delays to pre-study planning. As such, support will need to be provided to clinical trial staff including: appropriate focus on safety and ongoing management of trial participants, utilisation of remote monitoring tools, and support for ongoing recruitment activities for active trials.

Depending upon the escalation in COVID-19 cases and capacity within regular wards, clinical trial units could be converted to dedicated treatment or even isolation units. Any such measures would mean an immediate stop to all onsite clinical research activities.

NOVEL METHODS TO MAINTAIN CONTINUITY

Effective risk mitigation and management processes are needed to manage the current environment, as well as to address foreseeable challenges in this moving landscape.

The Australian government has recently issued a guidance document on the COVID-19 impact on clinical trials for institutions, ethics committees, researchers and sponsors. This document has been created by all state and territory Departments of Health, the Therapeutic Goods Administration (TGA), National Health and Medical Research Council (NHMRC) and the Clinical Trials Project Reference Group (CTPRG). The document provides guidance on the management of current and new trials, focusing on protecting the safety of participants, impacts on clinical trial centre staff and clinical trial sponsors, including the use of innovative solutions to minimise disruption, and advice for ethics committees and research governance offices. It is also designed to allow for prioritisation of clinical trial research, and as such allows for extraordinary meetings and expedited review processes, which are essential to allow for the rapid start-up of COVID-19 trials.

Remote data verification and of the use of digital technology options should be explored to minimise further delays in ongoing projects. Based on feedback from regulatory agencies such as the FDA and clinical research associations, alternative methods for data collection and assessment of patients should be considered, including:

- 1 Remote visits** 
- 2 Utilising telemedicine and direct-to-patient drug delivery** 

Such activities have been endorsed in principle by ethics committees and the TGA, however, for most trials this is non-standard and different to currently approved study activities, and this will necessitate additional documentation and approval steps.

Utilisation of Virtual / Hybrid trials platforms is to be evaluated, with a focus being on speed to develop appropriate solutions for ensuring rapid and accurate data collection while maintaining low subject burden and sponsor / clinical staff safety in an outbreak setting. Such novel approaches will require Human Research Ethics Committee (HREC) and local research governance office (RGO) approval prior to implementation, as well as alternative methods of consenting and communication with study participants and patients.

IMPACT FOR CLINICAL TRIAL SPONSORS

The impacts described above on patients and research site staff and facilities have the potential to cause substantial delays to the generation of clinical trial data.

Feedback from top 20 pharmaceutical companies suggests that they are delaying start-up activities of some new trials, particularly those that involve site-related start-up activities. In many cases, impacts to ongoing trials are being minimised, with companies often citing the welfare of trial participants and future patients as the reason to continue. By contrast, emerging biopharma and biotech companies are more commonly reporting impacts to their ongoing trials. This may be a result of many smaller companies having only a single asset, and therefore being unlikely to have a wide pipeline of planned trials to be impacted.

The temporary delay in research activities, including site identification, enrollment and monitoring visits, will have short-term consequences for clinical trial sponsors.

However, this is likely to be offset by an increase in activities after social distancing constraints are reduced and the pandemic is better controlled, although this will also be dependent upon the capacity of the investigator sites when activities resume.

Sponsors will need to work closely with clinical trial units and vendors/partners to utilise innovative tools to minimise the disruption of data collection, as described above. Fortunately, there is alignment between approving bodies, such as regulatory agencies and ethics committees, that alternative strategies may be utilised, and changes to study procedures and data collection methods can be reviewed in an expedited manner.

REPORTED IMPACT OF COVID-19 ON ONGOING AND PLANNED CLINICAL TRIALS

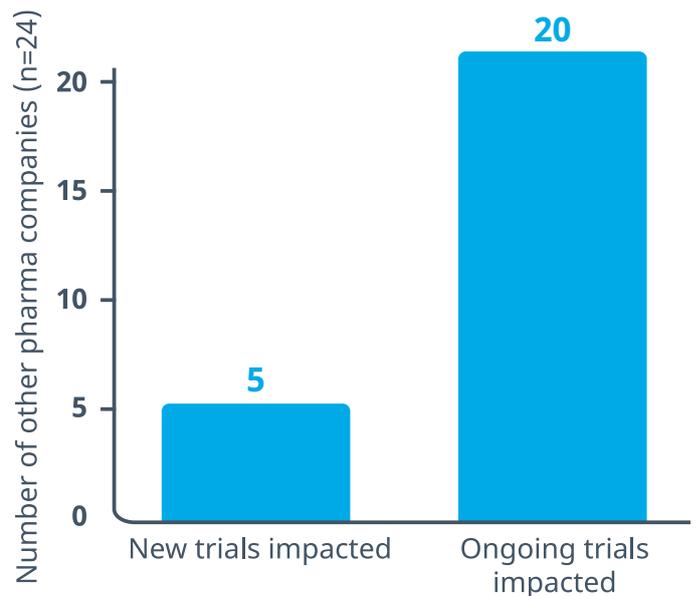
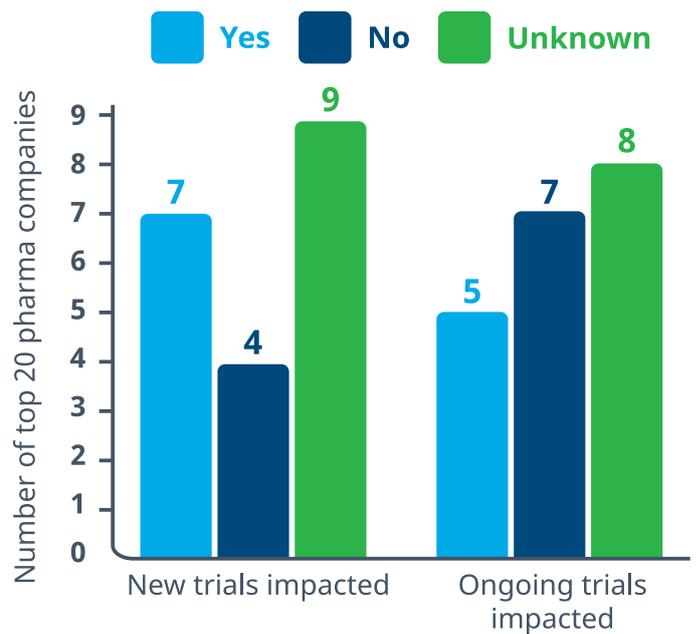


Figure 2 (a) and (b): Reported impact of COVID-19 on ongoing and planned clinical trials of top-ranked and smaller pharmaceutical companies.

Source: IQVIA European Thought Leadership.

Impact on the demand for prescription pharmaceuticals

As the COVID-19 health crisis deepens, a number of therapeutic categories have experienced unprecedented levels of demand, placing stress on the supply chain and threatening access to life-saving medicines. In Australia, we have seen an unprecedented surge in the demand for prescription pharmaceuticals. In March 2020, a 21% rise in the overall number of dispensations filled through community pharmacies was observed compared with the same period in 2019.

At the peak of demand, in the week commencing 16th March, this equated to more than 1,250,000 additional dispensations, and an increase of over 300,000 patients per week. The change in demand has not been uniform. Specific increases have occurred for categories such as respiratory, cardiovascular and lipid-modifying treatments with known correlated risk to COVID-19 mortality. Additionally, some of the increase in demand has been driven by speculation over untested products with potential benefit against COVID-19, such as hydroxychloroquine.

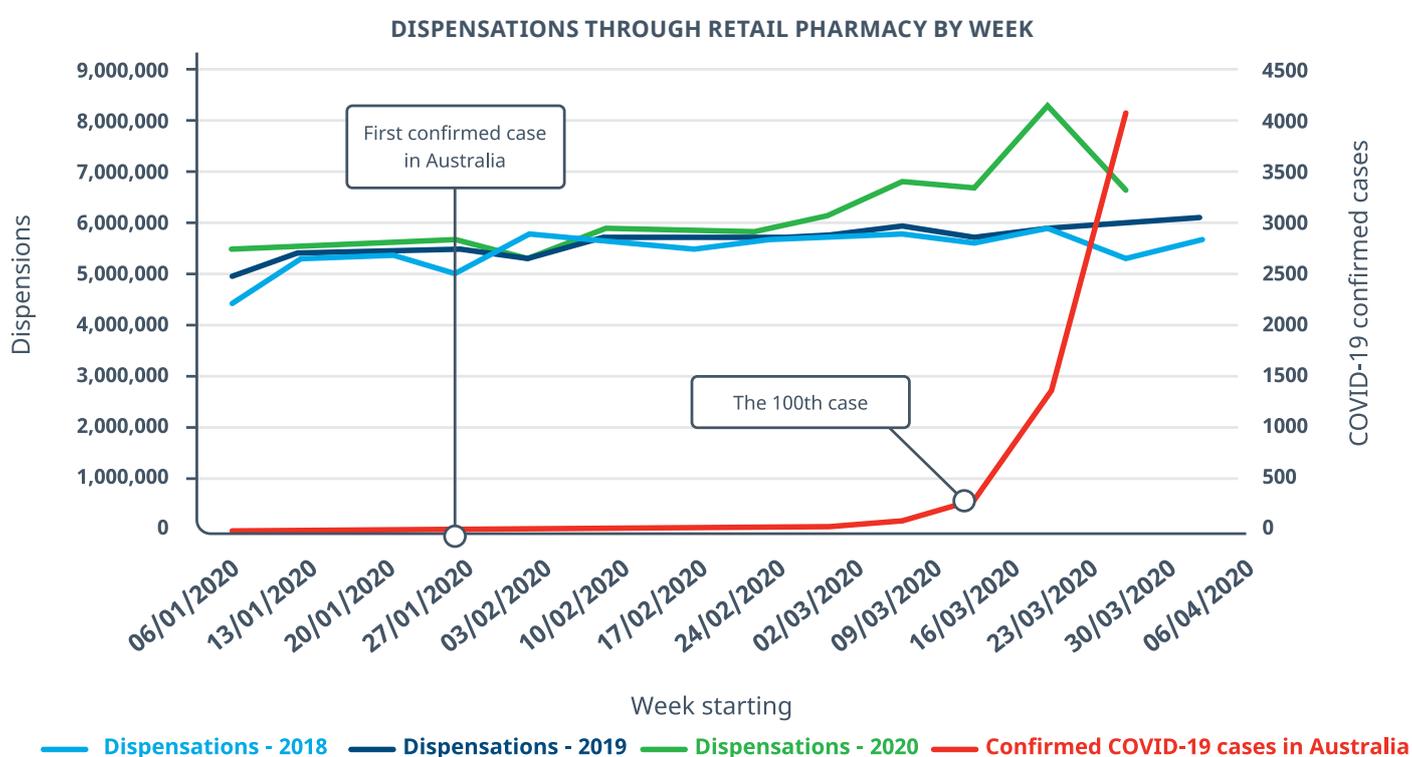


Figure 3: Dispensations through retail pharmacy by week

Source: IQVIA longitudinal dispensed data

Increased demand to date has been observed for both PBS reimbursed and private scripts, as well as across patented, off-patent and generic medications. A clear surge is visible in the volume of regulation 24/ 25 scripts. Under the National Health Regulations 1960, Regulation 24 allows a pharmacist to supply an original prescription medication and all of its repeats at the one time²⁵. Regulation 25 allows the pharmacist to dispense a prescription as an early PBS subsidised

resupply (within 20 days) where there is a genuine need (i.e. if the medicine has been destroyed, lost, stolen or is required without delay for the treatment of the person)²⁶. These scripts are most commonly used in cases of extended travel, however rates more than doubled in the weeks leading up to end of March, to account for over 12% of total dispensations, indicative of patients stocking up a long-term supply, as illustrated in Figure 4.

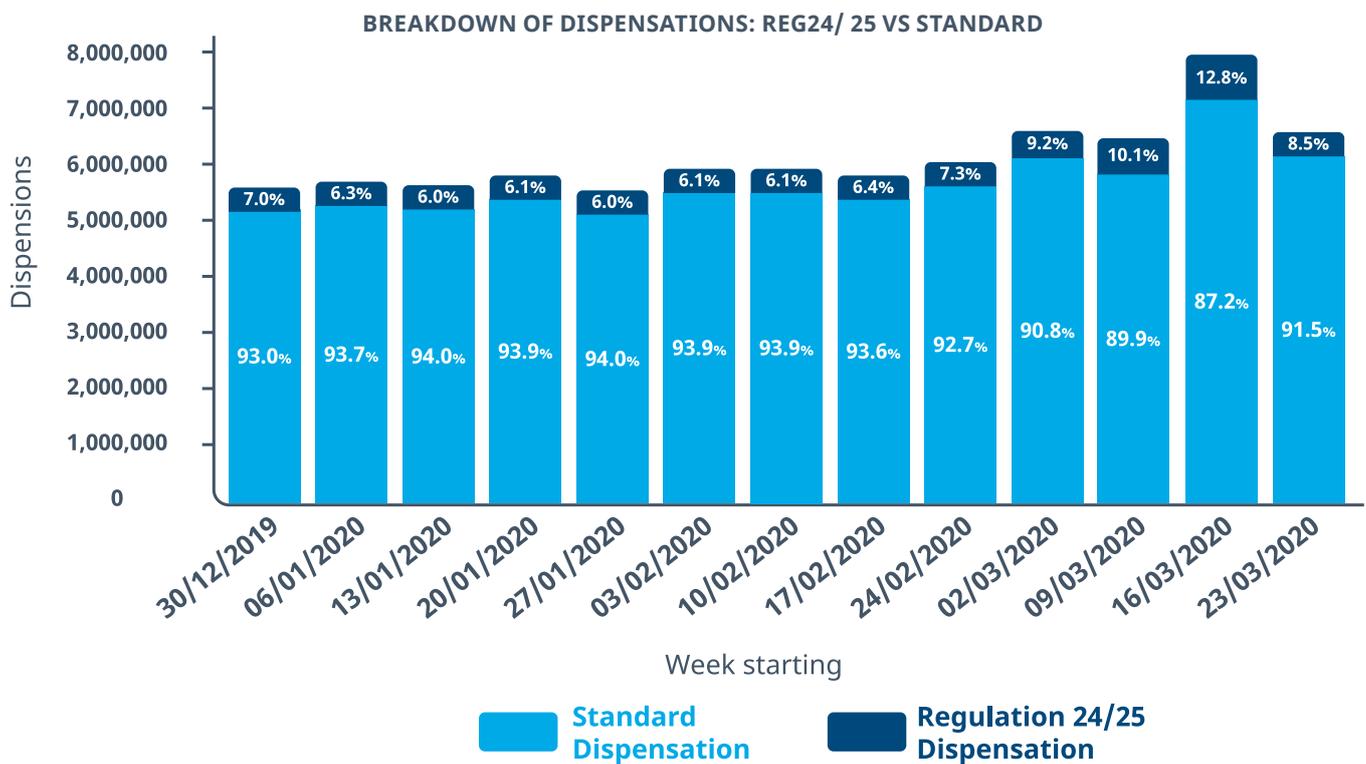


Figure 4: Regulation 24/25 scripts as proportion of total dispensations, 2020.

Source: IQVIA longitudinal dispensed data.

The unprecedented surge in demand resulted in pharmacies and wholesalers reporting stock-outs for numerous products. To mitigate further shortages, the Pharmacy Guild and Pharmaceutical Society of Australia introduced restrictions on 19th March applying to both prescription and over-the counter medicines, where interrupted supply could result in serious health consequences.

Restricted prescription products include asthma and COPD medicines, insulins and oral hypoglycaemics and anti-epileptics²⁷. With the exception of lipid modifying agents (C10) and anti-bacterials for systemic use (J01), all of the top ten ATCs demonstrating significant increase in demand are now subject to dispensing restrictions. The effect of these restrictions can be observed in the reduction of total and Regulation 24/25 scripts observed for the week commencing 23rd March (Figure 4 above).

In addition to existing patients securing their prescription medication more generally, the increased demand appears to have been further compounded by relapsed patients presenting to fill scripts in community

pharmacies in the last month. IQVIA's daily dispensed data measured a 25% increase year-on-year in the number of new or relapsed patients, equating to an additional 48,000 patients per week, for the week commencing 16th March. The majority of these patients were relapsed, as opposed to naive to treatment (Figure 5b), meaning that they had re-started treatment following a break of at least six months.

DEMAND BY THERAPEUTIC CATEGORY

Across therapeutic categories, respiratory, cardiovascular and lipid-modifying treatments have experienced the most significant increases in demand to date. Respiratory medicines (ATC R03), mainly asthma/ COPD inhalers, have been most impacted overall, with an increase of over 97% in dispensations, and more than 500,000 additional patients per month — an 84% increase in patient numbers — versus the same period last year. Similarly, cardiovascular medicines (ATC C09), such as ACE inhibitors and angiotensin receptor blockers, have experienced the second-greatest increase in demand, although in this case only an 11% increase in patients is observed (Figure 6).

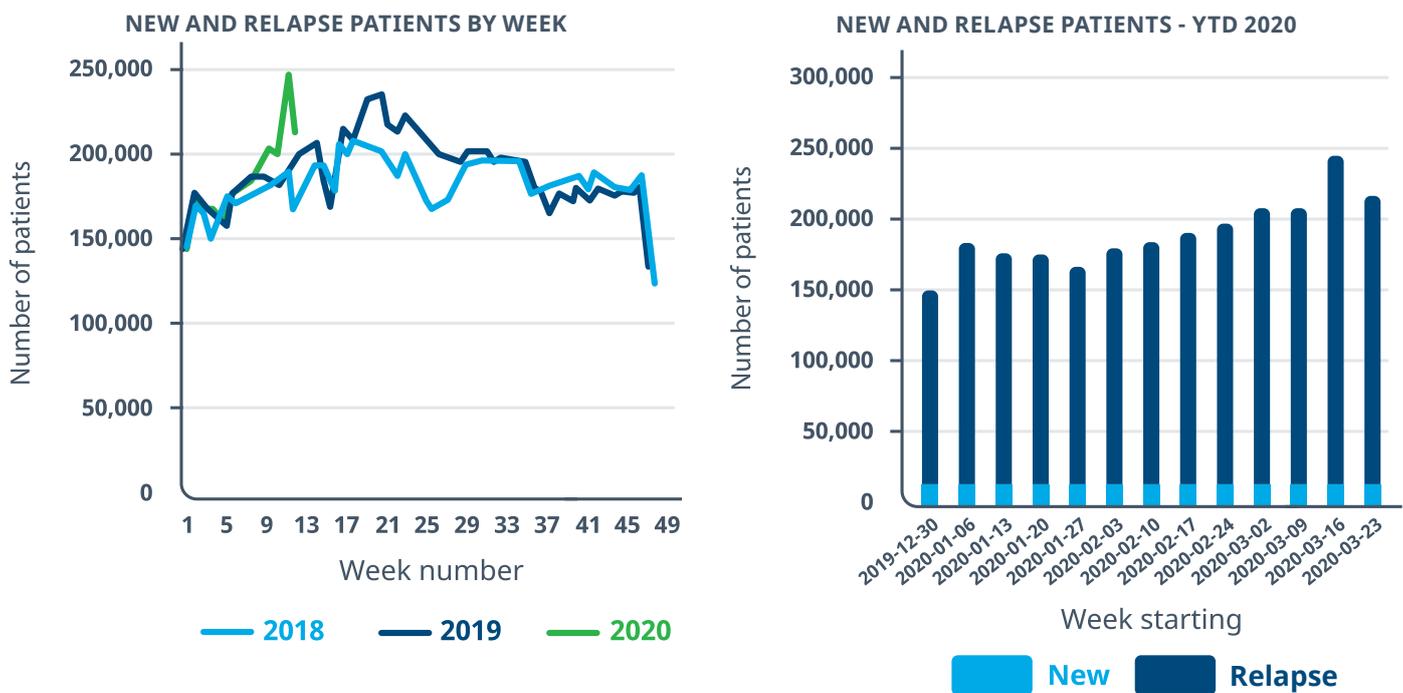


Figure 5 (a) and (b): Number of new/ relapse patients per week

Source: IQVIA longitudinal dispensed data. New patients are defined as patients receiving their first dispensation in a defined category based on the IQVIA LRx panel. Relapsed patients are those re-starting treatment in the defined category following a break of at least six months.

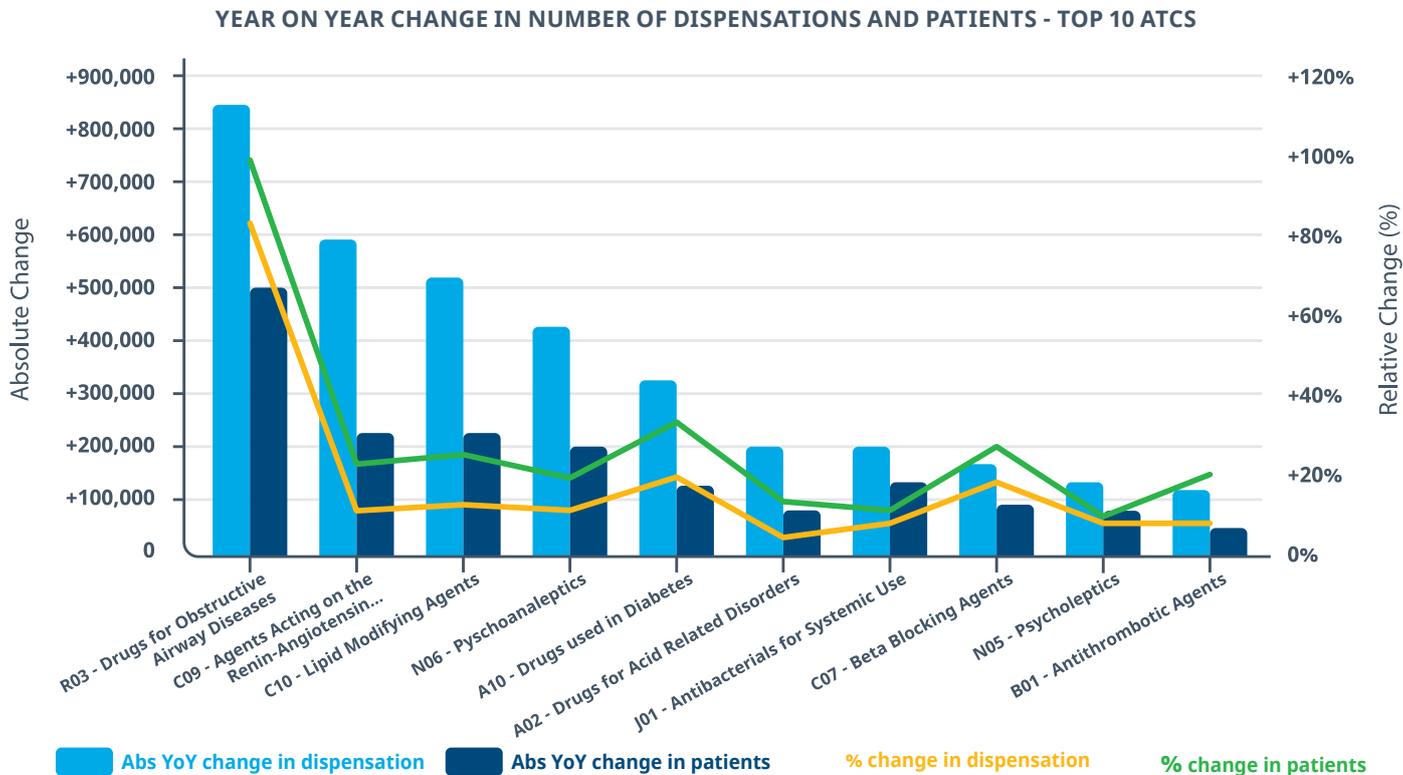


Figure 6: Year on Year Change in Dispensations and Patient Counts per ATC-2 Category. Absolute and Percentage Change

Source: IQVIA Longitudinal Dispensed Data.

PATIENT BEHAVIOUR & DRIVERS OF INCREASED DEMAND

The investigation of patient dispensing behavior reveals clear differences in the drivers of increased demand across categories. As illustrated in Figure 7 below, for the respiratory (R03) and systemic anti-bacterial (J01) categories, the main driver of increased demand is the volume of relapsed patients. Here, half of all patients in the latest month were new or relapsed, likely reflecting patients with a prior diagnosis of respiratory conditions who have sought to stock up on medications in case of exacerbation of symptoms linked to COVID-19. A further one-in-six patients (16%) is filling a repeat prescription for an existing treatment but has increased their average script volume. Only one-third of patients within this category have made no change to their behavior.

By contrast, within the cardiovascular and lipid modifying agent categories, three-quarters of patients are filling repeat prescriptions and have made no change to the volume of prescription medication they are purchasing. The increased demand in these categories is driven largely by repeat patients who have increased their average prescription volume. Given the large number of patients using these medication classes, even these changes in a small proportion of patients results in a large impact on absolute volume. The diabetes category shows a different trend again, with increased demand driven in similar proportion by new or relapsed patients and by increased scripts per patient. This category shows the highest proportion among top ATCs of continuing patients who have increased their prescription volume (23%).

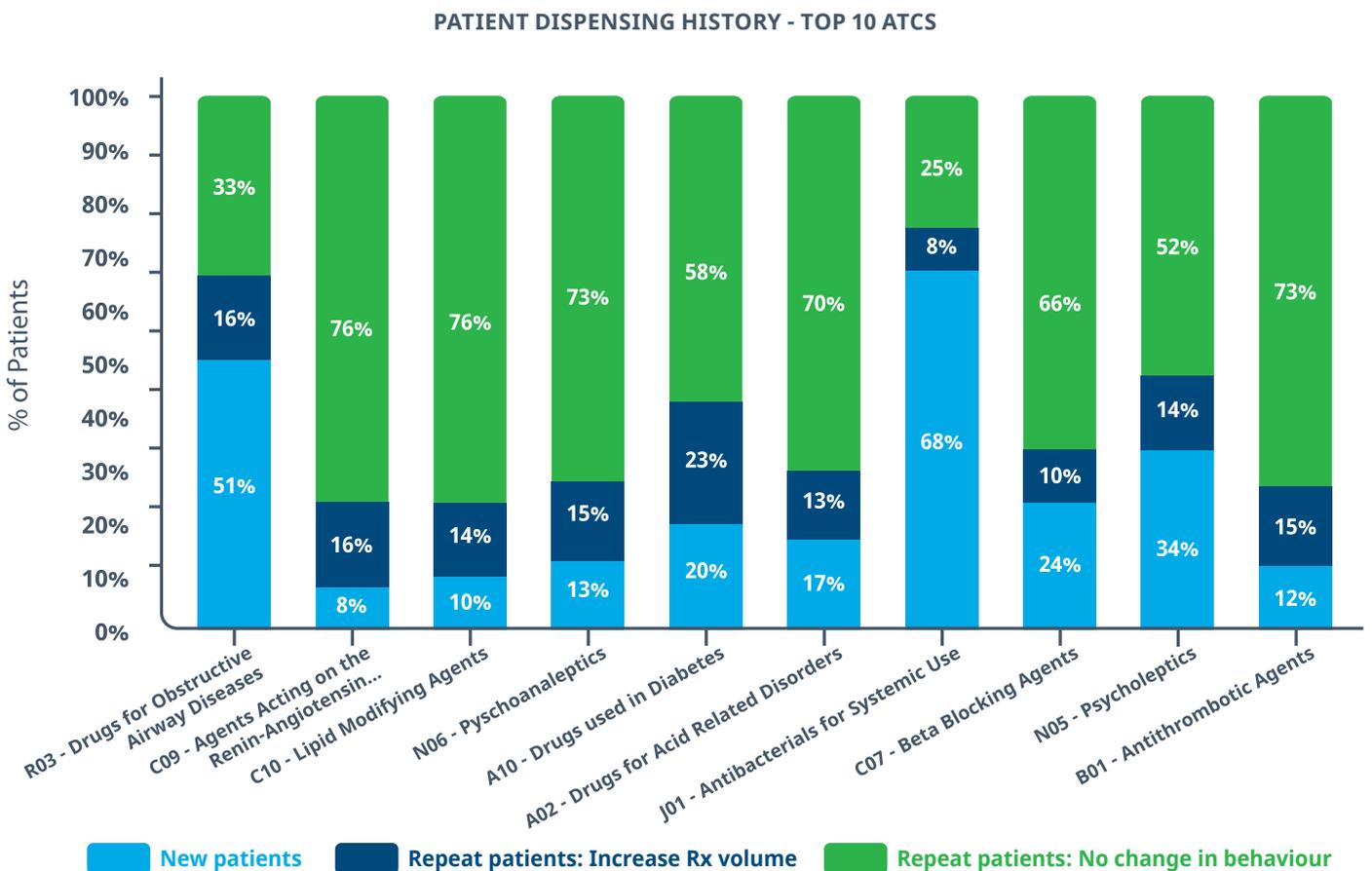


Figure 7: Breakdown of Patient Dispensing History by ATC-2 Category. Top ten ATCs by highest increase in dispensation volume year-on-year displayed.

Source: IQVIA longitudinal dispensed data.

IMPACT ON RESPIRATORY PRESCRIBER WORKLOAD

The respiratory category has experienced the most pronounced increases in demand since the start of the outbreak, with a range of 30,000 to 40,000 relapsed patients per week in the last two weeks of March. (Figure 8 below).

This influx of additional patients requiring treatment is creating mounting pressure on healthcare professionals, generating concerns around future capacity constraints if the pandemic worsens. The majority of scripts are sourced from new visits to clinicians, hence reflective of increasing workload. Analysis of the number of patients treated year-on-year highlights increases of over 100% in patients with respiratory conditions treated by both GPs and specialists versus the same period in 2019, explaining the reported need for new measures to alleviate capacity and pre-empt future bottlenecks.

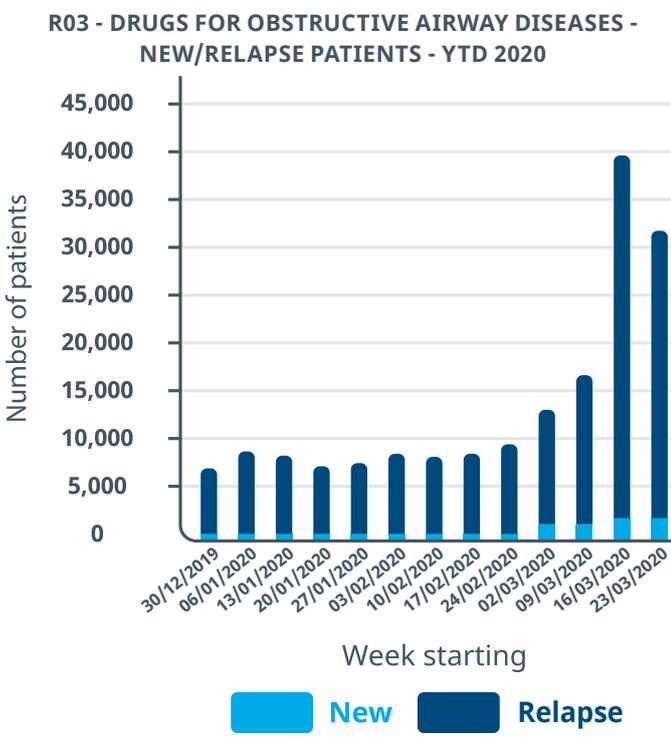
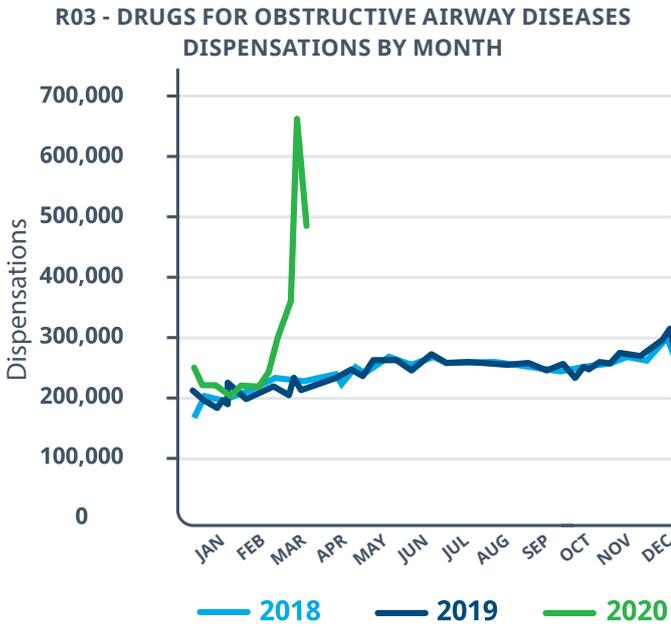


Figure 8 (a) and (b): Demand in dispensations & breakdown of new/ relapse patients for R03 category.

Source: IQVIA longitudinal dispensed data

Among specialists, a concurrent increase in the number of treating HCPs is observed (Figure 9a), with a broad range of specialties writing scripts for respiratory treatments, with nurses and registrars following respiratory and sleep physicians as key prescriber groups (Figure 9c). Among GPs, the size of the workforce remains largely unchanged, hence the impact on clinician workload is greater, with average caseload per GP close to doubling from 6.5 to over 12 patients per month (Figure 9b).

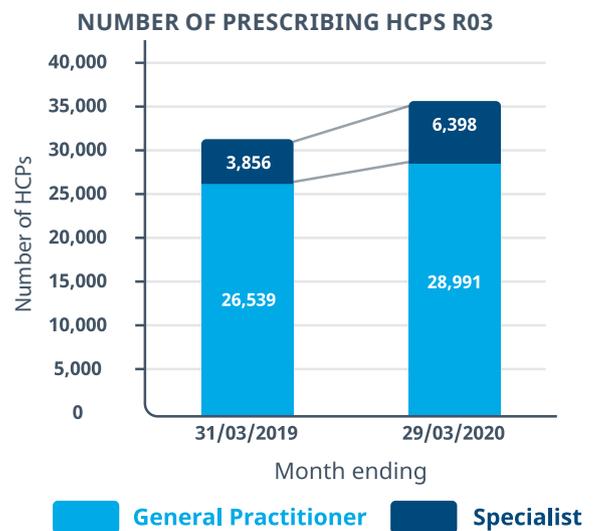
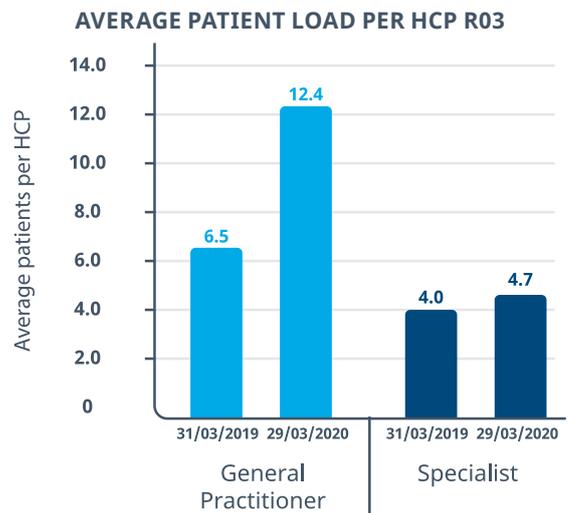


Figure 9 (a) and (b): Number of HCPs prescribing R03 medications 2019 vs 2020. Average R03 patient caseload per HCP 2019 vs 2020. Source: IQVIA Longitudinal Dispensed Data.

PATIENT CONTRIBUTION BY PRESCRIBER SPECIALTY - R03

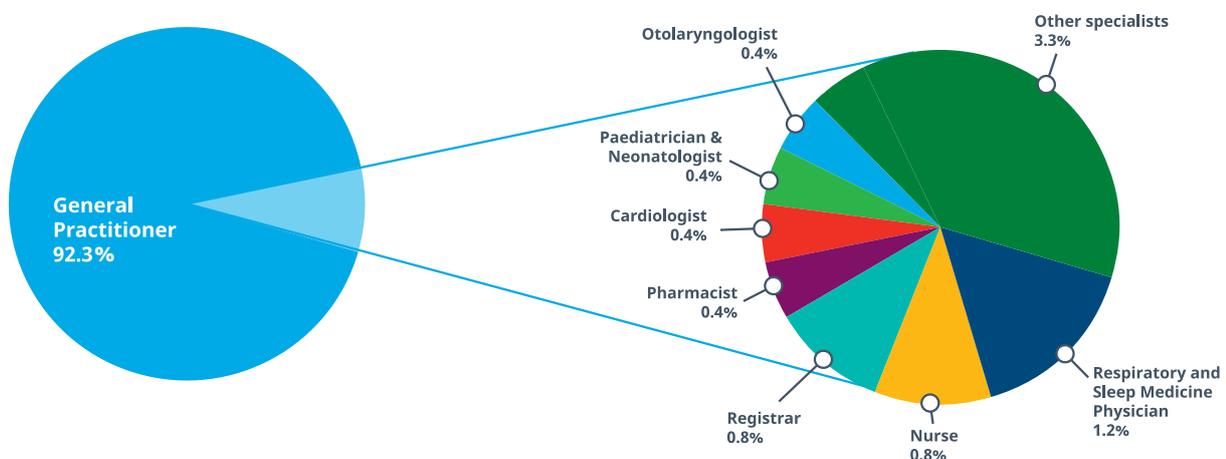


Figure 9 (c): Proportion of R03 patients by prescribing HCP specialty. Source: IQVIA Longitudinal Dispensed Data.

POTENTIAL CANDIDATES FOR A COVID-19 TREATMENT

A number of drugs across several therapeutic classes have been proposed to show potential benefit against the COVID-19 virus, as outlined in detail in the previous section. Despite the current lack of clinical trial data to prove the efficacy of these treatments against COVID-19, off-label use has already been observed. Hydroxychloroquine, a drug used primarily for the treatment of rheumatoid arthritis, has experienced sky-rocketing demand following US President Donald Trump's press conference on 19th March, in which he

touted the drugs chloroquine and hydroxychloroquine as a "game changer". The subsequent spike in demand at Australian pharmacies has led to shortages for patients who rely on the drug to treat flare ups associated with rheumatoid arthritis. A statement released by the Pharmaceutical Society of Australia (PSA) and Australian Medical Association (AMA) on 21st March requesting doctors to stop prescribing and pharmacies to limit their stock to patients with a proven need, appears to have been effective as a reversal in the trend has been noted in the latest week.²⁶

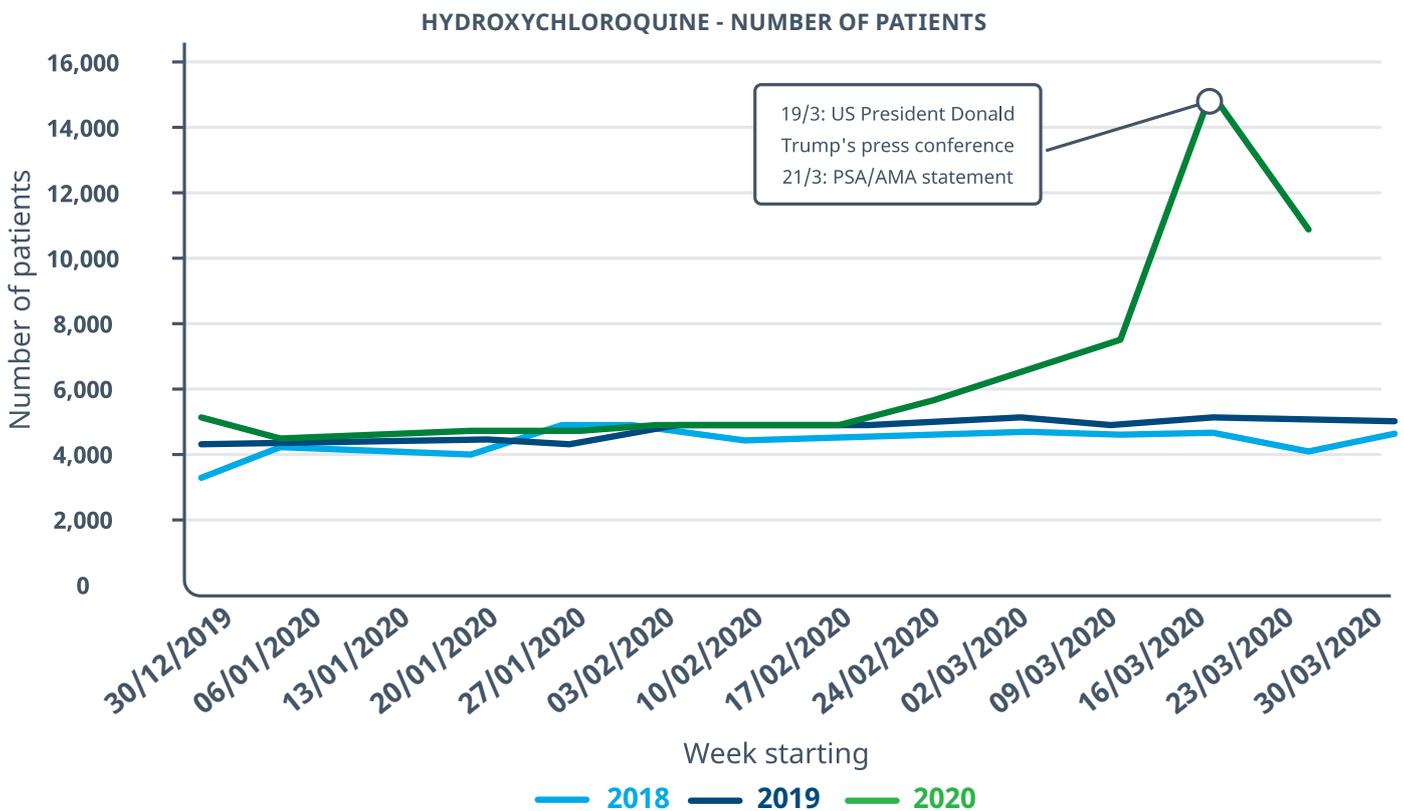


Figure 10: Number of patients dispensing hydroxychloroquine.

Source: IQVIA Longitudinal Dispensed Data.

RISK OF TREATMENT DELAYS AND UNDER-TREATMENT

As the pandemic progresses, it will be important to monitor not only for areas of increased demand, but also for reductions in dispensed volumes and new patients in certain categories, which will be indicative of under-treatment linked to the COVID-19 crisis. In particular, a decline in the initiation of new patients to immuno-suppressive treatment regimens such as chemotherapy is anticipated, due to the associated

increased susceptibility to the virus. A broader impact across a range of therapeutic categories is also likely, as patients become less willing to seek timely medical care due to fear of infection and/or reduced access to healthcare providers as resources are focused on fighting the pandemic. These longer-term impacts on particular patient subgroups, and their consumption of prescription medicines, will be explored in future reports.

Impact on the demand for non-prescription products

EVOLVING DEMAND

The COVID-19 pandemic has resulted in unprecedented demand across the Australian community pharmacy landscape, including a record for the highest number of consumer health products ever sold in a week. Over-the-counter (OTC) consumer demand was relatively stable during the early weeks of the outbreak and was comparable to the same period in 2019. On the 27th of February 2019, the Prime Minister declared that Australia was activating the Health Sector Emergency Response Plan, and this appears to have catalysed an increase in volume demand in the subsequent weeks, resulting in a 70% increase in the third week of March (Figure 11). The grocery channel has also been subject to substantially higher than usual consumer demand, with Coles and Woolworths groups subject to substantially higher than usual consumer purchases²⁹.

Not all non-prescription categories in community pharmacies were equally impacted by this sudden onset of demand. Products used to manage hand hygiene, circulatory products such as those that contain ginkgo biloba (Cer or Per Circulatory Products), disinfectants, and items to treat the symptoms of cough and cold were amongst those subject to the largest increase in absolute sales volume over the last 4 weeks (23 Feb 2020 to 16 Mar 2019), compared to the same period in 2019 (Figure 12a).

General adult and paediatric pain relief products have also been subject to a surge in demand, but not to the same extent as hand hygiene, circulatory products, etc. Pain relief has always been amongst the most consumed OTC products in Australia.

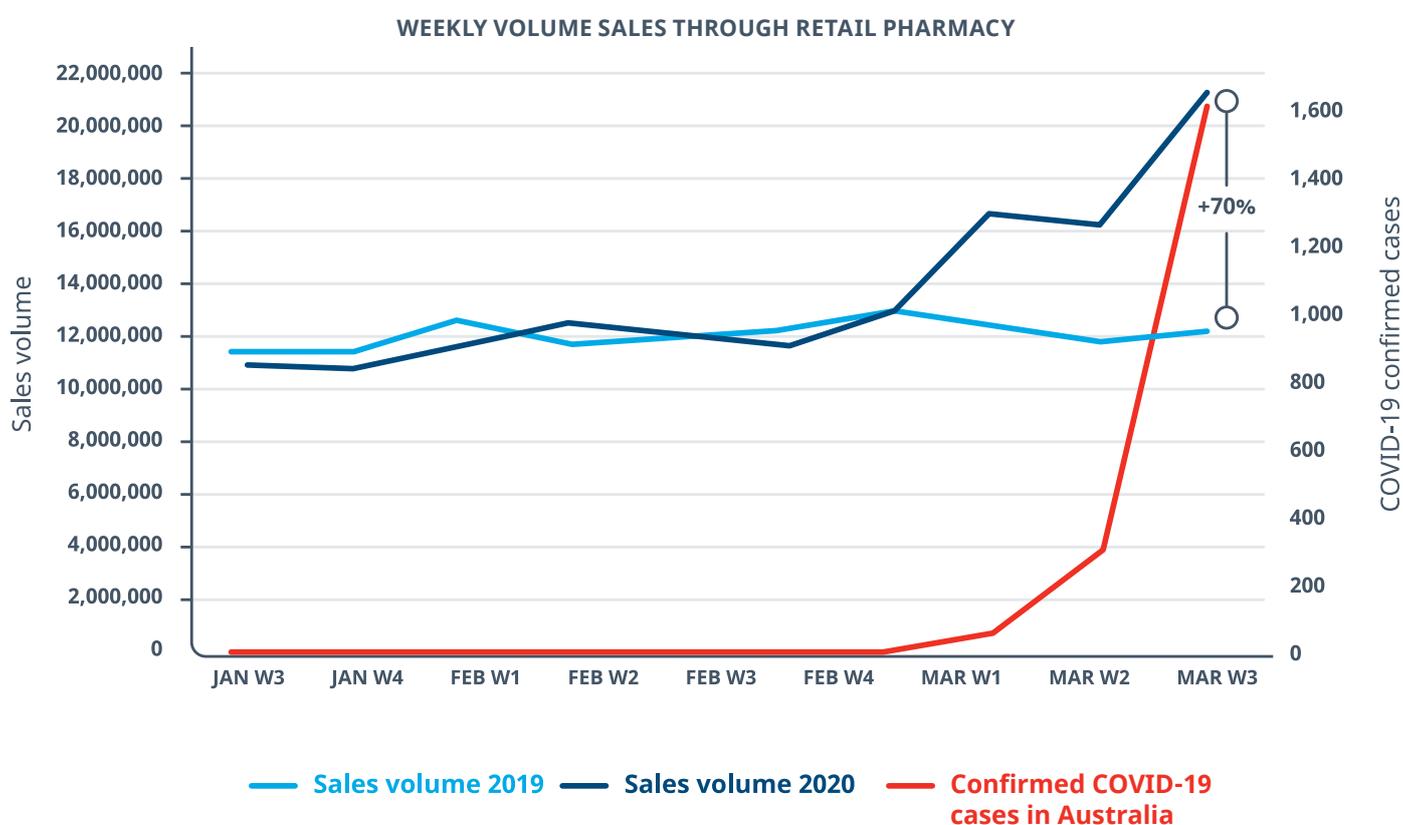


Figure 11: Weekly volume sales through retail pharmacy by week. W denotes “week”.

Source: IQVIA Pharmacy Scan data.

In the week ending 21st March 2020, 2.7 million over-the-counter pain treatments were sold in Australian pharmacies; an increase of 190% on the same week in 2019. This is the largest number of pain products sold in a week, breaking the previous weeks record of 1.9 million units.

The pain category demonstrated exponential growth, with 11.5 million units sold between the 19th January and the 21st March 2020, including 6.3 million units between 1st-21st March 2020. This equates to \$98 million over the 9-week period (Figure 11a). Paracetamol remains the preferred pain management agent amongst the pain relief molecules available for OTC sales, with the weekly sales volume share consistently between 68% and 70% from late January to late March 2020.

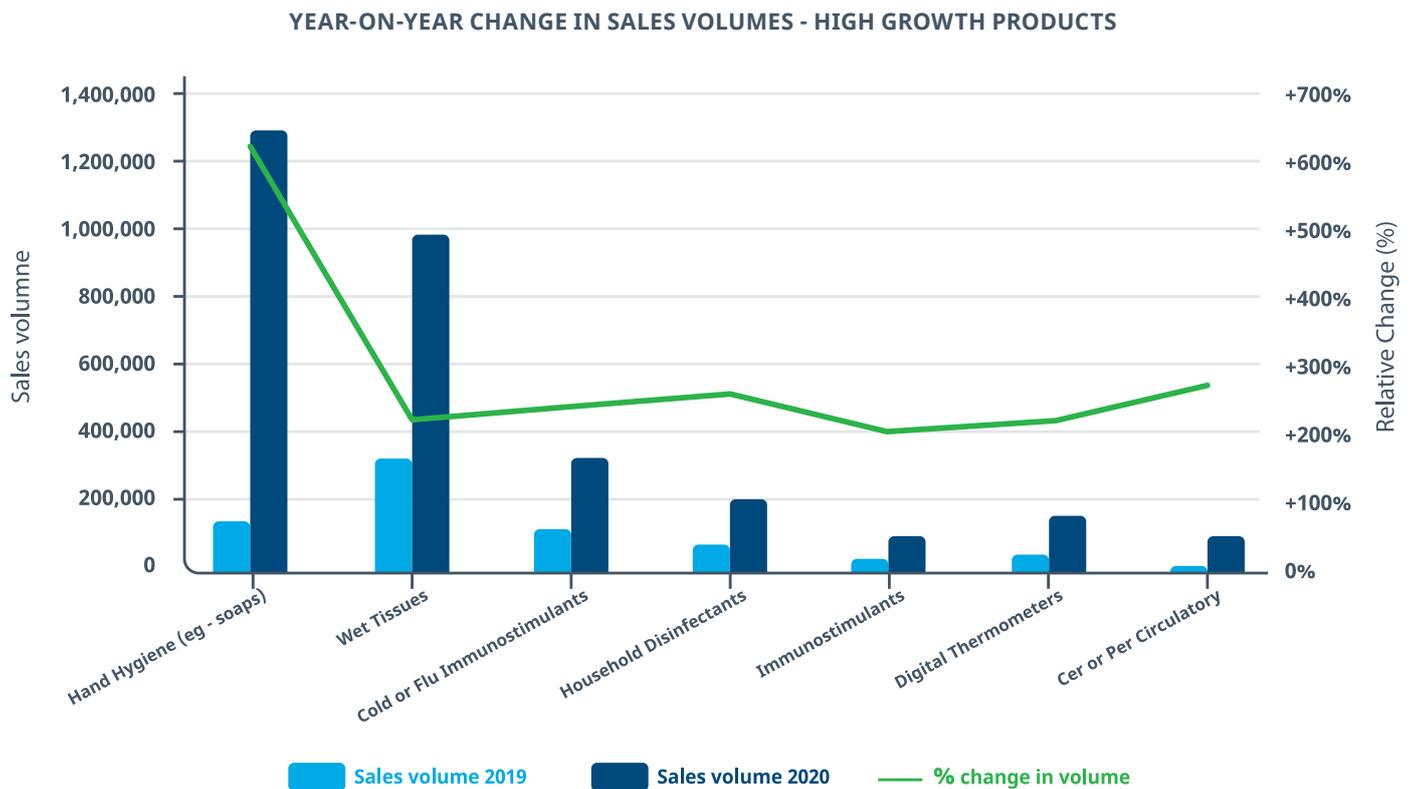
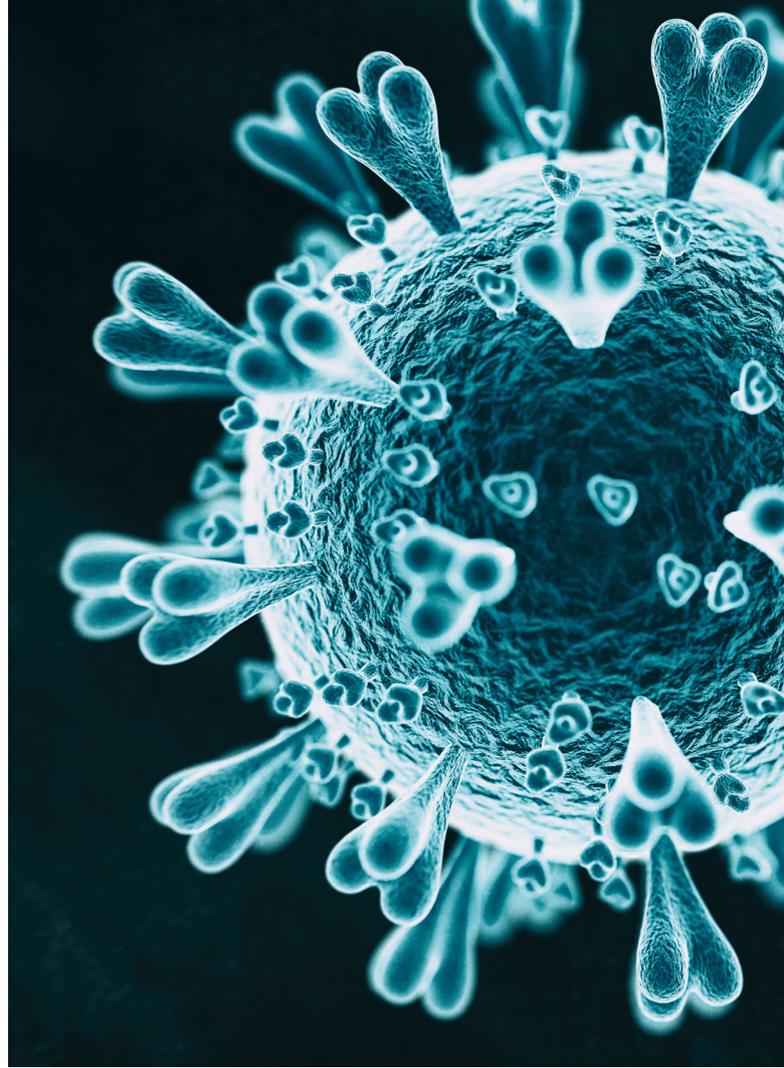


Figure 12a: Year-on-year change in sales volume over a 4 week period for high growth categories. Total sales & percentage change

Source: IQVIA Pharmacy Scan data.

Conversely, the sales of omega-3 and coenzyme Q10 supplements, beauty categories such as lip make-up, coffrets etc. and others such as liver remedies declined over the same period compared to last year (Figure 12b.). Some of this reduction is presumably the result of reduced social interaction thus limiting the need for beauty products, the reprioritisation of consumer spending towards essential goods, or a combination of the above factors. Personal care products appear to have limited utility in times where governments progressively impose greater restrictions on the movement and gathering of people.



YEAR-ON-YEAR CHANGE IN SALES VOLUMES - DECLINING PRODUCTS

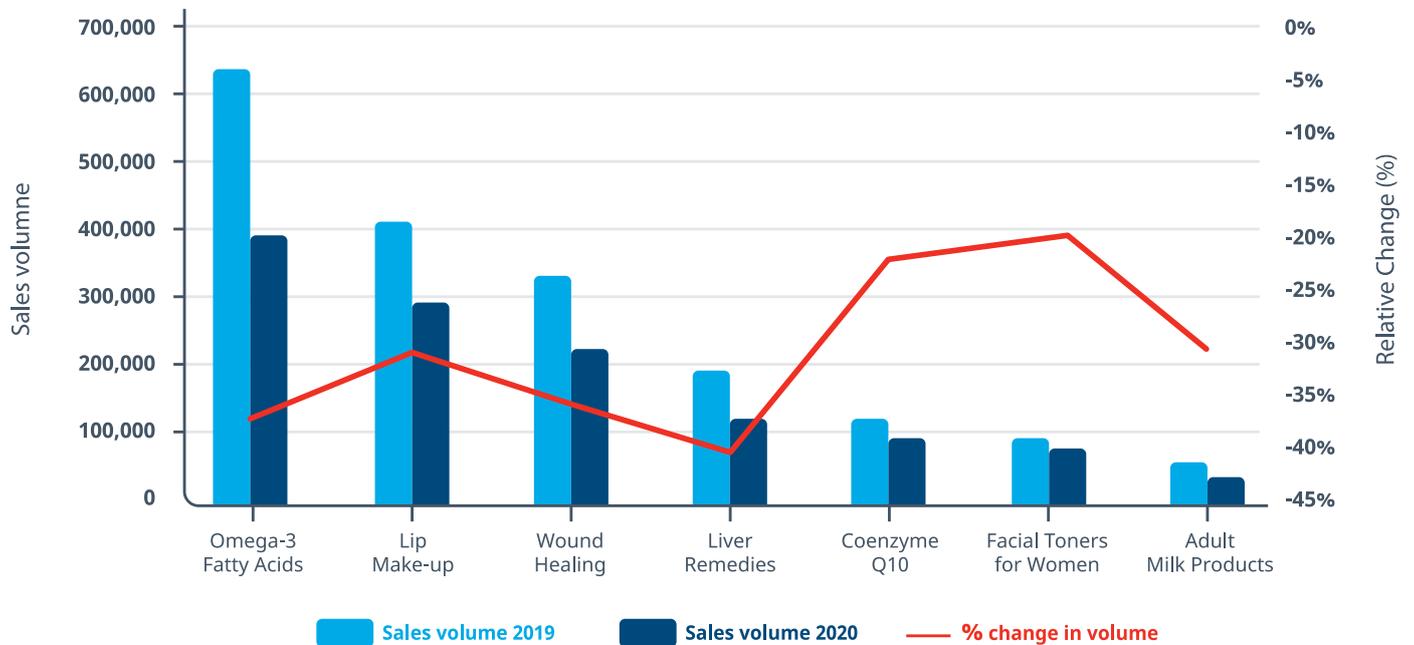


Figure 12b: Year-on-year change in sales volume over a 4 week period for categories where growth declined. Total sales & percentage change.

Source: IQVIA Pharmacy Scan data.

IMPACT ON EXPORT PRODUCTS

There has been a varied impact on export products with multiple dynamics at play. These include:

Ongoing impact of new e-commerce regulations and additional taxes implemented by the Chinese government for all online merchants.

Raw material and packaging shortages for Australian manufacturers with components of products made in China



Border closures and limited flights in and out of China.

Increased export demand for related preventative categories including vitamin C, circulation & immune supplements. Beauty and related categories were not historically exported to Chinese consumers, from Australian community pharmacies via the Daigou trade routes, to the same extent as products in the omega-3 fatty acids, coenzyme Q10 and liver remedies categories (Figure 13). Therefore, the decline in beauty product sales likely reflects declining Australian demand, whereas the trends for categories such as coenzyme Q10 highlight changes in export trade to China.

SHARE OF EXPORT VS DOMESTIC SALES

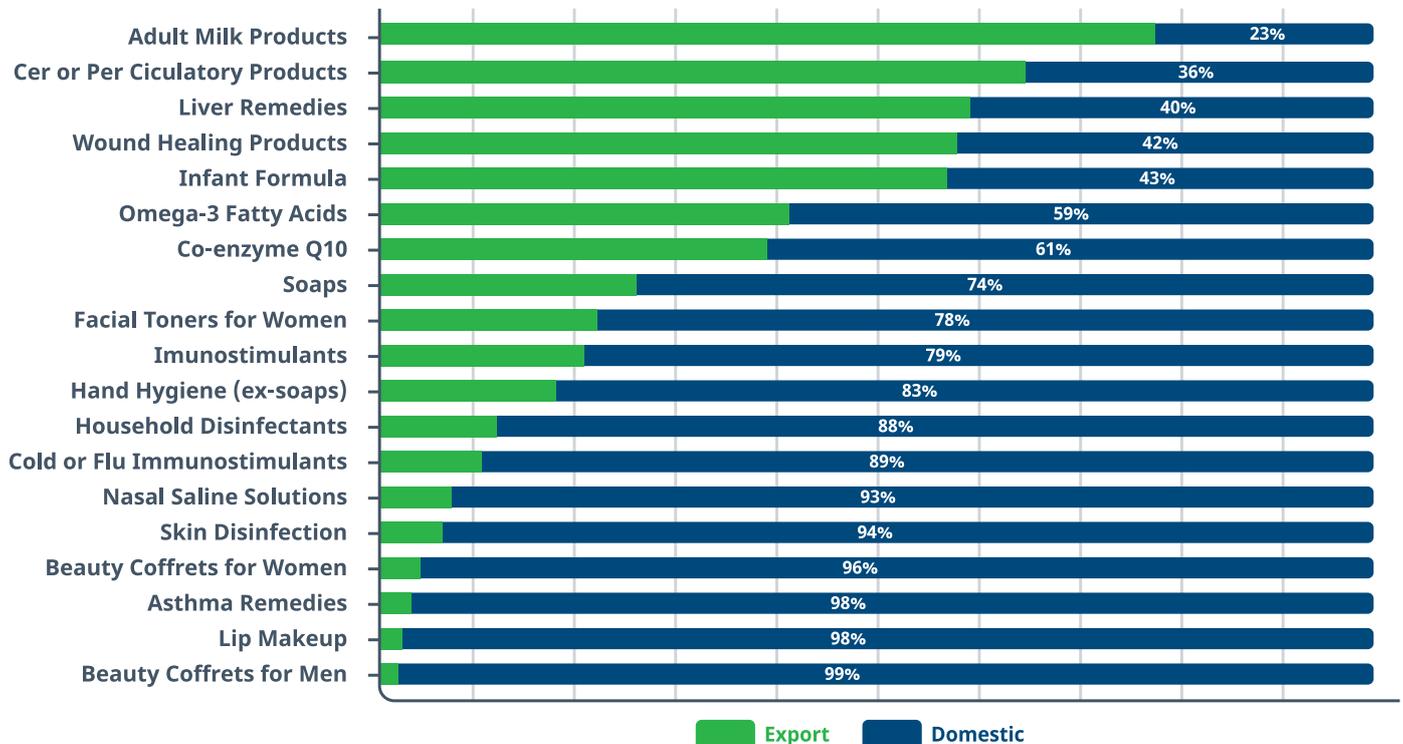


Figure 13: Share of export and domestic sales for selected categories in 2019.

Source: IQVIA Pharmacy Scan data and Xport Dynamics.

EXPORT VOLUME SALES - SELECTED CATEGORIES

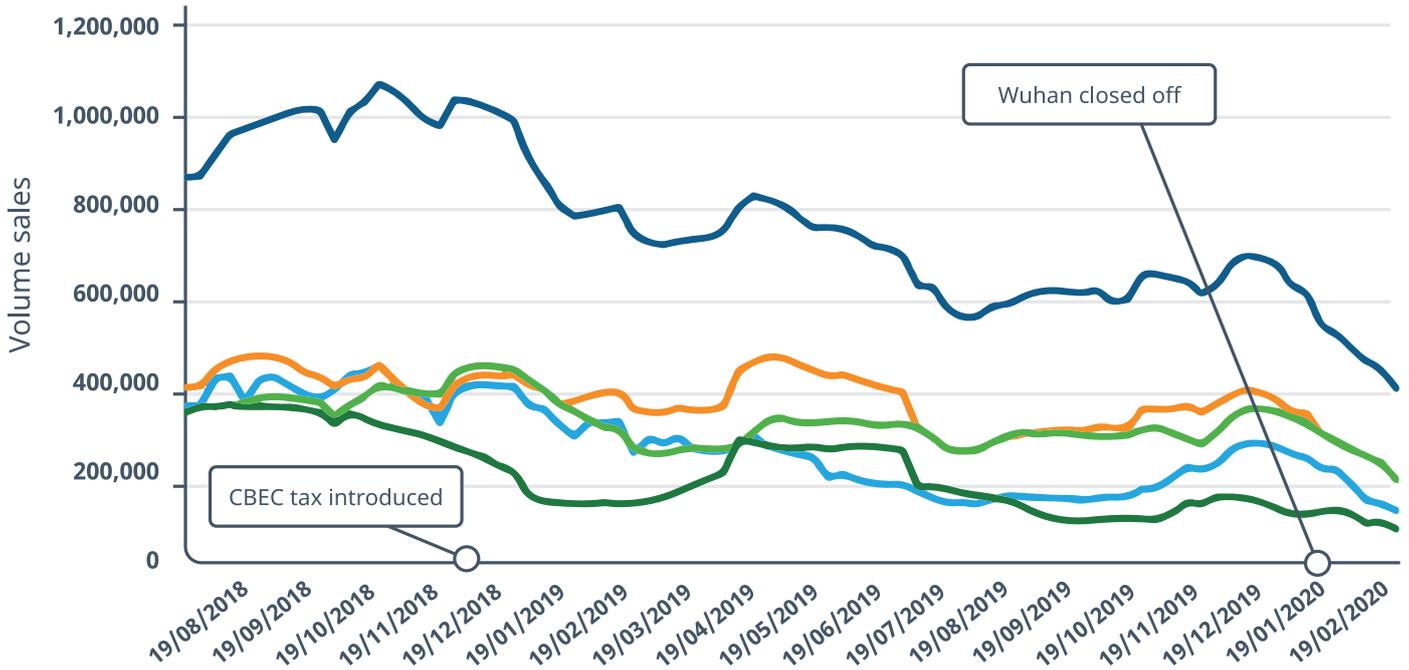


Figure 14: Weekly export volume sales of selected categories.

Source: IQVIA Pharmacy Scan data and Xport Dynamics.

The declining volume sales in categories subject to exports have generally followed a similar trend over the past 18 months, i.e. reduced uptake since the 11.9% Cross-Border E-Commerce (CBEC) tax was implemented on the 1st of Jan 2019 (Figure 14). This demand could have declined further due to the recent COVID-19 related lockdown of Chinese ports, quarantines and the restricted movement of people and goods internally³⁰.

Though consumer preferences continuously evolve, the demand for Australian products remains strong due to higher levels of trust among Chinese consumers for Australian manufacturers compared to their local counterparts³¹. With the outbreak of COVID-19, export demand from Chinese consumers has changed. In the past four weeks, dramatic increases in the export of hand sanitiser and disinfectants (Figure 15) have been observed, and most categories with increased exports are categories which were not exported historically (Figure 13).

Chinese consumer preferences appear increasingly

more in-line with those of Australians, prioritising goods that help maintain higher standards of hygiene. The only discrepancy is the continued and increased demand for Cer or Per Circulatory Products, i.e. ginkgo biloba (Figure 15). Sixty-four percent of Cer or Per Circulatory Product sales were exported in 2019 and this figure climbed to 70% in Q1 2020, despite the 11.9% tax. This suggests that Chinese consumers believe that products that contain ginkgo may in some way contribute to their wellbeing through this crisis. Despite the marked volume increase in general pain relief product sales, the share of export demand has been largely unchanged over the past 18 months, hovering between 2% to 3% of total volume sales per week.

Of the total hand sanitiser volume sold in pharmacies, 167,000 units in January and 300,000 units in February were exported to China. In the first two weeks of March, only 86,000 units were exported and when projected, there would be fewer units exported in March compared to February. This decline was presumably due to reduced access to retail

supply, consumption of existing stockpiles and the stabilisation of cases in China. By comparison, a total of 397,000 units of total pharmacy hand sanitiser sales were exported in 2019 leading to stock-outs in many locations.

Online sales for selected categories such as baby wipes, baby accessories, hand wash and sanitisers, and household disinfectants have increased in February and March, some with over 30% growth relative to the same period last year, but recent online sales restrictions and stock unavailability has dampened sales through this channel. Online sales were below the peaks observed during Christmas and major online sales events such as Black Friday. Categories that continue to show high online demand, despite restrictions, are largely those for regular baby needs such as diapers, formula and bottles and teats. Baby wipes appear to no longer be available online, with many suppliers facing stock shortages.

STOCKPILING

Since the onset of the pandemic, it has been widely reported that product stockpiling has occurred which, together with increased export demand, has rendered several categories, especially those that contain hygiene, disinfectant, cold or flu, or immunity products, as out-of-stock. A surge in demand globally, combined with a shutdown of production in China³⁰, general restrictions on labor including the harvesting of raw materials, legacy or pre-outbreak stock warehousing, distribution and resupplying patterns, all have resulted in a taxed global supply chain that cannot keep up. As such, consumers should be prepared for an extended period of limited stock for certain items until manufacturers, distributors and retailers align themselves to a new status quo.

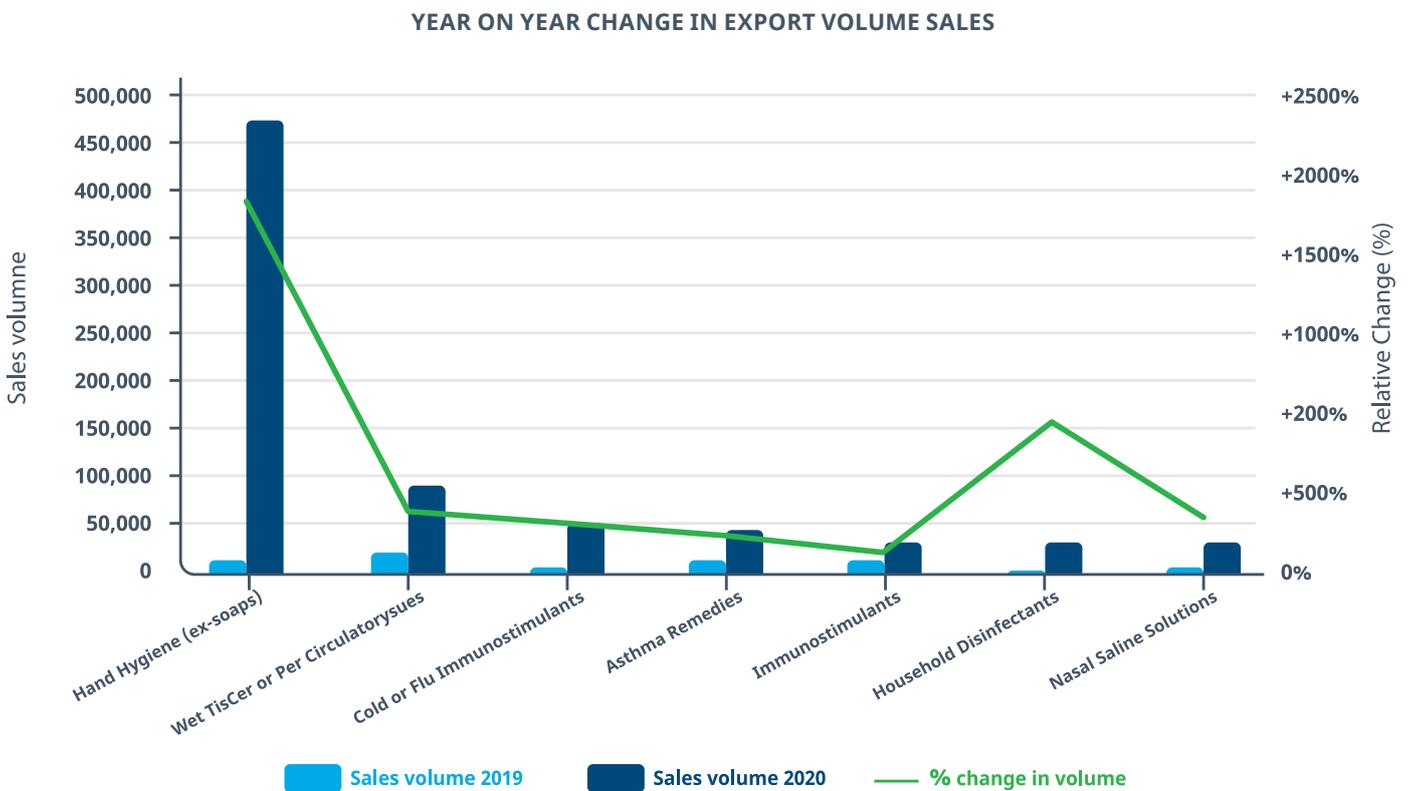


Figure 15: Export volume sales of selected categories in Q1 2020 compared to Q1 2019

Source: IQVIA Pharmacy Scan data and Xport Dynamics.

A comparison between sales into pharmacies, either from wholesaler withdrawals or direct supply, against sales to consumers from pharmacies shows clear discrepancies. For example, two spikes were observed in the sales to consumers over an 8-week period (Figure 16). The first occurred after China closed off Wuhan, the second after the Prime Minister declared that the country was activating the Australian Health Sector Emergency Response Plan (AHSERP) for Novel Coronavirus. Though suppliers and distributors maintained a higher level of sales into the channel between these two high demand periods, the total

sales into pharmacies over this 8-week period accounted for 94% of the sales to consumers, resulting in a gap of almost 40,000 units nationally.

A portion of this gap could be addressed through any stock-on-hand, but it is not likely that wholesalers or retailers were prepared for this. This discrepancy between excessive demand and insufficient supply was noted across products in several other categories, such as pain relief, cold or flu remedies and sore throat remedies, i.e. those with increased recent demand (Figure 12a).

VOLUME SALES TO PHARMACY VS TO CONSUMER - HAND SANITISER BRAND

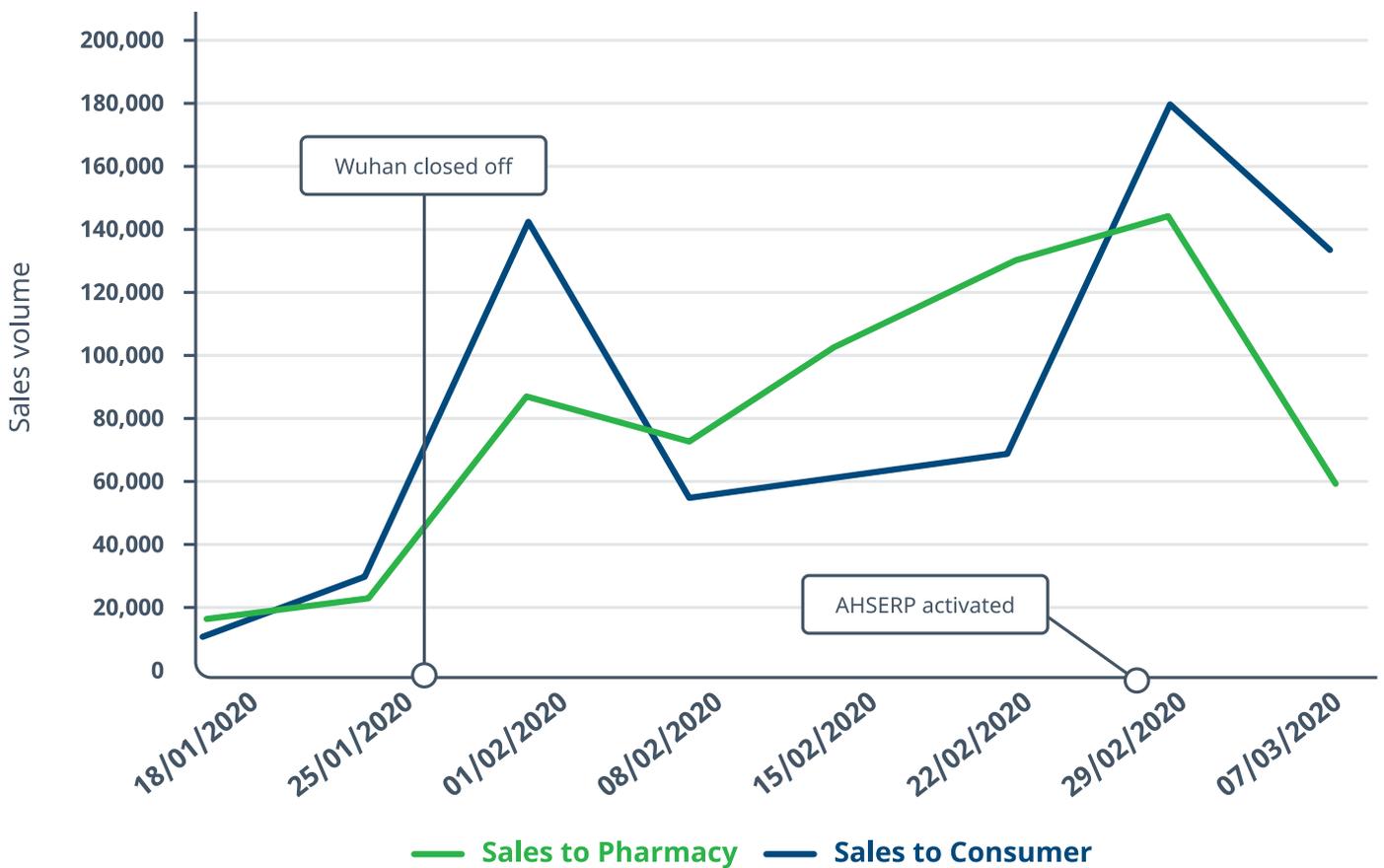


Figure 16: Weekly volume sales into pharmacy compared against sales to consumers for a selected hand sanitiser brand.

Source: IQVIA Pharmacy Scan and IQVIA DDD, ex-wholesale data.



OVER-THE-COUNTER ASTHMA PRODUCTS

A closer examination of over-the-counter asthma products reveals an exponential increase in demand, with unprecedented growth driven by COVID-19 impact. In the week ending 21st March 2020 asthma product sales increased by 272% compared with the same week in 2019, with the highest number ever sold in a week at 771,907 units across Australian pharmacies. Stock shortages are a concern for many pharmacists, particularly in rural areas. In particular, due to COVID-19 there has been unprecedented demand for salbutamol, following a high level of demand during the Australian bushfires in December and January.

Concerns around the potential shortages of critical over-the-counter products have led to similar restrictions introduced by the Australian Therapeutic Goods Administration as described in the previous section for prescription medicines, limiting sales to one-month's supply or a single unit per purchase³². OTC pharmacy categories where stock shortages are of most concern include asthma medications, adrenaline autoinjectors, glyceryl trinitrate and naloxone³².

ASTHMA PRODUCTS	AVERAGE PAST 52 WEEKS	29 FEB 2020	7 MAR 2020	14 MAR 2020	21 MAR 2020
Weekly Units	232,427	223,566	317,786	368,131	771,907
(Growth % v 2019)	-	+9%	+52%	+84%	+272%

Table 2: OTC Asthma Products

Source: IQVIA Pharmacy Scan

Perspectives from healthcare professionals

IQVIA has surveyed Healthcare Professionals (HCPs) at the frontline of managing the COVID-19 outbreak, general practitioners, respiratory physicians and hospital pharmacists, to understand how we can support them efficiently and effectively and gather the insights necessary to help advance our collective ability to fight the virus. The following insights are based on IQVIA's Medibus survey collected between 1st-6th April, and focuses on HCPs' main concerns surrounding COVID-19, the impact on their patients and themselves, their key needs at this time, and how they believe the pandemic will affect the model of care.

Key needs and concerns

In the current environment of rapid escalation in COVID-19 cases, overall impact at the hospital level remains uncertain, with perspectives differing depending on hospital and pharmacy type. Across the board the number of both in-patient admissions and out-patients has reduced in most centres, linked to the cancellation of elective surgeries and ward

closures. Many pharmacists believe their hospitals are currently quieter than usual but that they are awaiting an influx of patients. In terms of pharmacy operations, 48% of pharmacists surveyed feel COVID-19 has had a large or very large impact, with measures including physical distancing, staggered rostering, additional cleaning, and temperature checks commonly introduced (Figure 17).

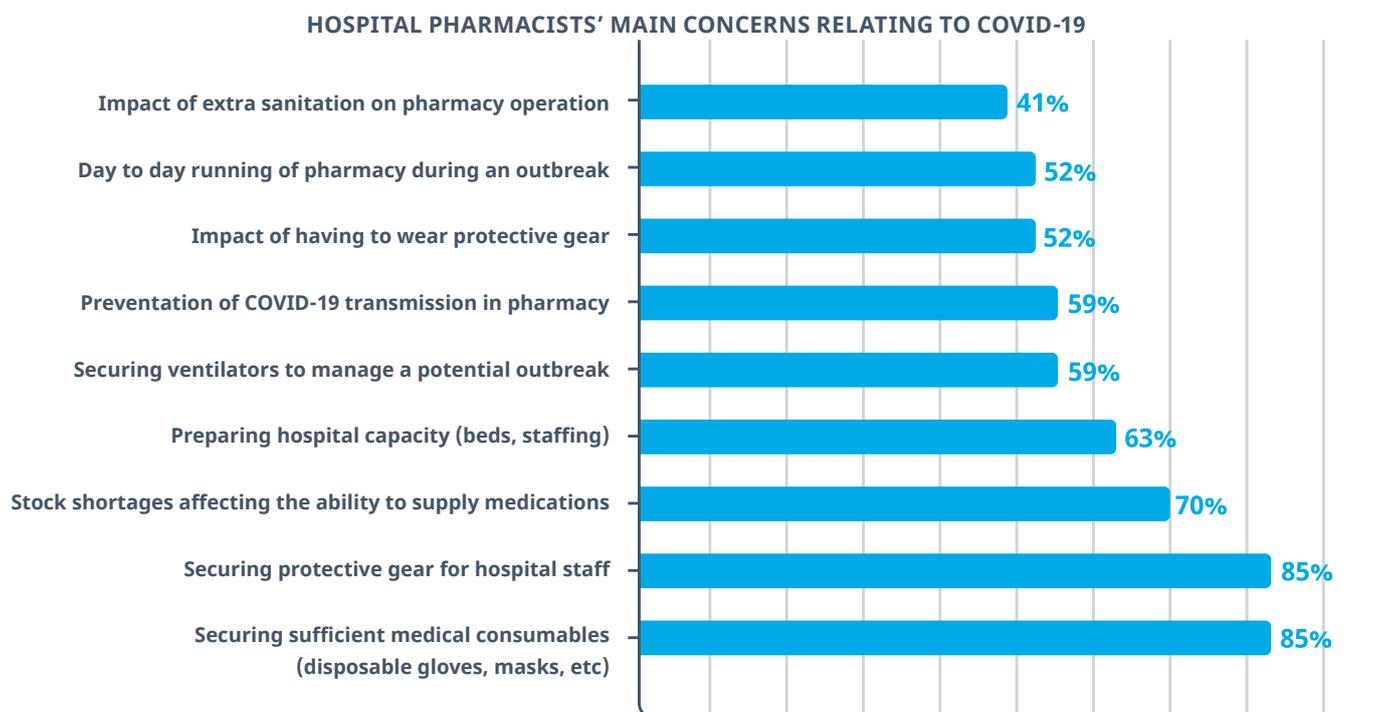


Figure 17; Hospital pharmacists' key concerns relating to COVID-19. % providing top-two-box rating.

Source: IQVIA Medibus, April 2020, n=27 Hospital Pharmacists.

GPS' KEY NEEDS RELATING TO COVID-19

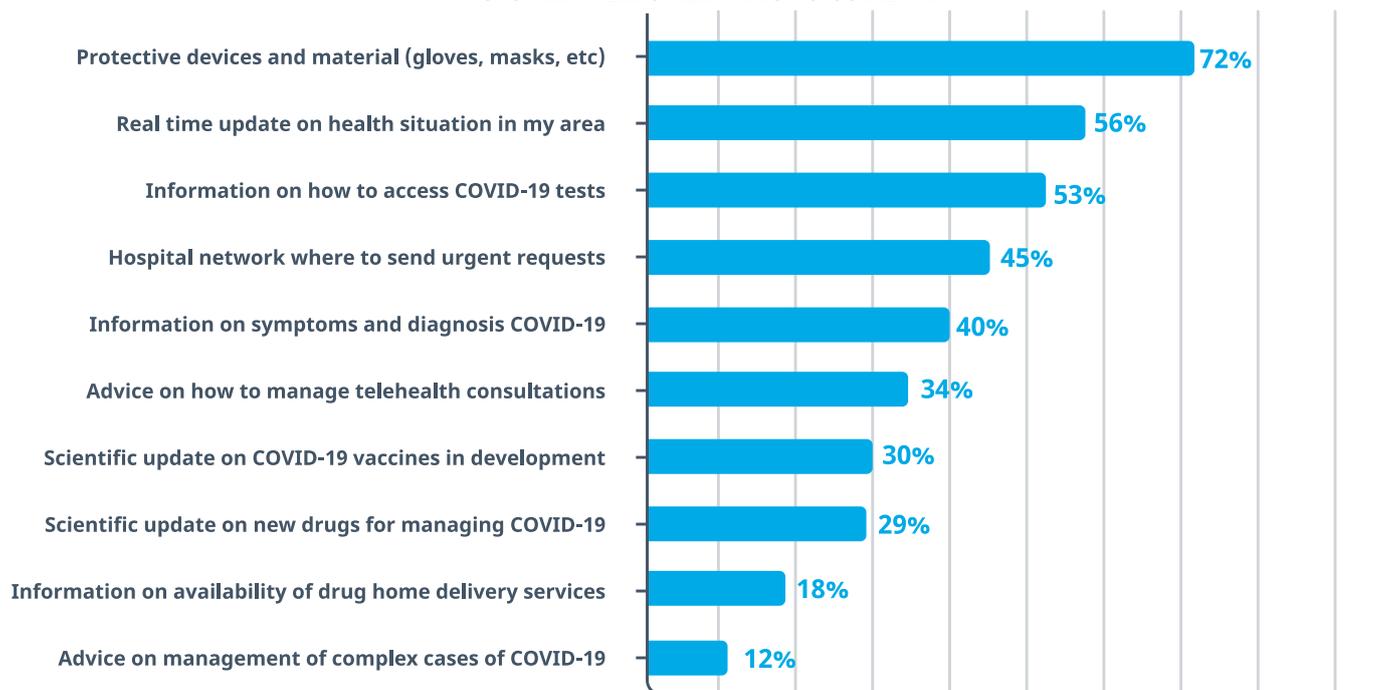


Figure 18; GPs' key needs relating to COVID-19.

Source: IQVIA Medibus, April 2020, n=119 GPs.

The key need highlighted across both GPs and Respiratory Specialists is for personal protective equipment (PPE). GPs also indicate a need for further real time information on the situation in their local area, as well as for information on how to access tests for COVID-19, as highlighted in Figure 18 above. Responses reflect the national prioritisation of testing and PPE to major COVID-19 centres, which means these materials have been in short supply. For respiratory physicians, guidance on the hospital network and where to send urgent patients, both those testing positive and negative for COVID-19, is also a major concern. Among hospital pharmacists, securing adequate supply of medical consumables and protective equipment is the primary concern, followed by shortages in stock which may affect their ability to supply medications throughout the course of the pandemic.

Managing high-risk patients

Patients with chronic conditions such as cardiovascular disease, diabetes and respiratory disease currently present the greatest concern to GPs with regards to COVID-19, as illustrated in Figure 19 below. Furthermore, patients with compromised immune systems, such as those undergoing chemotherapy, are also considered at risk. At this stage, mental health disorders are not raised by many GPs as being a significant concern, however the rates of such conditions will need to be carefully monitored for the potential impact of increased stress and anxiety caused by the pandemic and resulting social distancing measures.

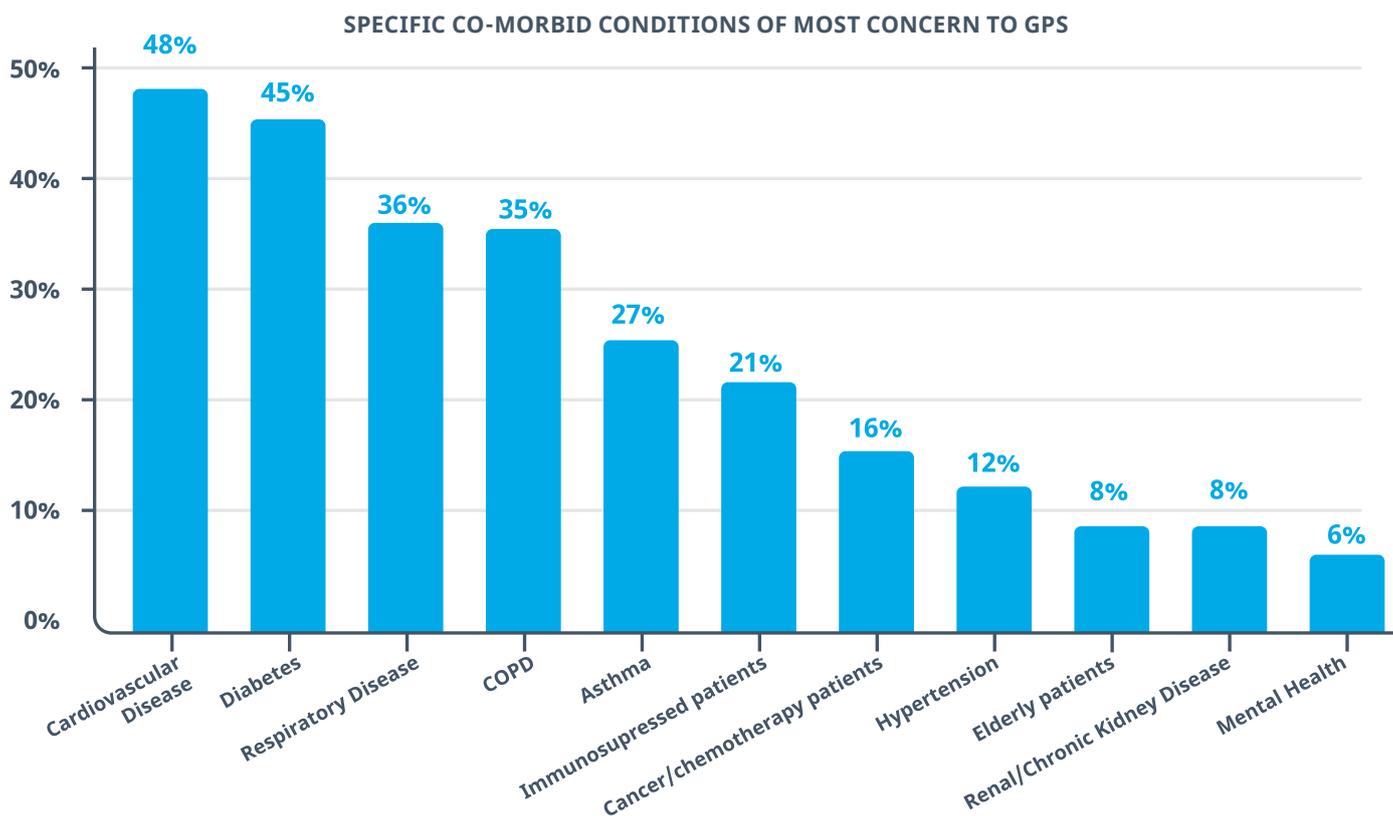


Figure 19; Specific co-morbid conditions of most concern with regards to COVID-19.

Source: IQVIA Medibus, April 2020, n=119 GP

GPs' concerns over patients at highest risk align with initial mortality data which suggests that certain comorbidities put patients at significantly higher risk of dying from COVID-19 (Table 3)³³. These data show a mortality rate for patients with pre-existing cardiovascular disease nearly ten-times higher than those with no comorbidities.

The ability to provide ongoing care throughout the crisis to patients with chronic conditions is a significant concern for almost all clinicians.

The majority of both GPs and respiratory specialists have provided patients with additional repeat scripts to ensure medicine supply if the pandemic worsens, as observed in the prescription demand trends. As well as ensuring supply for the patient, many GPs see this as a strategy to manage potential capacity concerns throughout the health crisis.

COMORBIDITY	DEATH RATE (ALL CASES)
Cardiovascular disease	10.5%
Diabetes	7.3%
Chronic Respiratory Disease	6.3%
Hypertension	6.0%
Cancer	5.6%
No pre-existing conditions	0.9%

Table 3; COVID-19 mortality rate by comorbidity. Death rate defined as number of deaths/ number of cases.

Source: Worldometer, Age, Sex, Existing Conditions of COVID-19 Cases and Deaths

Proactive self-isolation and increased personal hygiene measures are the main recommendations provided by GPs to high risk patients, linked to public health measures. Two-in-three also have also discussed the importance of compliance with prescribed medications.

Whilst compliance is likely to form part of GP-patient discussions in ordinary circumstances, this topic will become increasingly important as patients see their clinicians less frequently, and potentially feel less able to access sufficiently personalised care.

Nearly one-in-five have recommended delaying the start of a new treatment in light of COVID-19, suggesting there is already an impact on access to treatment for the broader population. It will be important to monitor the patient groups and therapeutic categories where such delays in treatment are occurring, to determine the risks and impact of under-treatment in these areas and assess whether interventions are required to ensure continued access to treatment.

Shortages in supply

Stock-outs have been experienced by over half of GPs, with the majority facing shortages for Ventolin and other respiratory products, as well as hydroxychloroquine, influenza vaccines and over-the-counter pain relief. Whilst some patients have been able to access their medicines from alternative pharmacies, in many cases these shortages have led to delays for patients in accessing their treatments. All hospital pharmacists have experienced stock shortages, again primarily for respiratory medicines (81%), as well as medicines to treat chronic conditions such as diabetes and hypertension (48%). Whilst a range of measures have been put in place to manage stock supply, including increased ordering, using alternative suppliers and sharing across hospital networks and limiting dispensing supply, only in a small minority, 12%, of cases were the shortages reported fully successfully resolved, with the remainder continuing to experience problems accessing required treatments.

SPECIFIC ADVICE PROVIDED BY GPs TO PATIENTS WITH COVID-19 RISK FACTORS

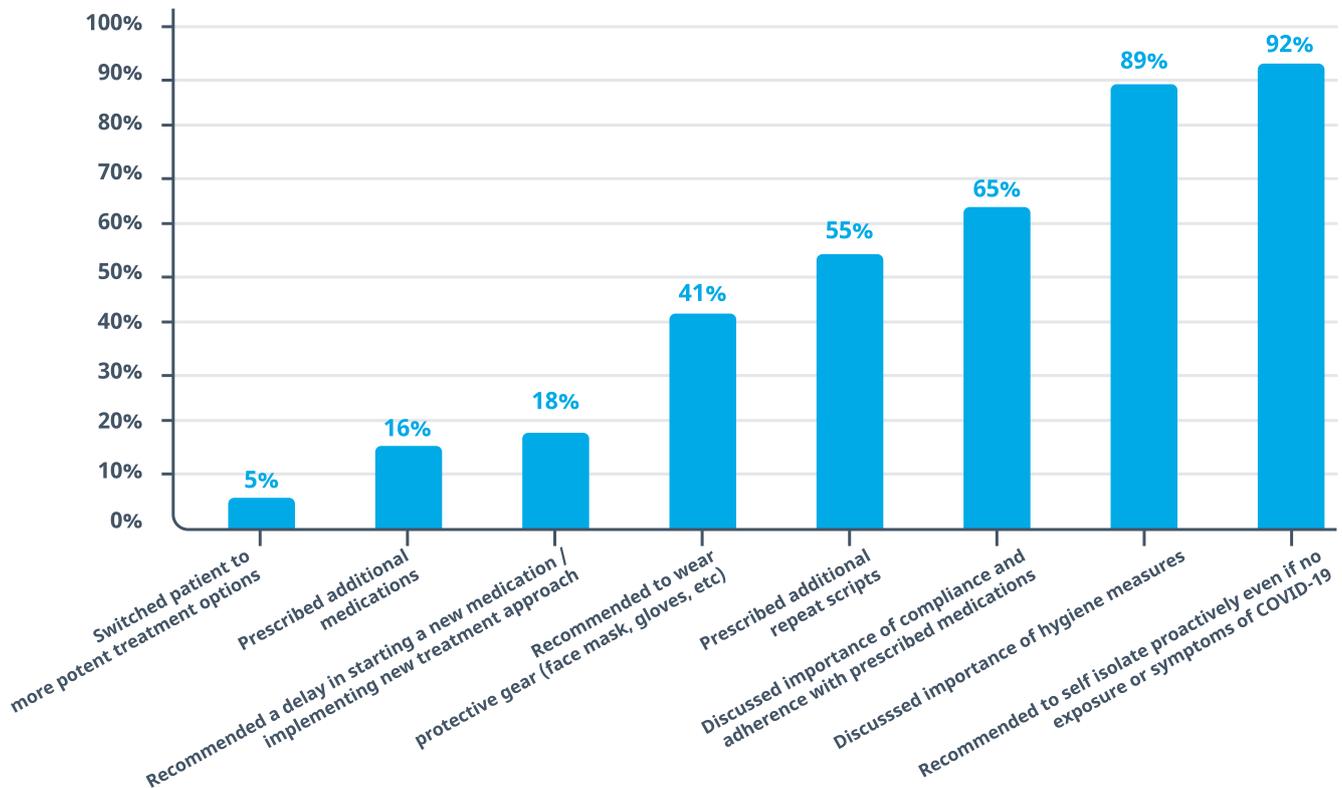


Figure 20; Specific advice provided by GPs to patients with COVID-19 risk factors.

Source: IQVIA Medibus, April 2020, n=119 GPs.



Anticipated impact on the model of care

Clinicians are aligned in the belief that COVID-19 will radically change the current model of care.

Primarily, there is consensus that Telehealth will become the standard of care, even in the case of patients who live locally, following the commitment of the Commonwealth government to expand Medicare-subsidised Telehealth services for all Australians³⁴.

The ability to offer video or phone consultations is seen to bring a number of benefits, not only in reducing risk of infection between patients and clinicians, but eight-in-ten GPs also believe this will create efficiencies that will enable them to better handle capacity constraints if the pandemic worsens. Many GPs also believe it may be necessary to expand the role of practice nurses and administrative staff, to support in triaging patients and/ or managing chronic patients. Among respiratory physicians, there is a desire to refer more of their patients to home treatment or infusion services, particularly in the case of elderly patients at risk of COVID-19 related respiratory disease.

Consequences for the healthcare and pharmaceutical sectors

In parts of Europe and the US, COVID-19 cases are creating a crisis for healthcare systems as hospitals are inundated with serious and critical cases. Without a slowing of transmission, Australia's hospitals will be overwhelmed with COVID-19 cases. The consequences will impact all aspects of the healthcare system. Shortages in the supply of medical services, drugs or equipment may contribute to the loss of life for non-COVID-19 patients.

The pharmaceutical industry faces significant threats, to maintaining the supply of essential medicines, as well as to the promotion of in-line brands and strategy for new launches. Specific challenges include supply chain issues following unprecedented volatility in demand, reduced ability to access HCPs, delays in product approvals and access, and anticipated decline in patient visits to HCPs. Amidst the current atmosphere of uncertainty, pharmaceutical companies must establish risk mitigation strategies and define a new way forward, to be able to continue the manufacture, supply and development of essential medications.

Barriers to Medical Service Provision

The crisis poses a significant threat to medical service provision, as hospitals are forced to divert resources to manage the escalation in urgent clinical cases. As hospitals reallocate wards, staff and resources to care for patients during the pandemic, this will inevitably result in the de-prioritisation or delay in care for non-critical cases. Additionally, self-isolation directives and the fear of risk of infection is likely to form a barrier which prevents individuals from seeking treatment.

Mitigation activities will be required, to ensure continuity in the provision of medical services for non-COVID-19 cases. Telehealth has already been flagged as a critical tool in enabling people to access essential health services in their home whilst undergoing self-isolation or quarantine.

The agreement announced on 29th March is designed to enable continuity of normal patient care, whilst protecting both vulnerable populations in the community and healthcare professionals themselves and preserving scarce resources such as PPE³⁵.

Furthermore, 'Hospital in the Home' and 'Hospital Substitute Treatment' services also play a role both in reducing the burden on medical centres and hospitals during the time of crisis, as well as in protecting vulnerable groups, such as those with suppressed immunity due to chemotherapy or immunotherapy.

The effects of COVID-19 on immunosuppressed individuals is likely to be significant. Initial published reports from China on the outcomes of cancer patients infected with COVID-19 indicated a 3.5 times higher risk of mechanical ventilation, ICU admission, or death compared with patients without cancer³⁶. These early findings suggest an increased risk in cancer treatment during this time, which raises difficult questions over how and when to provide treatment. Services which provide infusions to patients in their own home, where clinically appropriate, offer a safe, low-risk alternative to a hospital visit where both attendance at, and travel to and from, a hospital would otherwise expose the patient to greater infection risk.

With the general population increasingly isolated as tighter lock-down restrictions are introduced, patient support and out-reach services are likely to become increasingly important in assisting to monitor and promote treatment compliance and the early detection of problems requiring clinical care.

Supply Chain Risks

The unprecedented volatility in demand across both prescription and non-prescription categories as outlined earlier in this report creates a serious threat

to the supply of many essential medications, as well as items such as PPE and ventilators. In addition to the growth in local demand, increased global demand may lead manufacturing countries to impose limitations on export. Additional barriers to manufacturing and transport, for example reductions in air transport and increased costs, may further compound pressure on the supply chain.

The impact on major supply chain stakeholders is variable, as illustrated in Figure 21 below. To manage the current crisis during the quarantine phase, stakeholders must re-align resources to deliver on immediate demands, manage the demand of COVID-19 related treatments, respond to extended prescriptions and the upsurge in consumer market purchasing, and engage customers through non face-to-face channels. The ability to monitor trends in supply and demand, in real time and with geographic precision, is critically important, with predictive analytics required to offer an early warning of potential shortages, hence permitting timely interventions.

Looking ahead to the recovery phase, it will be critical to understand demand levels following first quarter prescription behaviour and disease progression and appropriately manage stock.

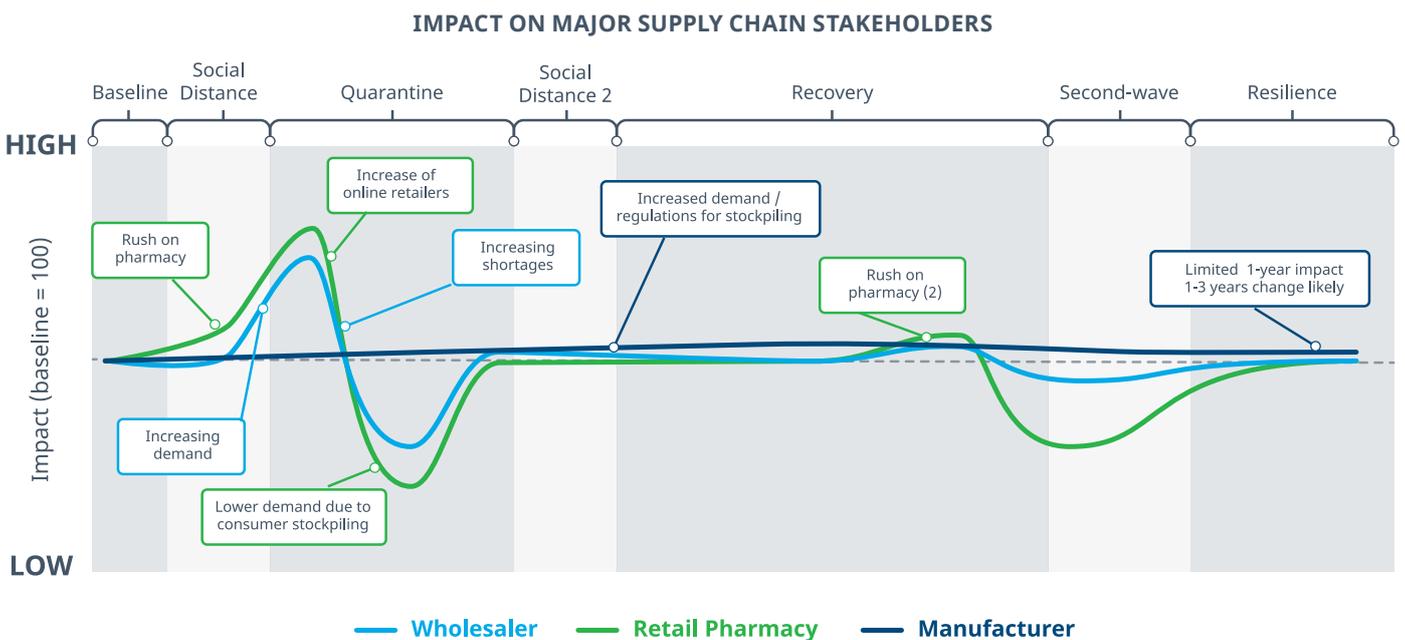


Figure 21; Retail Dynamics, the variable impact on supply chain stakeholders

Source: IQVIA Global Supplier & Association Relations insights (April 2020)

Stakeholders will need to assess parallel trade with export bans and manage the implications of delayed and future launches especially where supply chain service provision forms part of the proposition.

Finally, as we enter the second wave/ resilience phases, we will need to adapt to the new reality. Priorities will shift to determining the optimal location for API sourcing/production, assessing opportunities for adopting new/existing models (mail order/ homecare, reduced deliveries, virtual trials etc.), and managing the potential economic downturn triggered by COVID-19.

Maintaining Connectivity with Healthcare Providers

With the focus of healthcare providers (HCPs) increasingly directed towards handling urgent patient care, the resulting limitations in access to HCPs is a key challenge for pharmaceutical companies.

In the current environment, the question arises for pharmaceutical companies of how to maintain connectivity with HCPs without face-to-face engagement, with seminars, conferences, and workplace meetings now out of the question.

As demands on HCPs increase, companies must consider how they can assist clinicians to treat at-risk patients during a period of upheaval in the healthcare sector and establish a new model for education and information sharing between Medical Representatives and HCPs.

Feedback from pharmaceutical companies confirms that most have now ceased face-to-face activities and shifted to remote detailing via phone or internet. Based on IQVIA ChannelDynamics data throughout March, it is clear that captured face-to-face rep activity has markedly decreased week-on-week versus 2019.

MAR 2019 VS MAR 2020: % CHANGE IN ABSOLUTE RECORDED PROMOTIONAL VOLUME

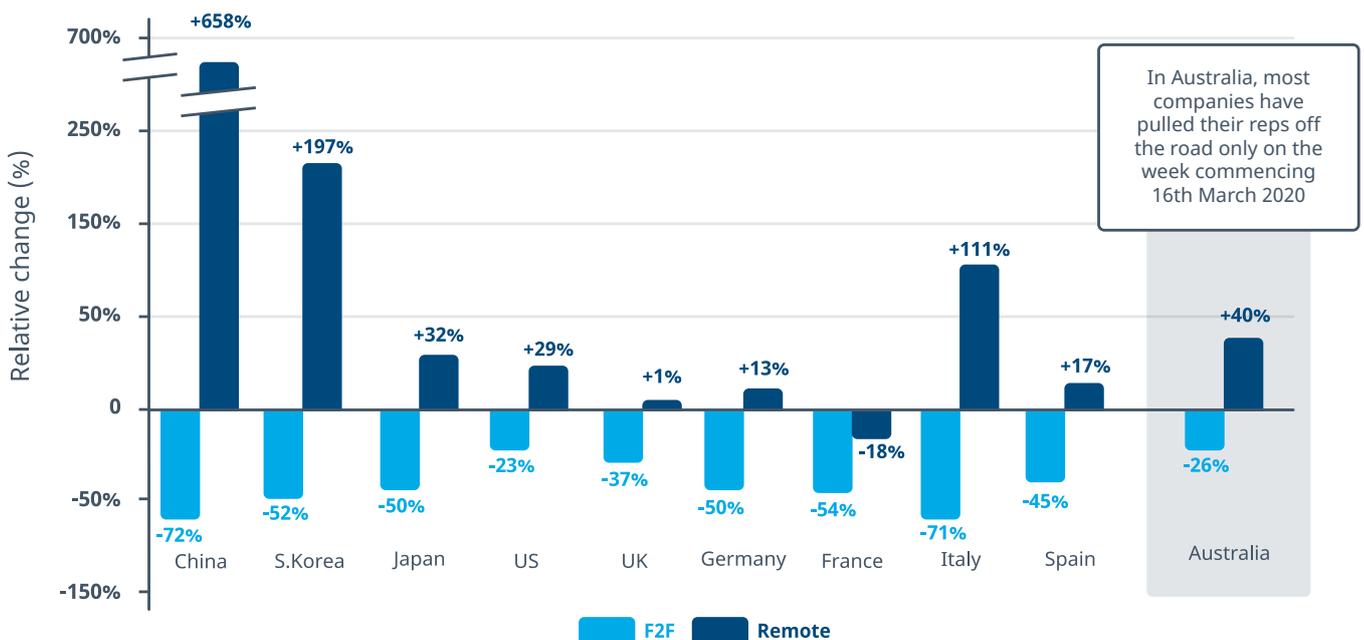


Figure 22: Change in absolute recorded promotional volume by country, Face-to-Face versus Remote.

Source: IQVIA ChannelDynamics.

While countries initially most affected by COVID-19, notably China and South Korea, have swiftly adopted remote channels, Australia has traditionally relied heavily on face-to-face promotion. However, feedback pre-COVID-19 has indicated that HCPs are readily welcoming digital interactions, and in March, the proportion of remote interactions vs. face-to-face detailing activity has seen a swing upwards, increasing to forty percent.

A review of remote interactions reveals there has been a rise in the recall of e-mail activity, which is the communication channel reportedly preferred among clinicians at this time³⁷. With remote activity gaining momentum compared to the same time last year, this assists in curtailing the decline in face-to-face detailing to produce a stable evolution of volume across all channels.

Further to the use of email, innovative virtual solutions will be required, for example, to facilitate Advisory Board discussions and to mitigate the risk of product approval/ access delays, or to create HCP portals which allow for peer-to-peer discussions linked to specific content.

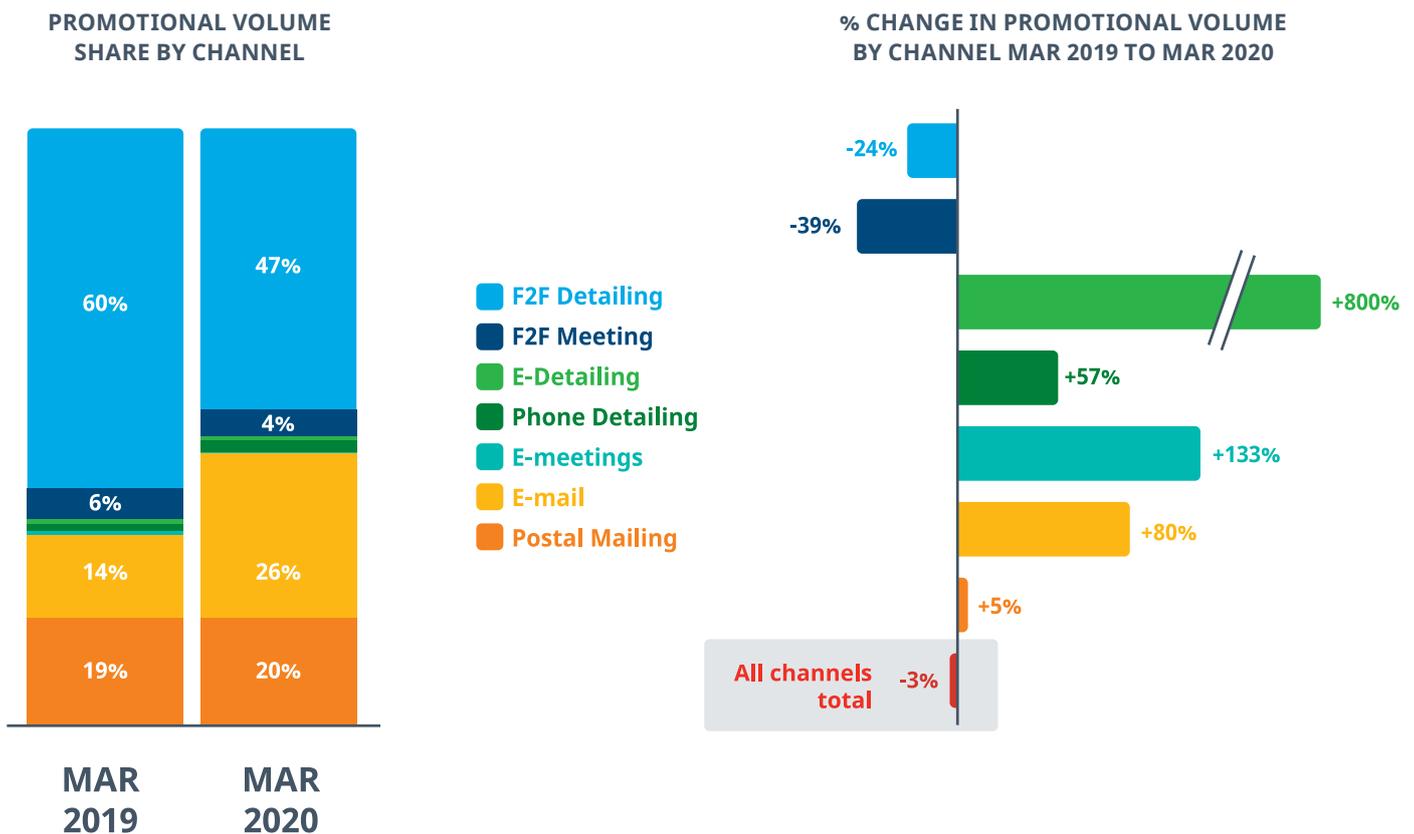


Figure 23 (a) and (b): Promotional volume share by channel and percentage change March 2020 vs March 2019.

Source: IQVIA ChannelDynamics.



Beyond the crisis

The COVID-19 pandemic is without doubt the greatest health crisis the world has faced in a century. The situation remains highly dynamic, with policies and recommendations continuing to evolve. There are early signs that Australia may be succeeding in flattening the curve of new cases, however there remains a long way to go in controlling the spread of the virus. We must continue to prepare for widespread and persistent impact. Even once the acute clinical crisis is resolved, there is no doubt that the economic and social impacts will be long-lasting.

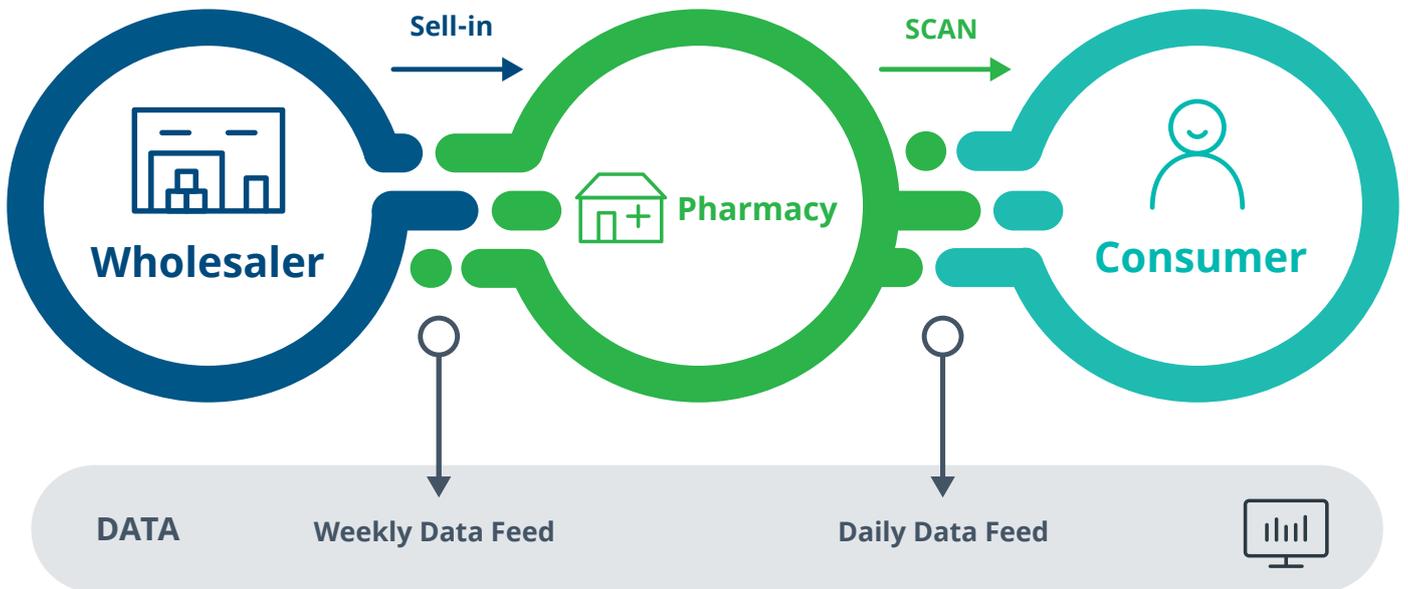
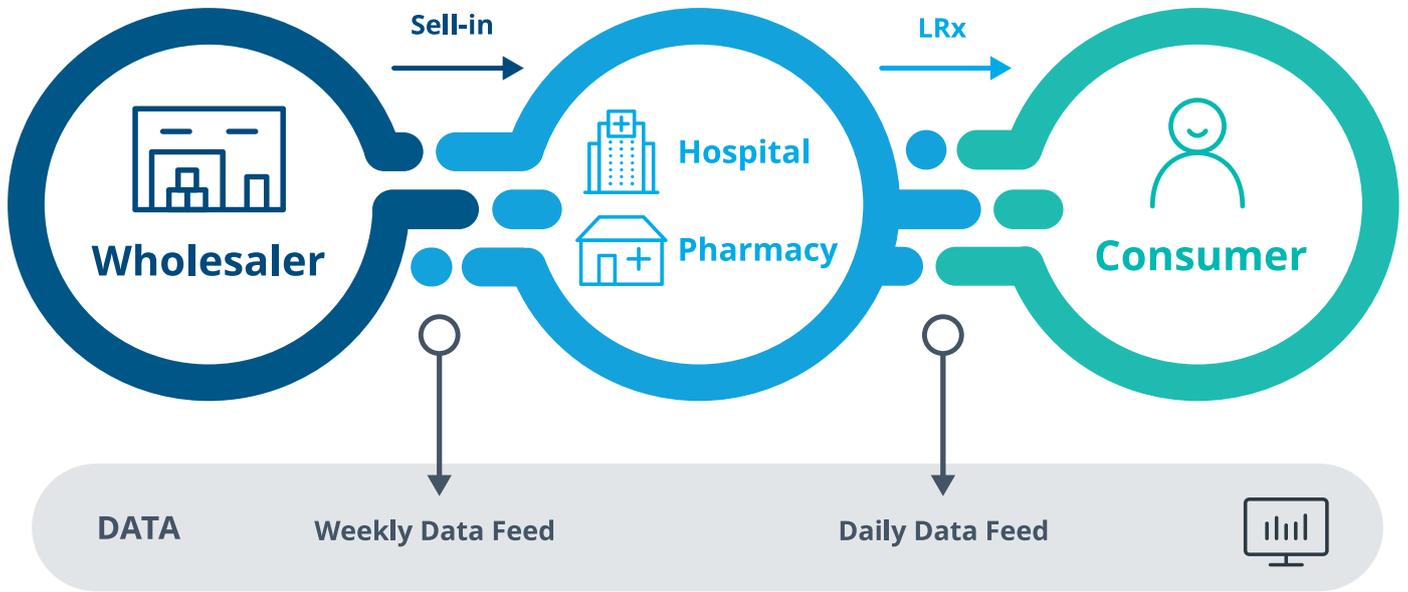
Beyond the direct impact of COVID-19 infections, the longer-term consequences for the health of the broader population are yet to be quantified. Many in the population will not have the same access to medical care and services during the crisis as they previously had, and this is likely to increase the morbidity and mortality of many treatable conditions. Consequently, the health impacts of this pandemic are likely to be observable for years. Furthermore, we are yet to understand the effects of the strict social distancing measures imposed to curb the spread of the virus.

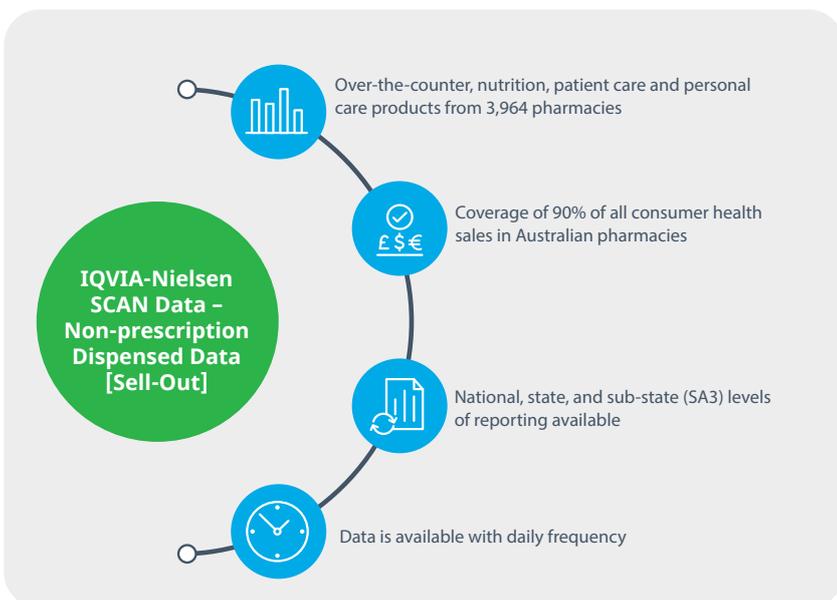
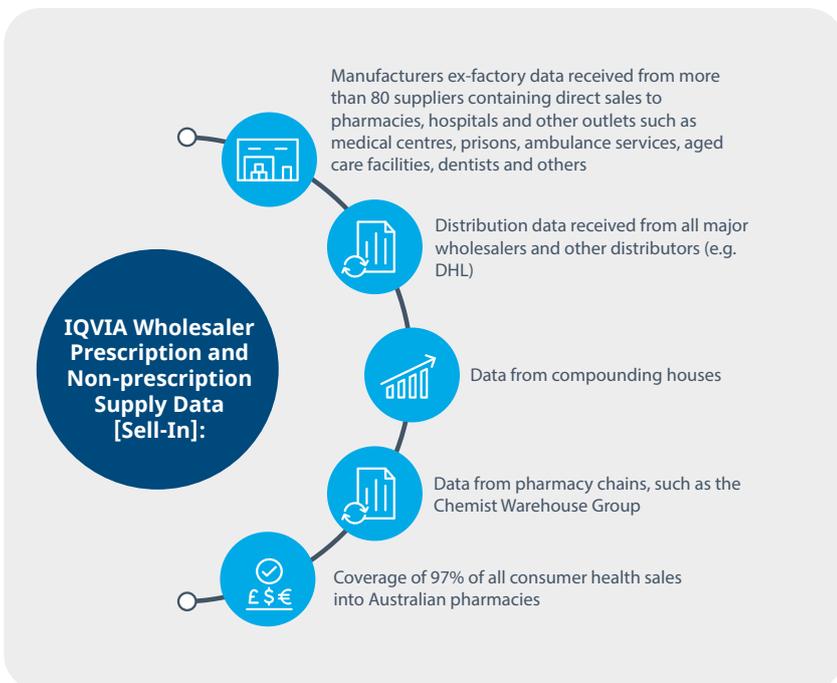
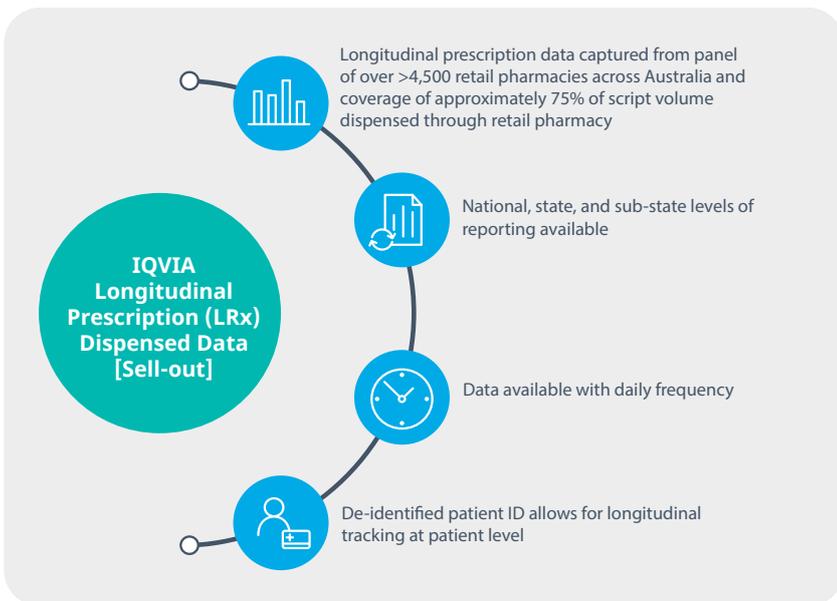
Mental health presents a key concern, as restrictions on social gatherings impact on many Australians causing increased stress and anxiety. Aboriginal and Torres Strait Islander people have been highlighted as a group with increased risk of infection, due to higher rates of chronic conditions. Access to care in Australia's regional and remote communities at a time of acute pressure on the supply chain is likely to become increasingly challenged. Delays to treatment and services must be managed to minimise impacts on patient outcomes and future bottlenecks for healthcare providers.

In the immediate term, the crisis requires adaptability and agility across every aspect of the healthcare system. The need for healthcare products and services is greater than ever, and there are opportunities for those who are able to respond quickly to change and adapt to meet the evolving needs of patients and healthcare providers. Innovative technologies, virtual and remote solutions and the smart use of data and analytics will all be critical in assisting the industry to respond to this crisis.

IQVIA data assets

IQVIA's proprietary data assets cover all stages of the supply chain in Australia:





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