Outpatient antibiotic prescribing in Australia fell by up to 38% during COVID-19 pandemic

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New research being presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Lisbon,

Portugal, (23-26 April) and published in the journal *Clinical Infectious Diseases* has found that the number of antibiotics prescribed in Australia fell by up to 38% during the COVID-19 pandemic.

"Antibiotic resistance threatens many of the gains of modern medicine in increasing life expectancy and decreasing infant mortality and hugely increases peri-operative risk," says Dr. Jack Skeggs, of Monash Infectious Diseases, Monash Health, Clayton, Australia, who led the research.

"Antimicrobial stewardship—reducing unnecessary use of antibiotics—is the first and least costly step in preventing the development of antibiotic resistance.

"The importance of antimicrobial stewardship is widely recognized, however outpatient programs have been harder to implement than in hospitals, so progress there has been slower."

Studies from around the world have shown reductions in outpatient antibiotic prescribing during the pandemic. However, the drivers of these reductions were unclear and could have been due to patients avoiding or being unable to see their GPs, strict measures such as lockdowns or less onerous measures such as targeted mask wearing, public education and culture shifts in hygiene.

To find out more, Dr. Jack Skeggs and colleagues at Monash Health looked at rates of outpatient antibiotic prescriptions across Australia before and during the pandemic.

The analysis of a representative sample of 10% of outpatient antibiotic prescriptions issued from January 2014 to April 2021 showed that prior to the pandemic there was a clear seasonal variation in prescribing.

Before 2020, antibiotic prescribing was 29% higher on average during the winter months of June, July and August, than in the summer months of December, January and February.

This seasonal variation disappeared during the pandemic. The number of prescriptions dropped sharply as national restrictions were implemented in Australia at the start of the pandemic in March 2020 and remained lower than usual during the entire period studied.

In winter 2020, there were 38% fewer antibiotics being prescribed each month than in the winters of 2018 and 2019 (1,432,000 prescriptions per month vs. 2,313,000). This was even lower than the usual summer: during the pandemic average winter month prescribing was 21% lower than pre-pandemic summer month averages.

Summer 2021 showed a 23% reduction in prescriptions compared to the summers of 2018 and 2019 (1,374,000 prescriptions per month vs. 1,817,000). More detail is available in Figure 1 of the abstract, see link below.

Reductions were predominantly in antibiotics used to treat community-acquired respiratory infections such as pneumonia and bronchitis (e.g. amoxicillin: Winter -52%, Summer -23% from pre-pandemic baseline).

Some of this reduction is likely to be due to the social distancing measures introduced to curb COVID-19 also reducing the spread of other respiratory infections. This includes viral infections. Antibiotics can be prescribed appropriately for bacterial infections which occur after viral infections, such as flu. They are, however, occasionally prescribed inappropriately for the viral infections themselves. Both types of prescribing are likely to have fallen during the pandemic.

Prescription of antibiotics commonly used for other indications

remained stable (e.g. trimethoprim, which is typically used to treat urinary tract infections: Winter -2%, Summer -3%).

However, prescription of amoxicillin-clavulanate followed a similar pattern to antibiotics commonly used to treat community-acquired respiratory infections (Winter -51%, Summer—37%), despite it not being recommended for this purpose under antibiotic stewardship guidelines.

The reduction in prescriptions suggests it is normally being prescribed in the community for inappropriate indications.

Decreases in antibiotic prescription were observed across all age groups, with the largest decreases seen in those aged 0-17 years (Winter -52%, Summer -24%).

Further analyses revealed that 84% of Winter and 97% of Summer decreases were driven by reductions in GP prescribing, despite GPs carrying out the same number of consultations as usual. In other words, the reductions in antibiotic prescriptions were not driven by patients being unable to or afraid to see their GP.

In addition, reductions in antibiotic prescribing occurred in all states and territories despite significant differences in COVID-19 case numbers and duration of lockdowns. For example, South Australia, in which there were no lockdowns during the study period, and Victoria, where stay at home orders were in place for 208 days in 2020, experienced comparable reductions in prescribing.

Dr. Skeggs says: "This is particularly promising as it suggests that the reductions were not dependent on high case numbers or the most onerous social distancing measures like lockdowns and it may therefore be possible to maintain some of the decreases after the pandemic."

Taken together, the results suggest the explanation for the drop in prescribing to be multifactorial.

Dr. Skeggs says: "Existing community antimicrobial stewardship programs, community education related to personal hygiene and handwashing, culture shifts in mask wearing and social distancing and, possibly, reduced prescribing for viral syndromes may all play a role.

"However, the finding that significant reductions existed in states without high case numbers or lockdowns is promising and suggests that we may be able to maintain at least some of these decreases after the pandemic by encouraging these same culture shifts.

"Our finding that certain broad-spectrum antibiotics like amoxicillin-clavulanate appear to be being prescribed for community-acquired respiratory infections suggests that antibiotic prescribing for respiratory illness remains a valuable target for future anti-microbial stewardship programs."

More information: Reductions in Antibiotic Prescribing in Australia During the SARS-CoV-2 Pandemic: National Prescribing Data, *Clinical Infectious Diseases* (2022).

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