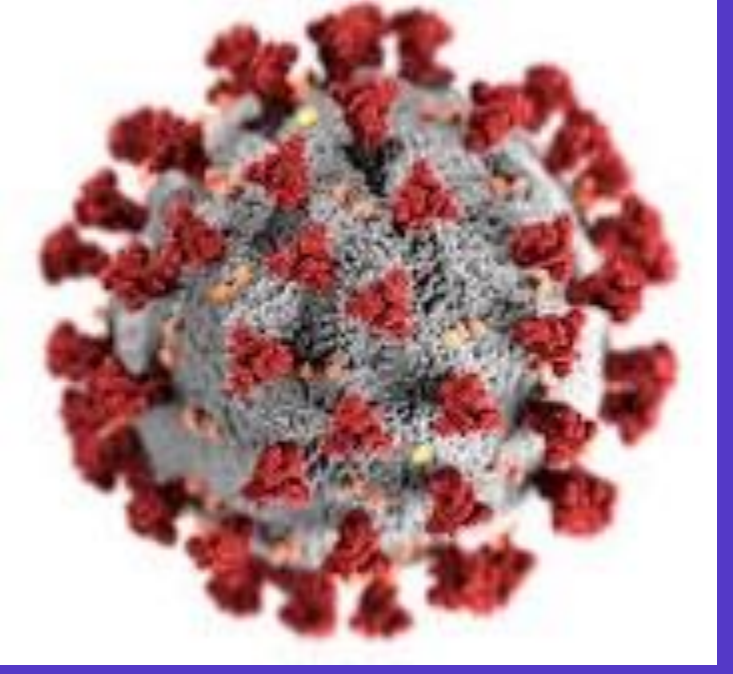


HOSPITAL ANTIBIOTIC USE DURING THE FIRST COVID-19 WAVE IN AUSTRALIA



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BACKGROUND

- Although COVID-19 is caused by the SARS-CoV-2 virus, a number of studies globally have reported that a high proportion of COVID-19 patients presenting to hospital are treated with antibacterials despite low reported rates of bacterial co-infection.



AIM

- To investigate the hospital inpatient usage of antibacterials commonly used to treat bacterial pneumonia during the first wave of the COVID-19 pandemic in Australia.



METHODS

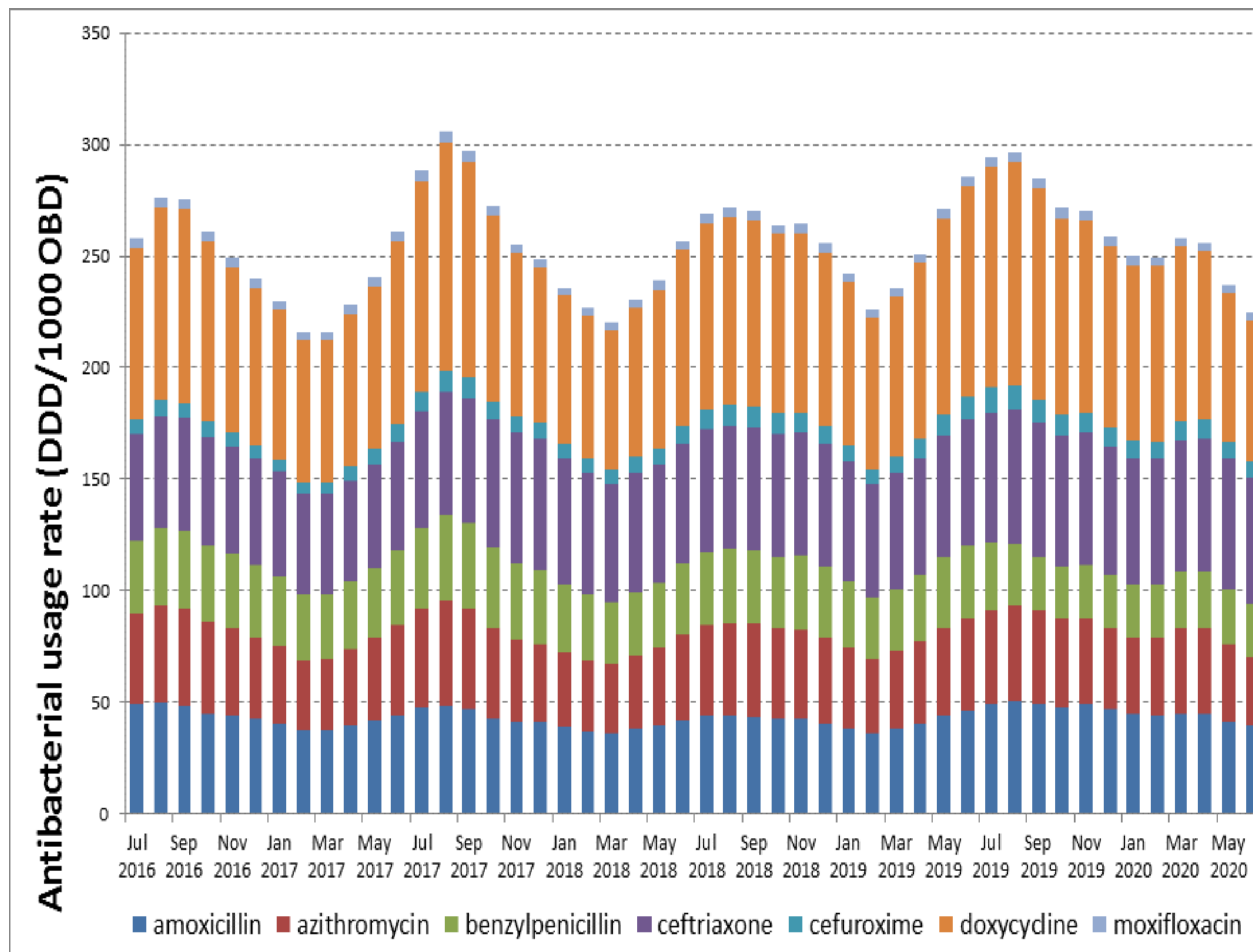
- Pharmacy dispensing data and patient occupancy data were analysed for the 6 month period January to June 2020 and compared to the same period in 2019.
- Usage rates (defined daily dose (DDD) per 1000 occupied bed days (OBDs)) were calculated to examine changes in prescribing trends.



KEY FINDINGS

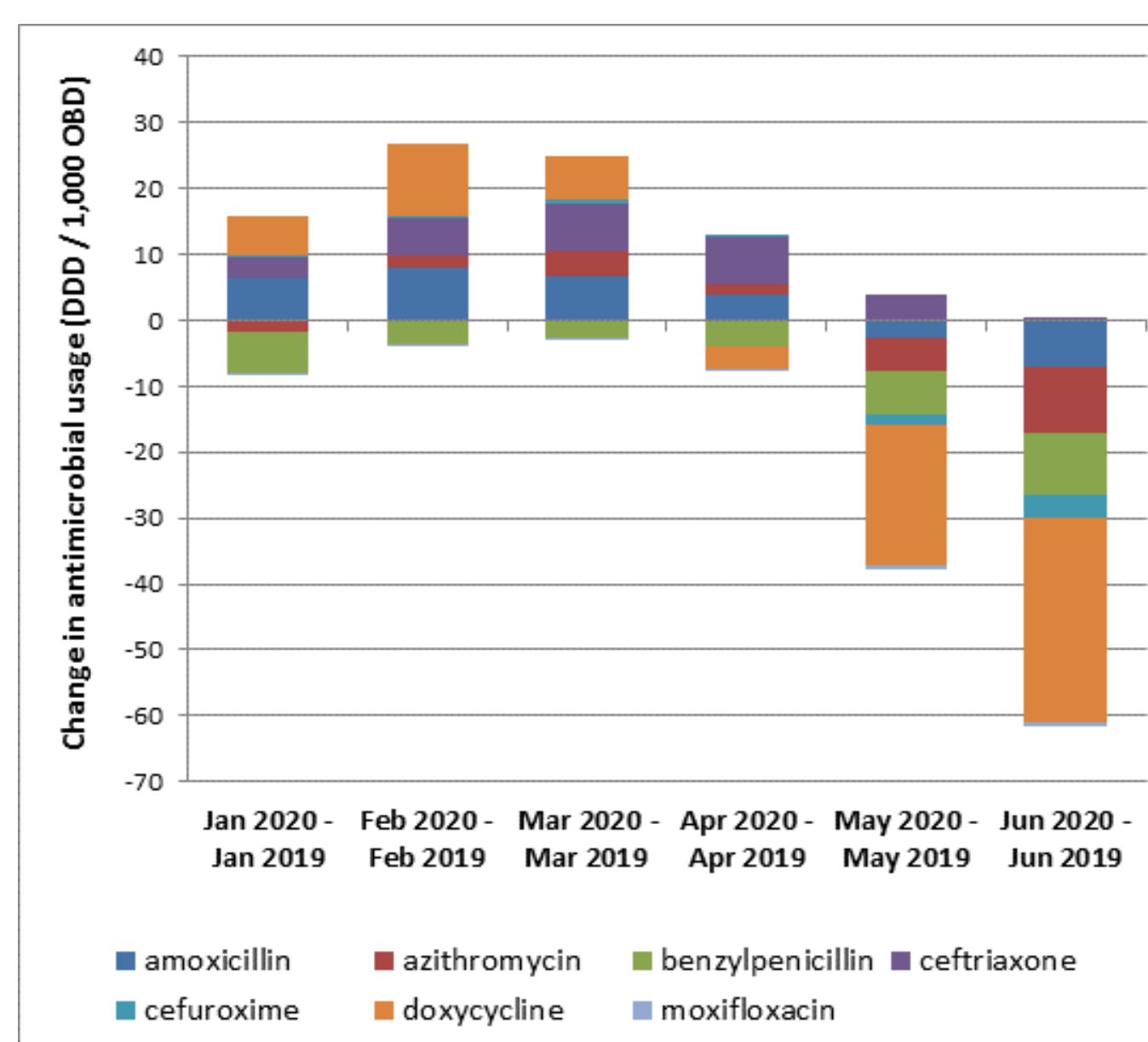
- Total usage rates for antimicrobials commonly used to treat bacterial pneumonia increased in the first few months of the COVID-19 pandemic (Jan-April) compared to the same period in 2019.
- National monthly usage of ceftriaxone was higher in the period January to June 2020, compared to the same period in 2019. In Principal Referral hospitals, usage of cefepime and gentamicin was higher for the first six months of 2020 compared to 2019.
- For the first 3-4 months of 2020, hospital inpatient usage of doxycycline and azithromycin was higher than the same months in 2019, but fell markedly in May and June.

National usage rates for antimicrobials commonly used to treat bacterial pneumonia



Antibacterials used to treat community acquired pneumonia typically follow a cyclical seasonal trend in usage, with higher usage rates in the winter months. Total hospital usage rates for doxycycline, amoxicillin and azithromycin are usually lowest between December and February. Doxycycline usage rate in January 2020 was 78.7 DDD/1,000 OBDs, compared to 72.6 DDD/1,000 OBDs in January 2019.

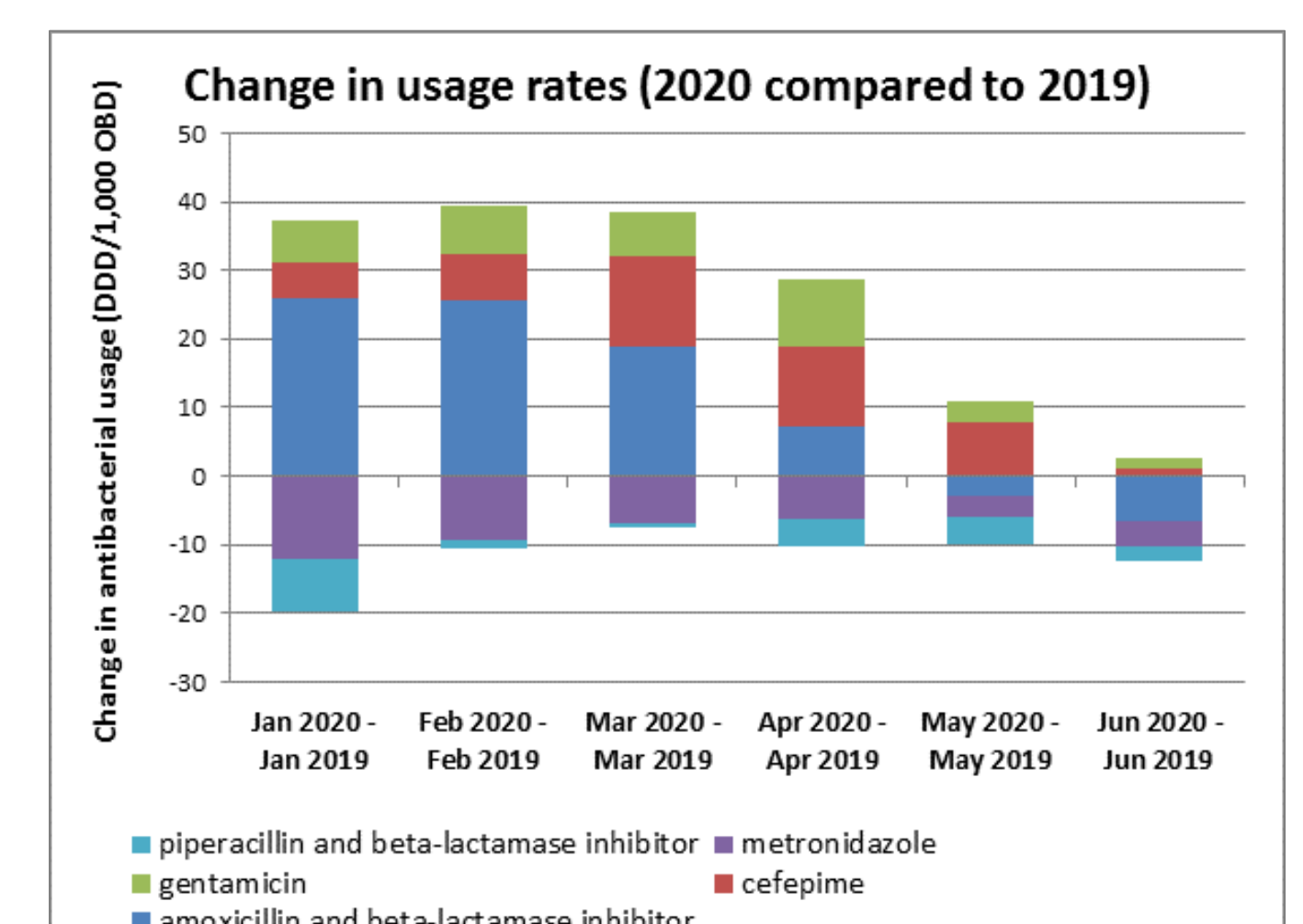
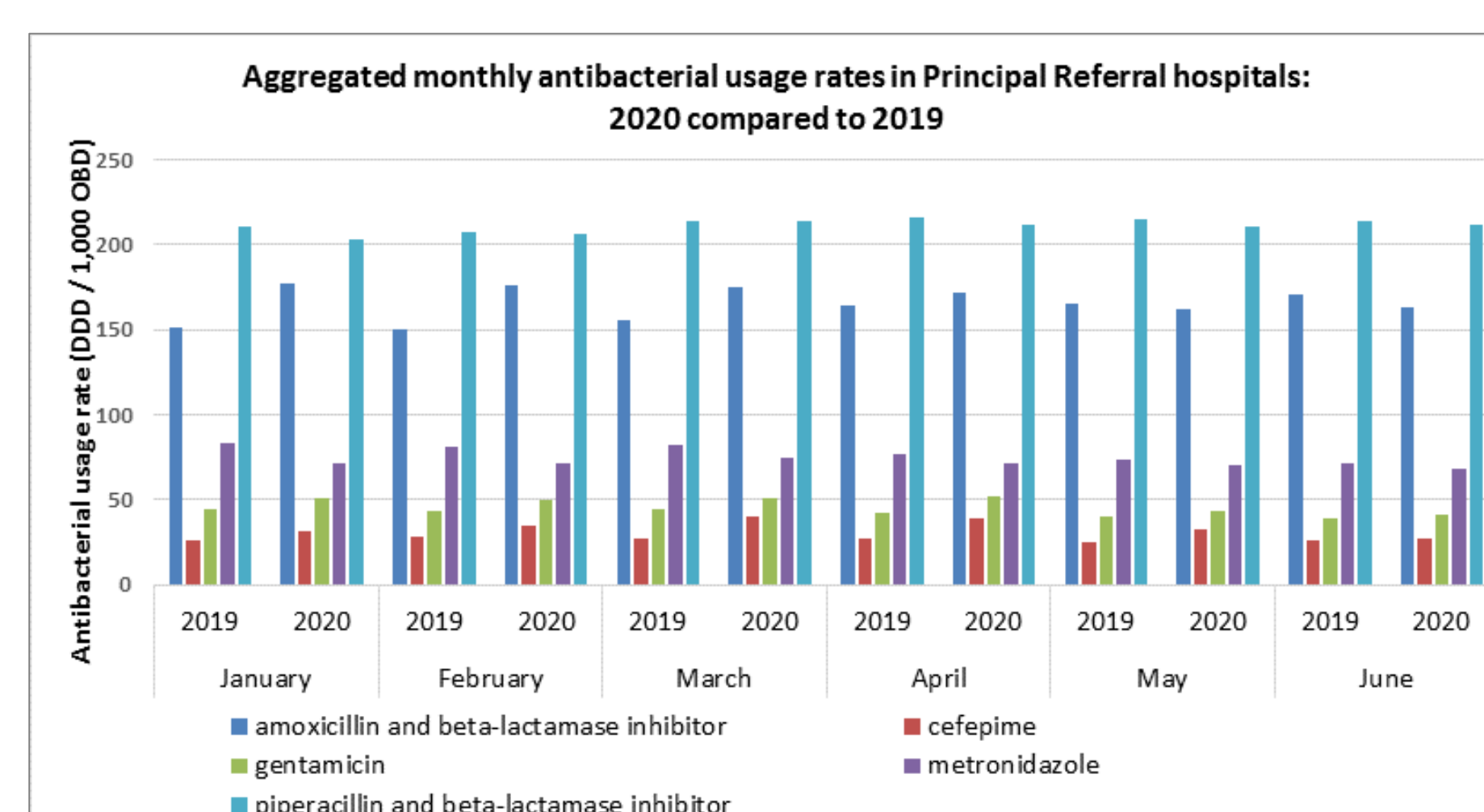
Change in national usage rates for key antibacterials: January – June 2020 compared to January – June 2019



During the initial stages of the COVID-19 pandemic (the first 3-4 months of 2020), total hospital usage rates for doxycycline, ceftriaxone, azithromycin and amoxicillin in Australian hospitals were higher than the same period in 2019. By May 2020, aside from ceftriaxone, usage rates for agents commonly used to treat bacterial pneumonia had markedly fallen compared to the same period one year prior. Ceftriaxone usage rates for January to June 2020 were higher compared to January to June 2019. The relative increase was highest in March and April (13.7% higher than the 2019 usage rate).

Doxycycline usage rates increased between January to March 2020, followed by a marked decline. The national aggregated hospital usage rate for doxycycline was 63.3 DDD/1,000 OBDs in June 2020, which was 33.0% lower than the usage rate in June 2019 (94.4 DDD/1,000 OBDs). Similarly, azithromycin usage rates were higher than the previous year in the first four months of 2020, but were lower in May and June. The aggregate hospital usage rate for azithromycin was 31.0 DDD/1,000 OBDs in June 2020, compared to 41.1 DDD/1,000 OBDs in June 2019, a decrease of 10.2%.

Antibacterial usage in Principal Referral hospitals



Usage rates for broad spectrum antibacterials used to treat hospital-acquired pneumonia (HAP) in Principal Referral hospitals were variable. Monthly total-hospital usage rates for piperacillin – tazobactam were lower in 2020 than in 2019. Use of cefepime and gentamicin was higher in 2020; in March 2020, the cefepime usage rate in Principal Referral hospitals was 40.2 DDD / 1,000 OBDs, an increase of 47.8% compared to March 2019. Usage of amoxicillin-clavulanate was higher for the first four months of 2020 compared to the same period in 2019, however usage in May and June 2020 were lower than the same months in 2019.

DDD = defined daily dose; OBD = occupied bed days



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