Reduction in acute coronary events without excess out of hospital cardiac arrest during the COVID-19 lockdown of 2020 in new South Wales, Australia

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Background: The COVID-19 pandemic has seen a significant reduction in reported ACS cases, raising concerns of avoidance behaviour contributing to increased OHCA incidence; exploring this phenomenon can help identify potential mediating factors for these changes and better understand its impact on cardiovascular health.

Purpose: Australia’s successful COVID-19 lockdown provides a unique opportunity to study whether it affected the incidence of ACS and OHCA, shedding light on the impact of pandemic-related behavioural modifications on cardiovascular health.

Method: Using data from the NSW Government database for ACS and NSW Ambulance dispatch data for OHCA, along with climate, traffic, and air quality data, we estimated the excess number of cases using an interrupted time-series analysis that adjusted for seasonal variations, day of the week and temperature. As a sensitivity analysis, we also conducted a two-stage time series analysis for the excess OHCA.

Results: During COVID-19’s first lockdown period (15th March to 1st July 2020), there were reductions in both ACS (-1259 [95% CI -1530, -989]) and OHCA (-69[-235, -92]) (Fig1). In this period there was a clear changes in anthropogenic activities with reductions in traffic (5670 ±1380 in 2020 versus 9150±1220 in 2018 and 8640±2370 in 2019) and flights (207±169 versus 884±152 and 902±103). These reductions were accompanied with improvement in PM2.5 (5.1±2.1μg/m³ versus 9.0±3.2 in 2018 and 8.2±3.2 in 2019), PM10 (13.3±5.4μg/m³ versus 20.9±8.6 and 17.7±6.0), and NO2 (7.4±2.7 ppb versus 8.4±3.3 and 9.0±2.8) (Fig2).

Conclusion: During the first COVID-19 lockdown in NSW, there was a significant reduction in the number of ACS cases without any associated excess in OHCA. This may be caused, at least partly, by the improved air quality from the behavioural changes.
Changes in Traffic and Flights Activity