



## Reduction of childhood trauma during the COVID-19 Level 4 lockdown in New Zealand

In January 2020, reports emerged from China of a cluster of patients with pneumonia caused by a novel coronavirus.<sup>1</sup> On 11 March 2020, World Health Organization declared coronavirus disease 2019 (COVID-19) a pandemic.<sup>2</sup> On 25 March 2020, New Zealand declared a state of national emergency and a lockdown known as 'Alert Level 4'. People were instructed to stay at home except for essential movement, recreational activity was limited to local areas, travel around the country was severely limited, all gatherings were cancelled, public venues closed, businesses except essential services closed, schools and university closed and healthcare services reprioritized.<sup>3</sup>

No event had led to such restrictions on daily life in New Zealand since the Great Influenza Epidemic of 1918–1920.<sup>4</sup> Most parents and virtually all children stayed home. Traffic on the roads was minimal. Could such restrictions on families be seen as the ultimate in injury prevention and lead to a reduction in trauma admissions? At the end of the lockdown, we looked at how paediatric trauma patterns had changed at our centre.

Starship Child Health is the New Zealand's only designated paediatric major trauma centre and admits approximately 1000 trauma patients annually. We interrogated the children's trauma registry (Collector; Digital Innovation, Forest Hill, MD, USA; see registry inclusion criteria in Appendix S1) for name, age, aetiology, place of injury, hospital transfer, diagnosis, injury severity score and major trauma (defined as injury severity score >15, admission to intensive care or trauma-related death) for admissions from 00.00 hours on 26 March 2020 until 23.59 hours on 27 April 2020, the period of the lockdown, and compared these to the same date range from the years 2016 to 2019. Statistical analysis was performed in generalized linear models in R.<sup>5</sup>

We found that the total trauma admissions during the lockdown were at a 5-year low (Figs S1,S2). There were 57 trauma admissions (four major trauma) during the lockdown compared to an average of 85 (six major trauma) during the same time period in previous years. Incoming transfers from around New Zealand were reduced consistent with a nationwide effect. No motor vehicle crash occupants were admitted. Two pedestrians were admitted: one injured overseas and transferred for care, and the other injured on a rural property. There was no increase in non-accidental injuries, although the numbers were small. In contrast, bicycle-related trauma increased to a 5-year high. Nineteen percent of children were injured on bicycles compared to an average of 3.6% in previous years (odds ratio 9.8, 95% confidence interval 3–46,  $P < 0.001$ ).

The location of injury was at home or on surrounding streets, except for one cycling injury in a school ground and one skateboard injury at a recreational facility. Instead of falls from playgrounds in public places, we saw falls from trampolines at home. Seventy-six percent of injuries occurred at home during the lockdown compared to an average of 32% in previous years (odds ratio 10, 95% confidence interval 4.7–25,  $P < 0.001$ ).

The lockdown coincided with a period of relatively warm, fine weather in New Zealand, which in our experience would increase trauma rates. Instead, trauma rates decreased across all aetiologies except for bicycle trauma, which increased fivefold. To understand the reasons behind the changes will require further analysis, but is probably linked to reduced traffic on suburban streets and increased supervision of children at home.

Some may interpret the jump in bike trauma as an injury prevention problem to be addressed. Others may feel warmed to see children able to cycle the streets again as in the olden days. The nature of bike injuries were mostly minor, predominantly limb and soft tissue injuries, although we did see one handlebar injury to the abdomen resulting in subserosal bruises on the colon but no perforation.

Our figures were too small to show a significant reduction in road trauma; however, data from the New Zealand's Midland Trauma System showed that in the first 2 weeks of the lockdown, motor vehicle crashes dropped to almost one quarter compared to the 2 weeks prior.<sup>6</sup> Apart from this study, we could find no other reports to date on the effect of COVID-19 on the volume and characteristics of trauma admissions.

Injury prevention was not the only winner from lockdowns around the world. Air pollution levels decreased by 20% across countries affected by the pandemic, with potential benefits on paediatric asthma and the global air pollution health crisis.<sup>7</sup> Carbon dioxide emissions decreased.<sup>8</sup> Newspapers reported a 'glimpse of an alternative future' offered by the pandemic.<sup>9</sup> Now, it is a good time to reflect on how we can approach not only injury prevention, but also the wider issues of health and the environment in a new and meaningful way.

### References

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## Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Appendix S1.** Starship Children's Trauma Registry inclusion and exclusion criteria.

**Figure S1.** Bar chart of the number of trauma patients admitted during the time period, 26 March–27 April, for the last 5 years.

**Figure S2.** Bar chart of the number of trauma patients admitted during the time period, 26 March–27 April, for the last 5 years.

James K. Hamill,\*†‡ PhD, FRACS 

Matthew C. Sawyer,\* DipHE, MN, CAISS

\**Children's Trauma Service, Starship Children's Health, Auckland, New Zealand, †Paediatric Surgery, Starship Children's Health, Auckland, New Zealand and ‡Department of Paediatrics, The University of Auckland Faculty of Medical and Health Sciences, Auckland, New Zealand*

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