Social restrictions during COVID-19 and major trauma volume at a level 1 trauma centre

Teagan L Way, Seth M Tarrant, Zsolt J Balogh

The coronavirus disease 2019 (COVID-19) pandemic has posed a variety of significant challenges. Since March 2020, the Australian government has introduced a series of social mobility restrictions, including supervised quarantine for returning overseas travellers. In health care, resources have been re-allocated, intensive care capacity increased, staff re-trained, and elective surgery postponed. It was suggested that major trauma volume would decline markedly during the pandemic, so that specialist trauma staff could be deployed elsewhere.[1] The frequency of self-harm and domestic violence, however, was expected to increase.[2]

The purpose of our observational study was to compare major trauma volumes at the John Hunter Hospital, Newcastle, during the period 1 March – 31 May before (2011–2019; to provide a large control group) and during the COVID-19 pandemic (2020). As the only level 1 trauma centre in the Hunter region, our hospital receives most patients from this area requiring trauma care. We analysed data routinely collected for the New South Wales trauma registry; our statistical analysis is described in the online Supporting Information. The study was granted formal ethics approval waiver by the Hunter New England Human Research Ethics Committee (reference, AU202004-17).

Our analysis included 3315 patients from the control period and 259 from the COVID-19 period. The age, sex, and injury severity score distributions were similar in the two groups (Box 1), as were those of mechanism of injury by month (Box 2). During the COVID-19 period, the number of admissions (259) was lower than the control mean (368; [standard deviation (SD), 73]; $P < 0.002$), as were the numbers of severely injured patients (96 *v* 124 [SD, 16]; $P < 0.001$), intensive care admissions (35 *v*

1 Demographic and clinical characteristics of patients admitted to the John Hunter Hospital with trauma-related injuries, March–May, 2011–2020

	Control (Mar–May, 2011–2019)	COVID-19 period (Mar–May 2020)	*P*
Number of patients	3315	259	
Age (years), mean (SD)	38 (21)	40 (23)	0.13
Sex (men)	2432 (73%)	183 (71%)	0.34
Blunt injuries	3041 (94%)	238 (94%)	0.76
Injury severity score, median (IQR)	9 (4–16)	8 (4–16)	0.21
Severely injured patients (scores > 12), annual mean (SD)*	124 (16)	96	< 0.001
Admissions, annual mean (SD)*	368 (73)	259	0.002
Length of stay (days), median (IQR)	3 (1–6)	3 (1–7)	0.44
Patients requiring surgery, annual mean (SD)*	142 (30)	106	< 0.001
Intensive care admissions, annual mean (SD)*	56 (10)	35	< 0.001
Length of stay (days), median (IQR)	3 (2–5)	3 (2–8)	0.97
Ventilation required, annual mean (SD)*	35 (9)	23	0.006
Ventilator use (days), median (IQR)†	3 (2–5)	3 (2–6)	0.93
Deaths, annual mean (SD)*	11 (3)	4	0.004

IQR = interquartile range; SD = standard deviation. * For COVID-19 period: number. † Ventilated patients only. ◆

2 Mechanism of injury, by month

Mechanism of injury*	Control (Mar–May, 2011–2019)	COVID-19 period (Mar–May 2020)
March	1172	80
Traffic	411 (35%)	34 (43%)
Recreational	383 (33%)	26 (33%)
Fall	212 (18%)	10 (13%)
Self-harm and assault	118 (10%)	7 (9%)
Other	48 (4%)	3 (4%)
April	1023	92
Traffic	323 (32%)	32 (35%)
Recreational	343 (33%)	32 (35%)
Fall	179 (17%)	16 (17%)
Self-harm and assault	116 (11%)	8 (9%)
Other	62 (6%)	4 (4%)
May	1120	87
Traffic	432 (39%)	28 (32%)
Recreational	366 (33%)	35 (40%)
Fall	187 (17%)	13 (15%)
Self-harm and assault	82 (7%)	8 (9%)
Other	53 (5%)	3 (4%)

* Traffic: all traffic accidents on public roads; recreational: leisure activities, non-traffic related car-, motorcycle-, bicycle- and animal-related trauma; other: burns and unspecified mechanisms. ◆

John Hunter Hospital, Newcastle, NSW. zsolt.balogh@hnehealth.nsw.gov.au • doi: 10.5694/mja2.50843

56 [SD, 10]; $P < 0.001$), patients requiring ventilation (23 *v* 35 [SD, 9]; $P = 0.006$), patients requiring surgery (106 *v* 142 [SD, 30]; $P < 0.001$), and deaths (4 *v* 11 [SD, 3]; $P = 0.004$). COVID-19 restrictions were strictest during April; the numbers of severely injured patients, patients requiring ventilation, and deaths were similar during April in the control and COVID-19 periods (Supporting Information, table).

Fear of contracting COVID-19 may have dissuaded people from presenting themselves to hospital, but the number of COVID-19 cases in the catchment area for our trauma centre was relatively low (279 cases over three months, including six intensive care admissions and four deaths, from a population of one million people). Lower admission numbers were therefore probably linked to social mobility restrictions.

We found no significant changes in mechanism of injury, in contrast to two reports of significant declines in traffic, industrial, sports, and fall-related trauma cases during periods of social restrictions.[3,4]

Our study was limited by its being a single-centre study, and it was restricted to a single COVID-19 wave in Newcastle. It included periods of no restrictions in early March, restrictions for the full month of April, and the easing of restrictions in May, a period not covered in previous studies.

Despite a lower than usual number of admissions, the demand for trauma care still required a fully functioning trauma service, and this should be taken into account by clinicians and hospital administrators when allocating resources.[5] Severely injured patients require comprehensive early management, and the availability of experienced senior trauma clinicians is essential.[6,7] On the basis of our experience of the first COVID-19 wave, switching staff from trauma specialist services to pandemic management would be unwarranted.[1]

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1 American College of Surgeons. Maintaining trauma center access and care during the COVID-19 pandemic: guidance document for trauma medical directors. 2020. https://www.facs.org/quality-programs/trauma/maintaining-access (viewed July 2020).

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7 Burrell AJC, Pellegrini B, Salimi F, et al. Outcomes of COVID-19 patients admitted to Australian intensive care units during the early phase of the pandemic [pre-print]; 16 Sept 2020. *Med J Aust* 2020; https://www.mja.com.au/journal/2020/outcomes-covid-19-patients-admitted-australian-intensive-care-units-during-early-phase ■

Supporting Information

Additional Supporting Information is included with the online version of this article.