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COVID-19

The impact of the UK national lockdown on trauma patterns and the pre-hospital advanced trauma team response within metropolitan London

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Abstract

Introduction: The societal changes triggered by the COVID-19 pandemic and resultant lockdowns have the potential to alter the incidence and nature of injuries within affected populations. We aimed to investigate these changes within metropolitan London and the impact lockdown had on London's Air Ambulance's (LAA) response to incidents.

Methods: This retrospective cohort study compared data from all LAA missions in the two-month period following instigation of the first UK national lockdown in 2020 to the equivalent period in 2019. Patient demographics, nature and severity of injuries, incident details and LAA mission parameters were assessed.

Results: LAA saw a significant reduction in the mean (standard deviation) of activations per week under lockdown (32.75 [4.95] vs. 54.25 [4.53], $p < 0.001$). The distribution of patients across different trauma aetiologies differed significantly under lockdown, with proportionately more injuries resulting from domestic violence (DV) (0.7% vs. 3.8%) and deliberate self-harm (DSH) (16.5% vs. 12.4%), although the absolute number of DSH fell. Significantly fewer incidents occurred in central areas of London, but injury severity was unaffected by lockdown. After adjustment for confounders, lockdown was associated with shorter drive times, but not overall response times. There was no association between lockdown and aetiology or severity of injuries.

Conclusion: The COVID-19 pandemic and ensuing UK national lockdown had a substantial impact on major trauma patterns within London and the subsequent LAA response. The feared rise in suicide was not observed, but there was a notable increase in DV frequency.

Keywords

injuries; air ambulances; pandemics; EMS; COVID-19; epidemiology

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INTRODUCTION

In March 2020, the UK government implemented a nationwide lockdown in response to the COVID-19 global pandemic.(1) This imposed restrictions on social interaction and non-essential travel to reduce the spread of infection and protect healthcare resources. Subsequently, NHS emergency departments reported a 49% reduction in all-cause attendances (2) and a 31% decrease in high acuity attendances,(3) consistent with internationally reported trends.(4–8)

Trauma is a leading cause of death among young adults in England (9) and is notable among diseases for the degree to which epidemiological patterns can be influenced by societal changes. Injury may result from several aetiologies (eg, interpersonal violence, accidental injury or suicide) and societal changes can influence each differently. Under national restrictions some areas in the United States reported increased levels of interpersonal violence, with Philadelphia recording its highest incidence of shootings for the past five years, whereas road traffic collisions decreased.(10–12) In Japan, excess suicide deaths were noted among women but not men as a consequence of the COVID-19 pandemic and countermeasures.(13) There were also concerns of a rise in domestic violence (DV), supported by an increase in domestic support helpline usage and website traffic, as previously observed during other crises.(14)

The US National Emergency Medical Services Information System (NEMSIS) reported an overall decrease in activations of 26.1%, and of 2.2% in those involving traumatic injury.(15) In the United Kingdom, the number of out-of-hospital cardiac arrests attended by London Ambulance Service (LAS) rose by 81% during lockdown, with response and scene times increasing significantly.(16) The following sought to assess the impact of the UK national lockdown on epidemiological patterns among urban trauma patients and pre-hospital emergency medical service mission parameters.

METHODS

Study design

This retrospective, observational cohort study reports on the incident details and response parameters of patients attended by London's Air Ambulance (LAA) for two months following the implementation of national lockdown on 23 March 2020, and the equivalent period in 2019. This service evaluation project did not require ethical approval and was registered with the Bart's Health Clinical Effectiveness Unit (registration number 11159). The STROBE checklist (17) for the reporting of observational studies was adhered to.

Patients and setting

LAA is a partnership between London's Air Ambulance Charity, LAS and Bart's Health NHS Trust. It provides a physician–paramedic advanced trauma team that responds to 999 calls (the UK's emergency telephone number) within metropolitan London 24 hours a day via fast response car and rotary aircraft. It aims to be by the patient's side within 30 minutes of the originating call. At LAS's emergency operation centre (EOC), an LAA paramedic screens 999 calls for incidents which meet criteria for activating LAA. Some incidents trigger an immediate activation (eg, person hit by train), others require the EOC paramedic to gather further information prior to activating ('interrogation'). Alternatively, LAS crews on scene can request LAA assistance directly.

A runsheet and further data for all missions are stored within the electronic database OnBase (Hyland Software Inc., KS, USA). Patient demographics, incident details, examination findings and information on interventions and disposition are included. If LAS crews on scene feel LAA's assistance is not required, they can cancel the team en route. In this instance, a paper record of the cancelled mission parameters, including reason for cancellation, is completed.

Data handling

Anonymised data on completed missions were inputted by a single investigator via an electronic case report form created in REDCap (Vanderbilt University, TN, USA), and data on cancelled missions by a second. All patients attended were included in the assessment of mission parameters. Patients who had not sustained traumatic injuries were excluded from the assessment of trauma epidemiology. Cancelled mission details were considered separately.

Outcome measures were decided upon a priori. Mission parameters of specific interest were overall response times and car mission journey times. Primary outcome measures for trauma epidemiology were aetiology and severity of injury. Aetiology was categorised to accidental injury, assault, deliberate self-harm (DSH) and DV. During lockdown there were anecdotal reports of an increase in DV. To assess this, DV was coded separately at data collection as assault occurring between members of the same household. DV was incorporated into the assault category for multivariable analysis due to low frequency occurrence. Injury severity was primary classified as no critical organ failure, one or more critical organ failure or traumatic cardiac arrest (TCA).

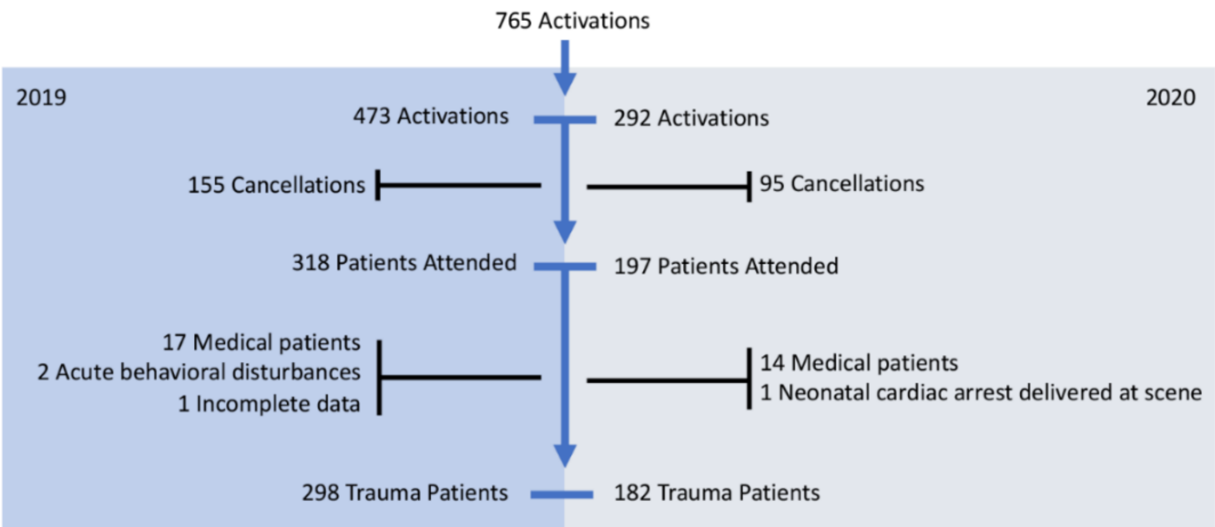


Figure 1. Composition of cohort detailing exclusion of cancelled activations, non-trauma activations and missing data

Statistical analysis

Data analysis was performed with SPSS v.23 (IBM, Armonk, NY, USA). Categorical data are presented as number (percentage) and the χ^2 test used to determine statistical difference. Normally distributed data are presented as mean (standard deviation) and analysed by means of an analysis of variance test. Data with alternative distributions are presented as median (interquartile range) and analysed via the Mann-Whitney U test. All *P* values are 2-tailed with an α level of 0.05.

Possible association between continuous outcome measures and independent measures in which a linear relationship was feasible was assessed by multiple linear regression analysis. The residuals were assessed for normal distribution and homoscedasticity. Multinomial logistic regression models were generated for categorical outcomes. All independent variables measured were included in the models. Model performances were evaluated on their predictive ability (likelihood ratio test) and goodness of fit (Pearson χ^2 test). Severity of injury was also measured via a categorised revised trauma score: severe (RTS < 2.5, P_s < 20%), moderate (RTS 2.5–6.0, P_s 20–92%) and minor (RTS > 6.0, P_s > 92%). As a sensitivity analysis, models were produced with both possible outcome measures as the dependent variable.

RESULTS

During the two-month period following the UK national lockdown LAA received 292 activations; the same period of the previous year saw 473 activations. Cohort composition is described in Figure 1.

Impact on London's Air Ambulance mission parameters

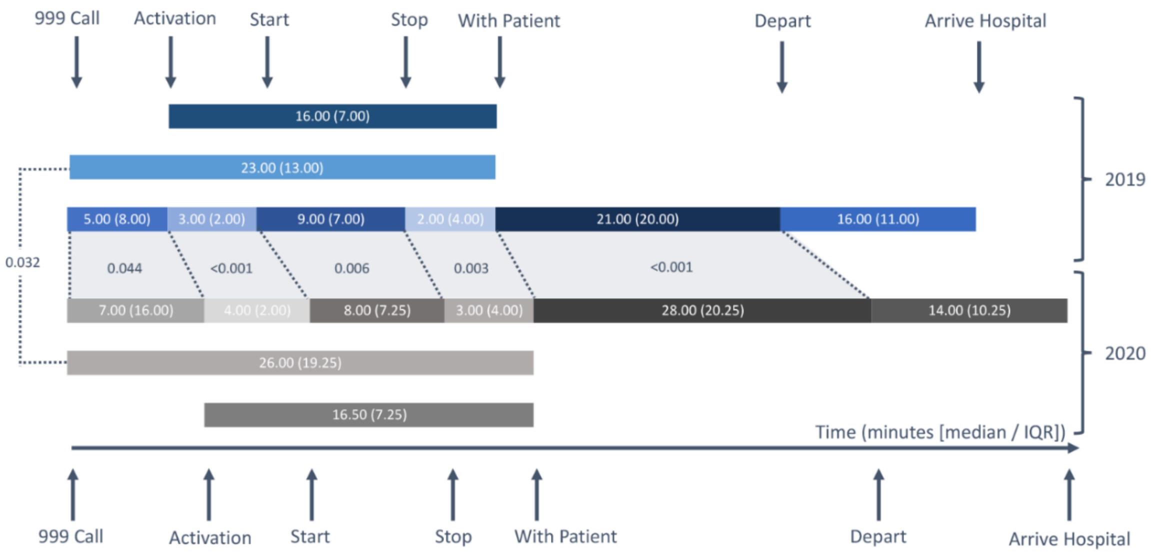
There was a significant decrease in the mean number of activations per week under lockdown (Table 1). There was a notable increase in car mission distance, although this did not reach statistical significance. No patients were transferred to hospital via helicopter under lockdown, and more were pronounced life extinct on scene.

There was a significant increase in the overall time from 999 call to the LAA team reaching the patient (Figure 2). Similarly, times from 999 call to LAA activation, from activation to engine start, and from stopping/landing to reaching the patient were prolonged under lockdown, as was time spent on scene. The median overall travel time for all missions was reduced under lockdown, but median car mission journey time remained unchanged.

Table 1. Overview of mission characteristics

	No lockdown (2019)	Lockdown (2020)	*P* value
Activations per week*	54.25 (4.53)	32.75 (4.95)	< 0.001
Dispatch criteria			
Immediate	65 (13.7)	55 (18.8)	0.100
Interrogation	345 (72.9)	190 (65.1)	
Crew request	54 (11.4)	42 (14.4)	
Secondary Transfer	0 (0)	1 (0.3)	
Not documented	9 (1.9)	4 (1.4)	
Vehicle			
Rotary aircraft	207 (43.8)	149 (51.0)	0.114
Fast response car	265 (56.0)	143 (49.0)	
Not Documented	1 (0.2)	0 (0)	
Car mission distance travelled (km)#	10.00 (10.02)	12.00 (15.00)	0.101
Aircraft landing site distance (m)			
0-50	26 (16.8)	16 (15.0)	0.826
50-200	57 (36.8)	39 (36.4)	
>200	70 (45.2)	49 (45.8)	
Not documented	2 (1.3)	3 (2.8)	
Car mission journey time (min)#	13.00 (9.00)	13.00 (12.00)	0.155
Response time < 30 min	228 (71.7)	125 (63.5)	0.050
Disposition			
Air transfer	11 (3.5)	0 (0)	0.012
Ground transfer with LAA staff	238 (74.8)	137 (69.5)	
Ground transfer without LAA staff	39 (12.3)	34 (17.3)	
Life pronounced extinct at scene	30 (9.4)	26 (13.2)	

Categorical data are n (%), with *P* values from χ^2 test.
*Normally distributed continuous data are mean (SD) and analysed using ANOVA; #non-parametric data are presented as median (IQR) with *P* values from Mann-Whitney U test.
LAA: London's Air Ambulance.



IQR: interquartile range. Only *P* values for significantly different times shown (from Mann-Whitney U test).

Figure 2. Graphical representation of mission times in 2019 versus 2020 (median [IQR])

The proportion of missions in which the LAA team were cancelled en route remained constant under lockdown (Table S1). There was a significant change in the reasons for cancellation after enforcement of the lockdown; more patients were recognised as life extinct by LAS crews and no reason was documented in a greater proportion of cancellations.

After adjusting for confounding factors, lockdown was associated with shorter drive times among car missions (Table 2). Drive times were also reduced in missions that took place later in the day, occurred in central areas of London and those with shorter driving distances. Lockdown was not associated with overall mission response times (time from 999 call to LAA reaching the patient).The models produced for overall mission response time explained less of the variability seen within the data than the car mission journey time model (adjusted R^2 = 0.032 vs. R^2 = 0.722) but both models predicted the outcome variables well (ANOVA $p = 0.001$ and $p < 0.001$, respectively).

Impact on trauma epidemiology

There was a significant increase in median age of trauma patients (Table 3) under lockdown, but the gender ratio and incident time of day and week remained unchanged. There was no significant difference in geographical distribution of incidents across districts (Figure 3), but a significantly greater proportion of incidents occurred in peripheral areas of London under lockdown.

A significant change in the distribution of incidents across the different trauma aetiology categories was noted. Fewer patients were injured as a result of interpersonal violence under lockdown, with a greater proportion of injuries resulting from DV and DSH. Although there was no overall significant difference in distribution across mechanism of injury between the two cohorts, there was a notable decrease in the proportion of penetrating trauma and increase in hanging and falls.

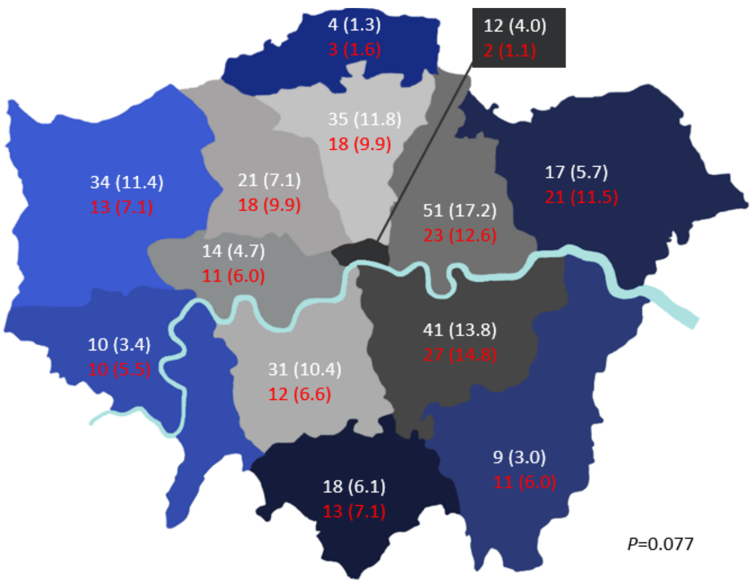
Table 2. Multiple linear regression of overall mission response times and car mission journey times

	Regression coefficients		Standardised regression coefficients			*P* value
	B	Standard error	β	95% CIs Lower	95% CIs Upper	
Mission response time (Adj R^2 = 0.032)						
Lockdown	2.546	1.553	0.071	-0.506	5.598	0.102
Weekday vs. weekend	2.435	1.660	0.064	-0.827	5.697	0.143
Time of day	-1.068	0.927	-0.061	-2.889	0.754	0.250
City area (central vs. peripheral)	6.107	1.606	0.167	2.952	9.263	< 0.001
Response vehicle (aircraft vs. car)	4.175	1.840	0.121	0.560	7.790	0.024
Car missions journey time (Adj R^2 = 0.722)						
Lockdown	-3.421	0.506	-0.235	-4.413	-2.428	< 0.001
Weekday vs. weekend	-0.457	0.522	-0.030	-1.486	0.571	0.382
Time of day	-0.854	0.253	-0.114	-1.353	-0.353	0.001
City area (central vs. peripheral)	1.383	0.697	0.089	0.011	2.755	0.048
Distance	0.684	0.038	0.801	0.609	0.759	< 0.001

Table 3. Trauma patients' demographic, temporal, geographic and incident details

	No lockdown (2019)	Lockdown (2020)	*P* value
Age*	30 (21–42.5)	33 (23.8–50.0)	0.034
Gender (male)	251 (84.2)	148 (81.3)	0.409
Time of week			
Weekdays	204 (68.5)	135 (74.2)	0.182
Weekends	94 (31.5)	47 (25.8)	
Time of day			
0600–1200	50 (16.8)	31 (17.0)	
1200–1800	91 (30.5)	55 (37.7)	0.985
1800–0000	101 (33.9)	64 (35.2)	
0000–0600	56 (18.8)	32 (17.6)	
City area			
Central	205 (69.0)	111 (61.0)	0.045
Peripheral	92 (31.0)	71 (39.0)	
Aetiology			
Accident	158 (53.4)	90 (49.5)	
Interpersonal violence	100 (33.6)	55 (30.2)	0.043
Domestic violence	2 (0.7)	7 (3.8)	
DSH	37 (12.4)	30 (16.5)	
Mechanism of injury			
Animal incident	0 (0)	1 (0.5)	
Blunt force assault	13 (4.4)	4 (2.2)	
Burns	8 (2.7)	5 (2.7)	
Electrocution	1 (0.3)	2 (1.1)	
Falls	80 (26.8)	54 (29.7)	0.398
Hanging	1 (0.3)	4 (2.2)	
Industrial incident	4 (1.3)	3 (1.6)	
Person hit by train	5 (1.7)	3 (1.6)	
Road traffic collision	100 (33.6)	63 (34.6)	
Penetrating trauma	84 (28.2)	43 (23.6)	
Sporting incident	2 (0.7)	0 (0)	

Data are n (%), with *P* values from χ^2 test.
*Continuous data are median (IQR) with *P* values from Mann-Whitney U test.
DSH: deliberate self-harm.



Central (grey): WC, EC, E, N, NW, W, SW, WE; peripheral (blue): all other postcodes.
Figures are n (%); white: 2019; red: 2020.
P value from χ^2 test.

Figure 3. Schematic of London areas based on postcode

Physiological parameters and markers of severity of injury among trauma patients were not influenced by the UK national lockdown (Table S2). Significantly more patients received a trauma line and transfusions. No other intervention rates differed between the two different data capture periods. No DV victims from 2019 were critically injured, while in 2020 two were critically injured and one sustained a TCA. The low frequency of these incidents precluded statistical analysis. There was no significant difference in the number of patients that were critically injured or sustained TCA due to accidental injury, interpersonal violence or DSH under lockdown (Table S3).

After adjusting for confounding factors, there was no significant association between lockdown and aetiology of injuries among patients attended by LAA (Table 4). Victims of interpersonal violence were significantly more likely to be younger males, injured at night, in the central areas of London. None of the variables assessed were predictive of DSH. The model accounted for a moderate amount of the variability within the dataset (Nagelkerke R^2 = 0.207). Pearson chi-squared assessment indicated the model fit the data well (P = 0.134) and likelihood ratio test suggested good predictive power within the model ($P < 0.001$).

After adjusting for confounding factors, there was no significant association between lockdown and severity of injuries among patients attended by LAA (Table S4). Patients with one or more critical organ failure were significantly less likely to have been victims of interpersonal violence than of DSH. Patients who suffered a TCA were less likely to have been involved in an accident or have been assaulted than to have self-harmed. Critically injured patients were less likely to have been accessed by the LAA team within 30 minutes than non-critical patients. The same relationship was not observed with patients in cardiac arrest. The model accounted for a moderate amount of variability within the dataset (Nagelkerke R^2 = 0.137). Pearson chi-squared assessment indicated the model fit the data well (P = 0.137) and the likelihood ratio test suggested good predictive power within the model ($P < 0.001$).

A sensitivity analysis was performed using a categorised revised trauma score as the outcome measure for severity of injury. There was no significant association between lockdown and severity of injury by this measure. Patients among the severely injured category were again less likely to have been involved in an accident or have been assaulted than to have self-harmed. The LAA team were less likely to reach moderately injured patients within 30 minutes than those with minor injuries. The was no association between LAA arrival time and patients within the severe injury category.

DISCUSSION

The UK national lockdown had a substantial impact on social norms and behaviours. Data from mobile phone

Table 4. Multivariable analysis of aetiology of injuries

	Unadjusted OR			Adjusted OR			
	OR	95% CIs		OR	95% CIs		
		Lower	Upper		Lower	Upper	*P* value
Interpersonal violence							
Lockdown	0.970	0.652	1.444	0.729	0.465	1.143	0.169
Male gender	2.643	1.421	4.918	2.858	1.468	5.566	0.002
Age 0–20	6.123	3.448	10.876	4.960	2.686	9.158	< 0.001
Age 21–40	2.431	1.463	4.038	1.980	1.144	3.425	0.015
Age > 41		Reference			Reference		
Daylight hours	0.535	0.360	0.794	0.548	0.354	0.847	0.008
Weekdays	1.231	0.803	1.887	1.341	0.833	2.158	0.227
Central area	2.226	1.447	3.424	2.472	1.538	3.973	< 0.001
DSH							
Lockdown	0.747	0.437	1.277	0.713	0.407	1.250	0.237
Male gender	0.636	0.347	1.165	0.755	0.397	1.436	0.391
Age 0–20	0.356	0.118	1.070	0.327	0.107	1.002	0.050
Age 21–40	0.992	0.571	1.723	1.008	0.558	1.821	0.979
Age > 41		Reference			Reference		
Daylight hours	1.537	0.894	2.643	1.523	0.867	2.675	0.144
Weekdays	1.254	0.803	1.887	1.294	0.693	2.415	0.418
Central area	1.667	0.940	2.956	1.677	0.921	3.055	0.091

Nagelkerke R^2 = 0.207; reference category = accidental injury.
CI: confidence interval; DSH: deliberate self-harm; OR: odds ratio

tracking reveal a reduction of movement to 15% of previous levels,(18) which corresponds to the 85% of UK respondents who reported full compliance with lockdown measures.(19) Data presented here describe the influence of these changes on the epidemiology of London's most severely injured patients and service provision by the advanced trauma team of LAA. Trauma is a disease of energy transfer, and its occurrence can be described in light of the epidemiological triad of host, agent and environment.(20) The reduction in trauma activations observed here was predictable, as London's inhabitants (the hosts) were far less exposed to energy transfer (the agent) due to changes in the environment (less social interaction and fewer car journeys, for instance). Similar patterns have been noted globally.(21,22)

Although incidents involving interpersonal violence or accidental injury demonstrated a greater proportionate decrease than DSH, there was still an absolute reduction in DSH. This is contrary to the documented increase in DSH during the 1918–19 influenza pandemic (23) and the 2003 severe acute respiratory syndrome epidemic.(24) Within England, a full account of suicide rates for the periods of lockdown remains to be published, but early data do not indicate a rise in rates.(25,26) A similar lack of post-lockdown suicide surges has been reported internationally, with reports of rates remaining constant (27) or falling.(28)

When LAS resources arrive before the LAA team and deem resuscitation attempts futile (eg, decapitation) they will recognise life extinct and cancel the LAA team. These catastrophic injury profiles are more likely to occur in high energy transfer incidents such as being struck by trains or falls from height, mechanisms associated with suicide. The proportion of cancellations for this reason rose significantly in 2020, and this may represent an important group of patients not included in this study, potentially resulting in an underestimation of the frequency and severity of DSH.

In 2020, LAA treated a greater number of injuries that were the result of DV, and these were of a more severe nature than those in 2019. During the UK national lockdown, the charity against domestic abuse, Refuge, saw a 950% increase in website visits.(29) In a small-scale survey performed by the charity Women's Aid, 61.3% of women who lived with their abuser reported a worsening in the violence.(30)

Despite this rise in DV incidents within the 2020 cohort, they still occurred in low absolute numbers and as such had to be incorporated into the interpersonal violence group for statistical analysis. This may have contributed to the lack of association between lockdown and aetiology of injury. Factors associated with assault were as expected – younger, male patients being injured later in the day, in central areas of London. The latter parallels published data which indicated that most London boroughs with high gun and knife violence rates were centrally located.(31)

There was minimal difference in the markers of severity of injury between the two years assessed, in keeping with documented UK trends.(32) One notable difference was that significantly more patients received a trauma line and blood transfusions in 2020. This could have resulted from changes in clinician preferences and practices but may alternatively be explained by the epidemiological changes described herein. There was a slightly higher incidence of haemodynamic instability, the patients were older and there were fewer penetrating injuries within the 2020 cohort. In non-compressible penetrating injuries, expedited retrieval to a major trauma centre for early control of bleeding is prioritised, and a permissive hypotension approach applied. In older patients, with a greater potential for cerebrovascular dysautoregulation, or polytrauma patients with head injuries, LAA clinicians would have been less tolerant of lower blood pressures and more inclined to insert a trauma line and transfuse prior to transfer.

The effects of the COVID-19 pandemic and UK national lockdown on LAA mission timings were multifactorial. During this period 999 calls reached unprecedented levels,(33) leading to delays in calls being connected to LAS EOC operators and passed on to the LAA EOC paramedic. This accounts for the prolonged 999 call to team activation times. To facilitate social distancing between LAA team members, time within the fast response cars was kept to a minimum; as such the night team spent more time at the base of operations on the 17th floor of the Royal London Hospital and less roaming within the fast response car than prior to the pandemic. This most likely accounts for the increase in activation to engine start time. Scene times were significantly greater in 2020, likely due to the additional requirement of donning personal protective equipment.(34) Additionally, proportionately fewer stabbings occurred during lockdown, which can often be assessed, treated and transferred more rapidly than patients with polytrauma.

The LAA team reached fewer critically injured patients within 30 minutes of the originating call than those with minor injuries. The most likely explanation for this is that at incidents involving a long travel time and patients with minor injuries, LAS teams are more likely to cancel LAA and convey themselves, whereas they will maintain the LAA response for critical patients requiring advanced interventions.

The overall journey time was reduced during lockdown, largely due to reduced helicopter response times. This is attributable to the fact that more incidents occurred in the peripheral areas of London where there is a greater availability of suitable landing sites. While there was no difference in the fast response car travel times between the two cohorts, there was an increase in median travel distance (although this did not reach significance levels) and an increase in missions within the peripheral areas of London. Therefore, after adjustment for distance and city area, lockdown was associated with shorter car mission travel times. This is attributable to the documented decline in traffic levels observed during lockdown.(35)

There are four major trauma centres within LAA's compact catchment area of Greater London. Transfer of patients to hospital is therefore typically of too short a distance to warrant use of the aircraft, with only 3.5% of patients in 2019 being transferred this way. The aircraft was not used to transport patients under lockdown as it would mean protracted periods offline for decontamination that would diminish LAA's ability to access patients in a timely fashion.

Limitations

Although our aim was to assess the impact of the UK national lockdown, many of the findings described here may be attributable to the COVID-19 pandemic itself rather than the lockdown. The retrospective nature of this study renders it vulnerable to biases. Selection bias was minimised by restricting the sampling to the same time period across two consecutive years. Trauma patterns are affected by weather conditions and this cohort selection method should have lessened the impact of this potentially confounding factor. By only sampling across two years, the influence of improvements in practice was minimised and this approach has been employed in previous work on the impact of COVID-19 on pre-hospital cardiac arrests.(16) To the best of our knowledge no new injury prevention legislation was enacted between the two data capture periods. A single investigator performed the data capture for completed missions which was used for the majority of analyses. This reduced our dataset's vulnerability to information bias.

CONCLUSION

The societal changes brought about by the COVID-19 pandemic and ensuing UK national lockdown had a substantial impact on the incidence and nature of major trauma within metropolitan London and the subsequent response from the advanced trauma team of LAA. The feared rise in suicide does not appear to have manifested, but a small, yet important rise in the number and severity of DV incidents has. Our findings should prove valuable to clinicians involved in the care of trauma patients and urban pre-hospital services in the event of further lockdowns or pandemics.

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COMPETING INTERESTS

The authors declare no competing interests. Each author of this paper has completed the ICMJE conflict of interest statement.

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SUPPLEMENTARY MATERIALS

Table S1. Cancelled missions characteristics

	No lockdown (2019)	Lockdown (2020)	*P* value
Cancellations	155 (32.8)	95 (32.5)	0.946
Cancellation reason	64 (41.3)	35 (36.8)	
Not required	48 (31.0)	27 (28.4)	
Not as given	17 (11.0)	5 (5.3)	
Crew departed	14 (9.0)	6 (6.3)	0.014
No patient/hoax	8 (5.2)	11 (11.6)	
ROLE Not documented	4 (2.6)	11 (11.6)	

Data are n (%), with *P* values from chi-squared test.
ROLE: recognition of life extinct.

Table S2. Physiology, severity of injury and pre-hospital interventions

	No lockdown (2019)	Lockdown (2020)	*P* value
Pulse rate* (beats per min)	90 (36)	92 (38)	0.596
MAP* (mmHg)	94 (30)	95 (32)	0.731
Respiratory rate* (breaths per min)	16 (7)	16 (6)	0.519
GCS*	15 (6)	15 (9)	0.619
RTS*	7.84 (1.87)	7.84 (1.95)	0.570
Critical organ failure	67 (22.6)	40 (22.0)	0.882
Airway compromise	53 (17.8)	39 (21.4)	0.334
Ventilatory failure	57 (19.2)	41 (22.5)	0.380
Haemodynamic instability	86 (29.0)	54 (29.7)	0.868
Unconsciousness	107 (36.0)	71 (39.0)	0.512
Any			
TCA	40 (13.5)	28 (15.4)	0.560
Pronounced life extinct	29 (9.7)	23 (12.6)	0.320
Any advanced intervention	109 (36.6)	69 (37.9)	0.769
Pre-hospital anaesthesia	72 (24.2)	43 (23.6)	0.485
Thoracostomy	31 (10.4)	19 (10.4)	0.557
Arterial line	1 (0.3)	3 (1.6)	0.156
Trauma line	5 (1.7)	10 (5.5)	0.020
Blood transfusion	18 (6.1)	20 (11.0)	0.040
Transfused units*	1 (1)	1 (1)	0.187
Thoracotomy	7 (2.4)	6 (3.3)	0.539
Resuscitative balloon occlusion of the aorta	2 (0.7)	1 (0.5)	0.677
Surgical airway	1 (0.3)	1 (0.5)	0.726

Categorical data are n (%), with *P* values from χ^2 test.
*Continuous data are median (IQR) with *P* values from Mann-Whitney U test.
GCS: Glasgow Coma Score; MAP: mean arterial pressure; RTS: Revised Trauma Score; TCA: traumatic cardiac arrest.

Table S3. Differences in severity of injury across different aetiologies

Aetiology	Severity	No lockdown (2019)	Lockdown (2020)	*P* value
	Non-critical	99 (62.0)	57 (63.3)	
Accident	Any critical organ failure	42 (26.6)	22 (24.4)	0.927
	TCA	18 (11.4)	11 (12.2)	
	Non-critical	75 (75.0)	38 (69.1)	
Assault	Any critical organ failure	16 (16.0)	11 (20.0)	0.730
	TCA	9 (9.0)	6 (10.9)	
	Non-critical	2 (100.0)	4 (57.1)	
Domestic violence	Any critical organ failure	0 (0)	2 (28.6)	*
	TCA	0 (0)	1 (14.3)	
	Non-critical	14 (37.8)	12 (40.0)	
Suicide	Any critical organ failure	10 (27.0)	10 (33.3)	0.982
	TCA	13 (35.1)	8 (26.7)	

Data are n (%), with *P* values from χ^2 test.
*too few patients for valid statistical analysis.
TCA: traumatic cardiac arrest.

Table S4. Multivariable analysis of severity of injuries

	Unadjusted OR			Adjusted OR			P value
	OR	95% Cis		OR	95% CIs		
		Lower	Upper		Lower	Upper	
Critically injured							
Lockdown	0.929	0.593	1.454	1.001	0.624	1.606	0.997
Male gender	1.058	0.588	1.905	1.371	0.734	2.562	0.322
Age group							
0–20	0.440	0.225	0.860	0.634	0.307	2.562	0.218
21–40	1.010	0.619	1.648	1.102	0.649	1.871	0.721
> 41		Reference			Reference		
Daylight hours (0800–2000)	0.839	0.541	1.303	0.824	0.518	1.312	0.415
Weekdays	0.817	0.512	1.303	0.960	0.585	1.577	0.873
Central area	1.093	0.690	1.731	1.409	0.854	2.325	0.179
Response time < 30 min	0.372	0.235	0.587	0.409	0.251	0.666	< 0.001
Aetiology							
Accident	0.596	0.306	1.163	0.638	0.320	1.273	0.202
Assault	0.352	0.170	0.727	0.424	0.194	0.929	0.032
Suicide		Reference			Reference		
TCA							
Lockdown	0.839	0.490	1.435	0.827	0.468	1.462	0.513
Male gender	0.956	0.478	1.910	1.299	0.616	2.738	0.492
Age group							
0–20	0.637	0.294	1.377	0.995	0.616	2.738	0.492
21–40	1.071	0.584	1.966	1.324	0.683	2.567	0.407
> 41		Reference			Reference		
Daylight hours (0800–2000)	1.633	0.958	2.784	1.453	0.819	2.580	0.202
Weekdays	1.327	0.512	2.451	1.330	0.694	2.549	0.390
Central area	1.311	0.739	2.325	1.468	0.787	2.741	0.228
Response time < 30 min	1.026	0.552	1.907	1.081	0.553	2.111	0.821
Aetiology							
Accident	0.212	0.106	0.420	0.220	0.109	0.445	< 0.001
Assault	0.152	0.071	0.327	0.156	0.068	0.359	< 0.001
Suicide		Reference			Reference		

Nagelkerke R^2 = 0.137; reference category = no critical organ failure.
CI = confidence interval; OR = odds ratio; TCA = traumatic cardiac arrest.