

The Effect of the COVID-19 Pandemic on the Workload of an Adult Major Trauma Centre in Northern Ireland



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ABSTRACT

Introduction: Based in Belfast, the Royal Victoria Hospital is the only Major Trauma Centre in Northern Ireland. Due to the COVID-19 pandemic, on 23rd March 2020, Northern Ireland was placed into 'lockdown' with the majority of the population advised to "stay at home". The objective of this paper is to identify what effect the lockdown restrictions had on the workload of the Major Trauma Service at the Royal Victoria Hospital.

Method: Patients were identified at the orthopaedic trauma meetings and from direct referral to the Major Trauma Service (MTS). Patients admitted and seen by the MTS from 23/03/20, the day lockdown was announced, to 29/05/20, when restrictions were partially lifted, were included in the analysis. Admissions data from this time period was then compared to admissions data from the same period in 2019 (23/03/19 - 29/05/19).

Results: When comparing pre-lockdown and lockdown groups there was an overall decrease of 26% in admissions to the MTS (n=57 vs n=42). Road Traffic Accidents were reduced by 53% (n=31 vs n=15) and falls from >2m were reduced by 29% (n=21 vs n=15).

Conclusion: Overall the number of admissions to the major trauma service was reduced during the lockdown period. A significant proportion of the reduction may be a result of social restrictions that reduced volume of traffic on Northern Ireland's roads. Further study of future lockdowns and including admissions data of other MTCs in the UK would allow us to draw more robust conclusions.

INTRODUCTION

Major trauma (MT) is the leading cause of death and a major cause of disability in people aged under 45. Defined as an injury or combination of injuries that are life-threatening and could be life changing because it may result in long-term disability.¹

The Major Trauma Network in Northern Ireland was created in 2017 following evidence that the regionalisation of major trauma services resulted in better patient outcomes.² Prior to this there was considerable variations in the standard of major trauma care based upon where and when patients

were injured.¹ The Royal Victoria Hospital (RVH) in Belfast was nominated as the adult Major Trauma Centre (MTC) for Northern Ireland and has become the main hospital from which major trauma patients are treated. The Belfast Hospital for Sick Children is the nominated MTC for paediatric patients. Six other hospitals across Northern Ireland were designated as Trauma Receiving Hospitals. Patients who are injured with ≤ 45 minute travel time of the MTC are taken directly to the MTC emergency department. Those who are >45 minutes from the MTC are taken to an emergency department of the nearest Trauma Receiving hospital and then subsequently transferred to the MTC following stabilisation.

The Major Trauma Service (MTS) was established in January 2018. Consisting of a multidisciplinary team of doctors, specialist nurses, dieticians, physiotherapists and occupational therapists. This team routinely review and provide input for any patient who is admitted as a result of trauma with an injury severity score (ISS) of >15 or who require the care of more than one hospital specialty.

As a result of the COVID-19 pandemic, on 23/03/20 the UK and Northern Ireland was placed into 'lockdown' with the majority of the population advised to "stay at home". The lockdown restrictions were subsequently eased on 29/05/20. The objective of this paper is to identify what effect these restrictions had on the number of patients admitted the MTS at the RVH.

METHOD

Patients were identified at the Orthopaedic Service trauma meetings, as all patients who triggered trauma calls are discussed, even if they have no orthopaedic injuries and fractures is not the lead speciality. (Trauma calls are fast bleeps that are sent to all members of the on-call trauma team to notify them that a major trauma patient has arrived in ED). Patients were also identified by direct referral from the admitting speciality to the MTS. Of the patients identified by the meeting or referral, those with ISS >15 or who require input from more than one speciality then received input from MTS and were therefore included in this study.



Those patients that died prior to arrival in hospital were not included. Patients that arrived in ED but subsequently died prior to leaving the department were only included if seen prior to death by the MTS.

RVH regularly submits to the Trauma Audit and Research Network (TARN). All patients attending RVH as a result of traumatic injuries who have an ISS >9 are submitted to TARN. Due to the differences in the admission criteria for the MTS and eligibility criteria for TARN, TARN data was not used as it is not representative of the workload of the MTS.

All patients who met the admission criteria were subsequently included in this study. Details recorded were; age, sex, ISS, lead speciality, date of admission, date of discharge, home trust, emergency department of first contact, trauma call code and mechanism of injury. Data of all patients seen by the MTS was collected from 06/01/2019 until time of writing, and is on-going.

Mechanism of injury was categorised into: fall from >2m, fall from <2m, road traffic accident (RTA) or other. RTAs were inclusive for accidents involving, motor vehicles (cars, vans & lorries), motorbikes and pedestrians if hit by one of the aforementioned vehicles.

Patient data from 23/03/20 to 29/05/20, the duration of lockdown, was then retrospectively analysed and compared to the data from the same 68 day period of 2019.

RESULTS

Between 23rd March, 2019, and 29th May, 2019 (pre-lockdown), 57 patients received inpatient input from the

	Pre-Lockdown		Lockdown	
Total Admissions	57		42	
Male	38	67%	32	76%
Age	47.4	SD 21	50.8	SD 18
Mean ISS	27.8		22.0	
Lead Speciality				
Ortho	40	70%	27	64%
Neuro	11	19%	5	12%
Thoracic	3	5%	7	17%
Gen Surg	2	4%	2	5%
Medical	0	0%	1	2%
ED	1	2%	0	0
Hospital of first contact				
Major Trauma Centre	45	79%	30	71%
Trauma Receiving Hospital	12	21%	12	29%
Mechanism of Injury				
RTA	31	54%	15	36%
Motor Vehicle driver or passenger	12		5	
Motorcyclist	13		7	
Cyclist	2		0	
Pedestrian	4		3	
Fall from >2m	21	37%	15	36%
Fall from <2m	3	5%	4	10%
Other	2	4%	8	19%

major trauma service. During lockdown, 42 patients were identified and received input.

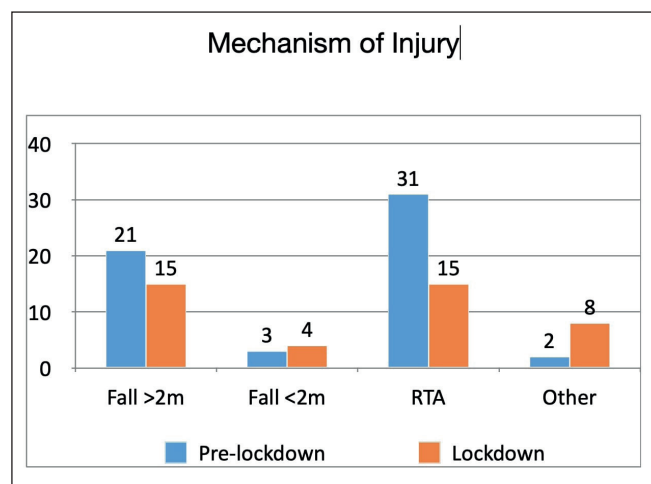
Pre-lockdown, 67% of patients were male (n=38) with a mean age of 47.4 years compared to the lockdown group with 76% male (n=32) with a mean age of 50.8 years. Patient demographic in each group is outlined in table 1.

Pre-lockdown, 54% (n=31) of admission were as a result of an RTA, 37% (n=21) from falls >2m, 5% (n=3) from falls <2m and 4% (n=2) from other mechanisms.

During lockdown 36% (n=15) of admission were as a result of an RTA, 36% (n=15) from falls >2m, 10% (n=4) from falls <2m and 19% (n=8) from other mechanisms [Figure 1].

Within the RTA category patients injured either driving or passengers of motor vehicle went from 12 pre-lockdown to 5 during lockdown, motorcyclists 13 to 7, cyclists 2 to 0 and pedestrians 4 to 3.

When comparing pre-lockdown and lockdown groups there was an overall decrease of 26% in admissions to the MTS. RTAs saw a reduction of 53%, 29% reduction in falls from >2m, 33% increase in falls from <2m and 400% increase in other mechanisms [Table 1].



DISCUSSION

The lockdown measures put in place due to the COVID-19 pandemic had a considerable effect on society within Northern Ireland. The majority of the population being instructed to work from home and to only venture out for shopping and daily exercise. With this change in social behaviour, a change in major trauma admission was expected, which resulted in redeployment of doctors and nurses to different departments within RVH.

Overall the major trauma service at RVH saw a 26% reduction in admissions when compared with the same time period of the previous year. A large proportion of that reduction was as a result of fewer admissions from RTAs. A similar trend was also seen in Police Service of Northern Ireland (PSNI) road death and injury statistics. Although not directly comparable as the data is presented as monthly



figures, the months that were partially or fully involved in lockdown (March, April and May) saw reductions in people killed or seriously injured (KSI) on Northern Ireland's roads when compared to the previous year. March saw a reduction of 43% in people KSI, April 58% reduction and May was down by 50%.³ When MTS admissions were broken down into separate categories based upon vehicle type involved, all vehicles saw a reduction in admission as well. This points towards a reduction of risk for all road users during lockdown.

With fewer people commuting to work it is probable that the overall number of vehicles on Northern Ireland's roads was significantly reduced during this period. This could have made the roads safer overall which resulted in less RTAs. PSNI estimated that traffic levels "over halved" during lockdown but we are unable to confirm this statement with published figures, as the road usage statistics for 2020 in Northern Ireland are not yet publicly available.⁴

Falls from >2m saw a reduction in 29%. It is plausible that this was a result of reduced number of people working in high risk areas, such as at construction sites or up ladders for example, but the data collected did not contain this information so it is not possible to apply causation to this hypothesis.

With regard to falls from <2m and other mechanisms, we are not able to draw reliable conclusions from the data as number of patients presenting from each mechanism is too small.

CONCLUSION

Overall, the admissions to the Major Trauma Service at the Royal Victoria Hospital were reduced during lockdown when compared to the previous year. The reduction in admissions was mostly a result of fewer RTAs and falls from >2m, which is likely as a result of the social restrictions placed upon the population of Northern Ireland during lockdown. However, the sample size collected is small and it is not possible to rule out random variation as a possible cause for the reduction. Combining data from other MTCs around the UK would allow for more robust conclusions regarding the pandemics affect on MT admissions to be made. It is possible that another lockdown may be imposed on Northern Ireland which would allow for further study of its effect on admissions to the MTS.

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