# Evidence Search Service Results of your search request

## COVID-19 impact on adult or paediatric trauma care delivery

**ID of request:** 26059  
**Date of request:** 11th November, 2020  
**Date of completion:** 11th November, 2020

If you would like to request any articles or any further help, please contact:  Jennifer Manders at [Jennifer.Manders@uhb.nhs.uk](mailto:Jennifer.Manders@uhb.nhs.uk)

Please acknowledge this work in any resulting paper or presentation as: Evidence search: COVID-19 impact on adult or paediatric trauma care delivery. Jennifer Manders. (11th November, 2020). BIRMINGHAM, UK: University Hospitals Birmingham (UHB) Library and Knowledge Service.

**Sources searched**  
CINAHL (2)  
EMBASE (6)  
MEDLINE (37)  
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**Date range used** (5 years, 10 years): 2019-2020   
**Limits used** (gender, article/study type, etc.): Conference Abstracts excluded   
**Search terms and notes** (full search strategy for database searches below):

Databases searched: MEDLINE, EMBASE, CINAHL, Cochrane Library, PubMED, NICE Evidence

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### [B. Search History](#SearchHistory)

## A. Original Research

1. **"Flattening the Curve" of COVID-19 pandemic in Orthopaedics and Trauma: the Greek perspective.**  
   Kenanidis Eustathios Injury 2020;51(7):1681-1682.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=da73b947f2a5a5d70917b38ec8d6dd5c)

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1. **"Staying Home"-Early Changes in Patterns of Neurotrauma in New York City During the COVID-19 Pandemic.**  
   Lara-Reyna J. World neurosurgery 2020;143:e344-e350.

OBJECTIVE: New York City is the epicenter of the novel coronavirus disease 2019 (COVID-19) pandemic in the United States. Traumatic brain injury accounts for a significant proportion of admissions to our trauma center. We sought to characterize the effect of the pandemic on neurotraumas, given the cancellation of nonessential activities during the crisis. METHODS: Retrospective and prospective reviews were performed from November 2019 to April 2020. General demographics, clinical status, mechanism of trauma, diagnosis, and treatment instituted were recorded. We dichotomized the data between pre-COVID-19 (before 1 March) and COVID-19 periods and compared the differences between the 2 groups. We present the timeline of events since the beginning of the crisis in relation to the number of neurotraumas. RESULTS: A total of 150 patients composed our cohort with a mean age of 66.2 years (standard deviation ±18.9), and 66% were male. More males sustained neurotrauma in the COVID-19 period compared with the pre-COVID-19 (60.4% vs. 77.6%, P = 0.03). The most common mechanism of trauma was mechanical fall, but it was observed less frequently compared with the pre-COVID-19 period (61.4% vs. 40.8; P = 0.03). Subdural hematoma, traumatic subarachnoid hemorrhage, and intracerebral contusion accounted for the most common pathologies in both periods. Nonoperative management was selected for most patients (79.2 vs. 87.8%, P = 0.201) in both periods. CONCLUSIONS: A decrease in the frequency of neurotraumas was observed during the COVID-19 crisis concomitant with the increase in COVID-19 patients in the city. This trend began after the cancellation of nonessential activities and implementation of social distancing recommendations.

1. **A new role for orthopaedic surgeons: ongoing changes, lessons learned, and perspectives from a level I trauma center during the COVID-19 pandemic.**  
   Congiusta DV Journal of shoulder and elbow surgery 2020;29(10):1951-1956.

The COVID-19 pandemic has redefined global health care. With almost 13 million confirmed cases worldwide, medical professionals have been forced to modify their practice to take care of an expanded, critically ill population. Institutions have been challenged to implement innovative ways to maximize the utility and the safety of residents and personnel. Guided by lessons learned from prior mass causalities, wars, and previous pandemics, adjustments have been made in order to provide optimal care for all patients while still protecting limited resources and the lives of health care workers. Specialists who are trained in the management of lethal aspects of this disease continue to have a high demand and obvious role. Orthopedic surgeons, with ill-defined roles, have been redeployed to manage complex medical problems. Still, the need to manage trauma, fractures, infections, tumors, and dislocations remains a necessity. Various innovative measures have been taken to maximize the utility and safety of residents in the inpatient and outpatient setting. Commonalities to most measures and distinct changes in practice philosophy can be identified and applied to both current and future pandemic responses.

1. **Aerosol generating procedures in trauma and orthopaedics in the era of the Covid-19 pandemic; What do we know?**  
   Sobti A. The surgeon : journal of the Royal Colleges of Surgeons of Edinburgh and Ireland 2020;:No page numbers.

PURPOSE: COVID-19 pandemic has created havoc all over the globe and spared no one regardless of status, gender, location and ethnicity. There were questions raised if trauma and orthopaedic (T&O) procedures actually generated aerosols? The need for a review of literature highlighting the nature and impact of aerosol generation within T&O surgery was noted. METHODS: A comprehensive online search was performed for all published articles in the English language, evaluating AGPs in T&O surgery and the relevant personal protection equipment used. RESULTS: The search strategy populated 43 studies. Six studies were identified as duplicates. The shortlisted 37 studies were screened and nine studies were included in the review. An additional four studies were included from the bibliography review. CONCLUSION: Most orthopaedic procedures are high-risk aerosol generating procedures (AGPs). Conventional surgical masks do not offer protection against high-risk AGPs. In the current era of COVID-19 pandemic, there is a significant risk to the transmission of infection to the theatre staff. For protection against airborne transmission, appropriate masks should be used. These need proper fitting and sizing to ensure full protection when used.

1. **Analysis Of Mortality Following Trauma And Orthopaedic Surgery At The Peak Of COVID-19 Pandemic.**  
   Sobti A. The British journal of surgery 2020;:No page numbers.

1. **Are Hospitals Safe? A Prospective Study on SARS-CoV-2 Prevalence and Outcome on Surgical Fracture Patients: A Closer Look at Hip Fracture Patients.**  
   Segarra Borja Journal of orthopaedic trauma 2020;34(10):e371.

OBJECTIVESTo describe clinical characteristics of fracture patients, including a closer look to hip fracture patients, and determine how epidemiological variables may have influenced on a higher vulnerability to SARS-CoV-2 infection, as the basis for the considerations needed to reintroduce elective surgery during the pandemic.DESIGNLongitudinal prospective cohort study.SETTINGLevel I Trauma Center in the East of Spain.PATIENTS/PARTICIPANTSOne hundred forty-four consecutive fracture patients 18 years or older admitted for surgery.INTERVENTIONPatients were tested for SARS-CoV-2 with either molecular and/or serological techniques and screened for presentation of COVID-19.MAIN OUTCOME MEASUREMENTSPatients were interviewed and charts reviewed for demographic, epidemiological, clinical, and surgical characteristics.RESULTSWe interviewed all patients and tested 137 (95.7%) of them. Three positive patients for SARS-CoV-2 were identified (2.1%). One was asymptomatic and the other 2 required admission due to COVID-19-related symptoms. Mortality for the whole cohort was 13 patients (9%). Significant association was found between infection by SARS-CoV-2 and epidemiological variables including: intimate exposure to respiratory symptomatic patients (P = 0.025) and intimate exposure to SARS-CoV-2-positive patients (P = 0.013). No association was found when crowding above 50 people was tested individually (P = 0.187). When comparing the 2020 and 2019 hip fracture cohorts we found them to be similar, including 30-day mortality. A significant increase in surgical delay from 1.5 to 1.8 days was observed on the 2020 patients (P = 0.034).CONCLUSIONSPatients may be treated safely at hospitals if strict recommendations are followed. Both cohorts of hip fracture patients had similar 30-day mortality.LEVEL OF EVIDENCEPrognostic Level III. See Instructions for Authors for a complete description of levels of evidence.

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1. **Atencion de la urgencia quirurgica durante la pandemia COVID-19. Recomendaciones de la Asociacion Espanola de CirujanosEmergency Surgery and Trauma Care During COVID-19 Pandemic. Recommendations of the Spanish Association of Surgeons**  
   Aranda-Narvaez J.M. Cirugia espanola 2020;98(8):433-441.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=bf1d894b5a6d83d9505c5375edf6d14c)

1. **Challenges of diagnosis of COVID-19 in trauma patients: A case series**  
   Sabetian G. Trauma 2020;:No page numbers.

Background: Diagnosis of COVID-19 can be challenging in trauma patients, especially those with chest trauma and lung contusion. <br/>Method(s): We present a case series of patients from February and March 2020 who were admitted to our trauma center at Rajaee Hospital Trauma Center, in Shiraz, Iran and had positive SARS-CoV-2 PCR test or chest CT scan suggestive of COVID-19 and were admitted to the specific ICU for COVID-19. <br/>Result(s): Eight COVID-19 patients (6 male) with mean age of 40 (SD = 16.3) years old, were presented. All patients were cases of trauma injuries, with multiple injuries including chest trauma and lung contusion, admitted to our trauma center for management of their injuries, but they were diagnosed with COVID-19 as well. Two of them had coinfection of influenza type-B and SARS-CoV-2. All patients were treated for COVID-19 and three of them died; the rest were discharged from hospital. <br/>Conclusion(s): Since PCR for SARS-CoV-2 is not always sensitive enough to confirm the cause of pneumonia, chest CT manifestations can be helpful, though, they are not always differentiable from lung contusion. Therefore, both the CT scan and the clinical and paraclinical presentation and course of improvement can be beneficial in diagnosing COVID-19 in the trauma setting.<br/>Copyright &#xa9; The Author(s) 2020.

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1. **Change in practice due to COVID-19 - Early experiences of a United Kingdom district general hospital in trauma & orthopaedics.**  
   Faria G. Journal of orthopaedics 2020;22:288-290.

COVID-19 is a significant worldwide challenge to many healthcare systems. In Trauma and Orthopaedics, there has been a significant change in the workload but departments have been compelled to change their practice in order to match the demand, as well as respond to the escalating situation of COVID. Some guidance is available on these changes from bodies such as the National Health Service (NHS), Public Health England and the British Orthopaedic Association (BOA). We have implemented certain changes in our university district general hospital trauma and orthopaedic department with regard to staff roles, outpatient and inpatient care and operative protocols. We aim to present some of these changes and their effects on patient care in an attempt to share these with colleagues who may face similar pressures and make some recommendations to help others prepare for a possible second wave of COVID-19.

1. **Changes of clinical activities in an orthopaedic institute in North Italy during the spread of COVID-19 pandemic: a seven-week observational analysis.**  
   Zagra Luigi International orthopaedics 2020;44(8):1591-1598.

PURPOSEThe COVID-19 pandemic is importantly affecting the orthopaedic practice all over the world with Northern Italy being the first European area that faced the worst scenario. In this study, the changes in clinical practice occurred in an orthopaedic center in Milan are described.METHODSNumber and type of admissions, outpatients cancelled and preserved, emergency room, and intensive care unit activities have been analyzed in the timeframe of seven weeks since the beginning of the pandemic (from February 24th to April 10th) and compared with the same period in 2019.RESULTSThe planned surgical admissions declined from 2172 in 2019 to 664 in 2020 (69.42%, p < 0.0001), while emergencies increased from 158 to 268 (69.62%). The rehabilitation admissions declined from 414 to 69 (83.33%). The overall admission decreased by 63.52%, the trend showed a drop in the last weeks. Surgery performed in the COVID-19 operating room increased by 16.7% in the last week. Seven deaths occurred (0.7% of all orthopaedics and trauma admissions) compared with four (0.1%) which happened in the same period in 2019 (p = 0.004). Six of these patients were suffering from COVID-19. A total of 23,580 outpatients (93.8%) were cancelled. Emergency room consultations declined by 68.14% and 63.47% among white and green priority, respectively, while increased by 25% and 100% among yellow and red, respectively.CONCLUSIONThese numbers show the radical changed scenario in an orthopaedic center in Milan during COVID-19 pandemic. Elective surgery declined rapidly going close to zero, outpatient admissions were restricted to cases that cannot be postponed, while emergencies increased due to the role played by the hospital as referral orthopaedic centre during the pandemic. The still ongoing emergency will have important impacts on the overall orthopaedic healthcare management for the next months.

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1. **Changing Pattern of Orthopaedic Trauma Admissions During COVID-19 Pandemic: Experience at a Tertiary Trauma Centre in India.**  
   Dhillon MS Indian journal of orthopaedics 2020;:1-6.

INTRODUCTION: COVID-19 has emerged as a medical threat to mankind, with a serious disruption of lifestyle in 2020. This has not only changed the way we live and work but has also changed the pattern of hospital admissions and medical care. To see if there was significant change in the pattern and management of trauma in our region, we evaluated data from our centre for the lockdown period and compared it with data from the previous year, and also with some available international data. METHODS: We collated data from our Tertiary care hospital for two periods, i.e. from 25th March 2020 to 3rd May 2020 signifying strict lockdown and then from 4th May to 31st May during which some conditional relaxations were given. This was compared to data from similar periods in 2019. We looked at patient demographics, fracture types, injury mechanisms, and even changes in treatment protocols. RESULTS: Significant reductions in caseloads were noted; open injuries were less, road accidents were infrequent, but cases due to falls, especially children and the elderly were still seen, although slightly reduced. The plan to minimize operative interventions could not be fully implemented due to complex nature of trauma seen by us. Only one case of bilateral amputation turned out to be positive, with no infectious consequences to the treating staff. CONCLUSIONS: COVID-19 pandemic led to significant reductions in trauma caseload and change in injury patterns. Doctor responses and patient management needs significant alteration to prevent spread of disease.

1. **Collateral effect of COVID-19 on orthopedic and trauma surgery.**  
   Randau Thomas M. PloS one 2020;15(9):e0238759.

OBJECTIVESThe purpose of this study was to assess the impact of the COVID-19 pandemic on orthopedic and trauma surgery in private practices and hospitals in Germany.DESIGNIn this cross-sectional study, an online-based anonymous survey was conducted from April 2th to April 16th 2020.SETTINGThe survey was conducted among 15.0000 of 18.000 orthopedic and trauma surgeons in Germany, both in private practices and hospitals.PARTICIPANTSAll members of the German Society of Orthopedic and Trauma Surgery (DGOU) and the Professional Association for Orthopedic and Trauma Surgery (BVOU). were invited by e-mail to participate in the survey.MAIN OUTCOME MEASURESOut of 50 questions 42 were designed to enquire a certain dimension of the pandemic impact and contribute to one of six indices, namely "Preparedness", "Resources", "Reduction", "Informedness", "Concern", and "Depletion". Data was analyzed in multiple stepwise regression, aiming to identify those factors that independently influenced the indices.RESULTS858 orthopedic and trauma surgeons participated in the survey throughout Germany. In the multiple regression analysis, being employed at a hospital was identified as an independent positive predictor in the indices for "Preparedness", "Resources", and "Informedness" and an independent negative predictor regarding "Depletion". Self-employment was found to be an independent positive predictor of the financial index "Depletion". Female surgeons were identified as an independent variable for a higher level of "Concern".CONCLUSIONSThe study confirms a distinct impact of the COVID-19 pandemic on orthopedic and trauma surgery in Germany. The containment measures are largely considered appropriate despite severe financial constraints. A substantial lack of personal protective equipment (PPE) is reported. The multiple regression analysis shows that self-employed surgeons are more affected by this shortage as well as by the financial consequences than surgeons working in hospitals.WHAT ARE THE NEW FINDINGSThe COVID-19 pandemic has a profound impact on orthopedic and trauma surgery as an unrelated specialty. Self-employed surgeons are affected especially by a shortage of PPE and financial consequences.HOW MIGHT IT IMPACT ON CLINICAL PRACTICE IN THE NEAR FUTUREPolitical and financial support can now be applied more focused to subgroups in the field of orthopedics and trauma surgery with an increased demand for support. A special emphasis should be set on the support of self-employed surgeons which are a more affected by the shortage of PPE and financial consequences than surgeons working in hospitals.

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1. **Community quarantine strategy against coronavirus disease 2019 in Anhui: An evaluation based on trauma center patients**  
   Zhu W. International Journal of Infectious Diseases 2020;96:417-421.

Objective: The objective of our study was to introduce community quarantine strategy against coronavirus disease 2019 (COVID-19) in Anhui and evaluate the effectiveness of community quarantine based on trauma center (TC) patients. <br/>Method(s): The structure of community quarantine strategy was illustrated. Distribution of injuries among patients in two TCs between January 24, 2020 and February 24, 2020 was described. Multiple linear regression was used to analyze the correlation between the distribution of Injuries in TCs and the number of COVID-19-associated cases. <br/>Result(s): A total of 757 TC patients in the two hospitals were enrolled. The number of traffic injuries and outdoor injuries showed a significant decrease in the early stage and began to increase on February 17. The number of indoor injuries neither decreased nor increased. Multiple linear regression analysis revealed a significant correlation between COVID-19-associated cases and traffic and outdoor injuries. <br/>Conclusion(s): From the perspective of the injuries in TCs, community quarantine strategy was effectively implemented and significantly slowed the outbreak of COVID-19 in Anhui. However, the implementation and maintenance of the strategy is costly and requires the participation of the entire population.<br/>Copyright &#xa9; 2020

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1. **Coronavirus Pandemic - SARS-CoV-2 in Orthopedics and Trauma Surgery.**  
   Müller Michael Zeitschrift fur Orthopadie und Unfallchirurgie 2020;:No page numbers.

The corona virus has spread worldwide since it first appeared in China and represents a pandemic of unprecedented magnitude. The pandemic has not only social and economic effects, but even more impressive effects on the health system. If the virus spreads uncontrollably and rapidly, there is a risk of an unpredictable increase of patients with COVID-19 disease requiring hospital treatment. The capacities of a hospital can quickly reach the limit and consequently patients can no longer be adequately treated. Therefore, in the acute phase of the pandemic, it is necessary to release all hospital resources for the treatment of COVID-19 patients. Strict hygiene regulations must also be observed in order to prevent the virus from spreading unexpectedly in the hospital in order to protect patients and hospital staff. Elective operations and outpatient clinics must be cancelled in the acute phase. Special hygiene measures must be observed for urgent and unpostponable operations. These relate to the admission of the patients, the accommodation in the ward and the operative care in the operating room. In the post-acute phase, a normal surgical program can be resumed step by step. In this phase, however, clear hygiene regulations must also be observed. Regular medical meetings taking into account the current pandemic situation and the occurrence of new infections must be carried out in the hospital and the occupancy of the ward and operating room adjusted accordingly. To what extent the situation for the treatment of patients in orthopedics and trauma surgery will normalize cannot be predicted at the present time.

1. **CORR Insights®: How Did the Number and Type of Injuries in Patients Presenting to a Regional Level I Trauma Center Change During the COVID-19 Pandemic with a Stay-at-home Order?**  
   Meshram P. Clinical orthopaedics and related research 2020;:No page numbers.

1. **COVID-19 and remote consulting strategies in managing trauma and orthopaedics.**  
   Iyengar Karthikeyan Postgraduate medical journal 2020;96(1137):438-439.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=3c4c3e8e2558e690961a780695aed0d2)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=8f7d67c2f70e98c04efc37ccb086e06f)

1. **COVID-19 and Trauma Care: Improvise, Adapt, and Overcome!**  
   Dutton Richard P. Anesthesia and analgesia 2020;131(2):323-325.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=2b17c0d796a5d408cce8f9fbe6f2f6c7)

1. **COVID-19 outbreak: The early response of a UK orthopaedic department.**  
   Tadros BJ Journal of clinical orthopaedics and trauma 2020;11(Suppl 3):S301-S303.

1. **COVID-19 pandemic: management of patients affected by SARS-CoV-2 in Rome COVID Hospital 2 Trauma Centre and safety of our surgical team.**  
   De Mauro D. International orthopaedics 2020;:1-5.

BACKGROUND: SARS-CoV-2 pandemic left a deep mark in the health systems around the globe, leading to an important change in the way we intend the access to the healthcare and its fruition. Hospitals faced something unexpected, and they underwent a deep change and so did orthopaedic activity. MATERIALS AND METHODS: In "A. Gemelli" University hospital new protocols were adopted for the safe management of patients affected by SARS-CoV-2. Among these patients, six had to be treated also for orthopaedic problems. The management of these patients, from the admission in the Emergency Room (E.R). to the operating room (O.R.), followed the protocols we developed for the coronavirus crisis. RESULTS: Four among the six patients underwent surgical treatments. Two of them showed a change of their clinical status, due to a worsening of COVID-19 symptoms, so the surgical option was postponed. All of them were admitted to the Infectious Diseases Unit, rather than the Orthopaedic and Traumatology Unit, in order to provide the best measures to prevent the spread of the contagion and to ensure the best treatment for COVID-19. No O.R. staff was infected by SARS-CoV-2. CONCLUSIONS: More studies are needed to provide a higher statistical significance to the safety measures taken in order to contrast the spread of SARS-CoV-2 in the Surgical Room. Orthopaedic surgeons are more exposed to the contagion due to the particular tools set they use. A more sensible and specific quick test for novel Coronavirus is particularly needed, due to the lack of sensitivity of the serological rapid test.

1. **Critical adjustments in a department of orthopaedics through the COVID-19 pandemic.**  
   Luengo-Alonso Gonzalo International orthopaedics 2020;44(8):1557-1564.

PURPOSESARS-CoV-2's new scenario has forced health systems to work under extreme stress urging to perform a complete reorganization of the way our means and activities were organized. The orthopaedic and trauma units have rescheduled their activities to help SARS-CoV-2 units, but trauma patients require also treatment, and no standardized protocols have been established.METHODSA single-centre cross-sectional study was performed in a tertiary hospital. Two different periods of time were analyzed: a two week period of time in March 2019 (pre-SARS-CoV-2) and the same period in March 2020 (SARS-CoV-2 pandemic time). Outpatient's data, emergency activity, surgical procedures, and admissions were evaluated. Surgeons' and patient's opinion was also evaluated using a survey.RESULTSA total of ~ 16k (15,953) patients were evaluated. Scheduled clinical appointments decreased by ~ 22%. Urgent consultations and discharge from clinics also descended (~ 37% and ~ 20% respectively). Telemedicine was used in 90% of outpatient clinical evaluations. No elective surgical procedures during SARS-CoV-2 time were scheduled, and subtracting the effect of elective surgeries, there was a reduction of inpatient surgeries, from ~ 85% to ~ 59%. Patients delayed trauma assistance more than 48 hours in 13 cases (35%). Pre-operative admission for hip fractures decreased in ten hours on average. Finally, surveys stated that patients were more in favour than surgeons were to this new way to evaluate orthopaedic and trauma patients based strongly on telemedicine.CONCLUSIONDetailed protocols should be standardized for surgical departments during the pandemic. This paper offers a general view in how this virus affects an orthopaedic unit and could serve as a protocol and example for orthopaedic and trauma units. Even in the worst scenario, an orthopaedic and trauma unit could offer an effective, efficient, and quality service. SARS-CoV-2 will set up a new paradigm for health care in orthopaedics and trauma.

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1. **Descriptive Epidemiology of Traumatic Injuries During the First Lockdown Period of COVID-19 Crisis in Iran: A Multicenter Study.**  
   Khak Asian Journal of Sports Medicine 2020;11(2):1-5.

Background: The study of alterations in the epidemiological pattern of traumatic injuries during the COVID-19 crisis can provide estimates in the planning of healthcare resources. In a prospective epidemiological study during the first 45 days of lockdown legislation in Iran and by comparing the results with previously published large population-based studies in Iran, we sought changes in the epidemiology of traumas. Methods: Datawereobtained prospectivelyfromthe orthopedicemergencydepartments of twotertiary orthopedictraumacenters in Iran form Feb 20 to Apr 3 2020 for 45 days. Both centers were active in giving care for COVID-19 patients, and they were major referral orthopedic trauma centers. Results: A total of 628 patients with a mean age of 38.9 ± 19.9 (range 1 to 96) years consisting of 640 limb injuries were recruited. There were 387 (60.5%) fractures, 176 (27.5%) lacerations, and only 13 (2%) ligamentous injuries due to sports activities. Low-energy trauma was the most common mechanism of injury (38.3%), and its rate was specifically high as the mechanism of injury among women (69 %). In men, sharp injuries had the highest frequency (33%). Sharp injuries and blunt trauma during labor were 6.6 times and 19.5 times more prevalent in men, respectively. Most injuries were seen in 21 - 40-year-old patients. Distal radius/ulna fracture was the most common site of fracture. There were 233 (36.4%) patients with self-discharge. Conclusions: There were important epidemiological changes during the COVID-19 crisis in trauma patients. The cessation of sports activities resulted in a reduction in ligamentous injuries of sports origin. Women better implemented the stay-at-home strategies shown by a sudden increase in the men to women ratio of risk-taking traumatic injuries. The decreased number of patients with soft-tissue injuries and a high rate of self-discharge must inform the authorities of the fear of in-hospital contamination.

1. **Disruption of paediatric orthopaedic hospital services due to the COVID-19 pandemic in a region with minimal COVID-19 illness.**  
   Wong Fui Lin Journal of children's orthopaedics 2020;14(4):245-251.

PurposeThis study was designed to evaluate the impact of the COVID-19 pandemic on paediatric orthopaedic services in a paediatric tertiary hospital in South Australia.MethodsA retrospective audit was conducted of orthopaedic activity at a major paediatric tertiary hospital with a Level 1 paediatric trauma centre, where no patients were admitted with COVID-19 illness. Orthopaedic Emergency Department (ED) presentations, outpatient clinics and hospital admissions for the period between 16 March 2020 to 26 April 2020 were studied and compared with the same period in 2019 (18 March 2019 to 28 April 2019). Chi-square tests were performed with p < 0.05 indicating statistical significance.ResultsIn total, 621 patients presented to the ED with orthopaedic complaints during the pandemic (versus 997 in 2019). However, there was minimal change in the number of ED presentations requiring admission (110 in 2020 versus 116 in 2019). Among patients discharged directly from ED, 27.3% received hospital outpatient referral (versus 39.1% in 2019), with the remaining patients referred to community health services or discharged directly.There was a 509.8% increase in telehealth (video and phone) outpatient consultations compared to 2019 and a 60.6% decline in face-to-face appointments. There was a total of 144 orthopaedic admissions (elective and emergency) compared to 184 in 2019. Admissions for children under seven remained unchanged (32.5% reduction in children aged seven and above).ConclusionDespite an overall decline in all paediatric orthopaedic hospital activity, the number of emergency admissions for musculoskeletal conditions did not change. Elective surgery numbers for children aged under seven were also unchanged. Appropriate planning and hospital resources allocation are necessary to meet this service requirement in future pandemics.Level of evidence IV.

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1. **Early comprehensive testing for COVID-19 is essential to protect trauma centers.**  
   Hu Parker The journal of trauma and acute care surgery 2020;89(4):698-702.

BACKGROUNDThe severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic presents a threat to health care systems worldwide. Trauma centers may be uniquely impacted, given the need for rapid invasive interventions in severely injured and the growing incidence of community infection. We discuss the impact that SARS-CoV-2 has had in our trauma center and our steps to limit the potential exposures.METHODSWe performed a retrospective evaluation of the trauma service, from March 16 to 30, following the appearance of SARS-CoV-2 in our state. We recorded the daily number of trauma patients diagnosed with SARS-CoV-2 infection, the presence of clinical symptoms or radiological signs of COVID-19, and the results of verbal symptom screen (for new admissions). The number of trauma activations, admissions, and census, as well as staff exposures and infections, was recorded daily.RESULTSOver the 14-day evaluation period, we tested 85 trauma patients for SARS-CoV-2 infection, and 21 (25%) were found to be positive. Sixty percent of the patients in the trauma/burn intensive care unit were infected with SARS-CoV-2. Positive verbal screen results, presence of ground glass opacities on admission chest CT, and presence of clinical symptoms were not significantly different in patients with or without SARS-CoV-2 infection (p > 0.05). Many infected patients were without clinical symptoms (9/21, 43%) or radiological signs on admission (18/21, 86%) of COVID-19.CONCLUSIONForty-five percent of trauma patients are asymptomatic at the time of SARS-CoV-2 diagnosis. Respiratory symptoms, as well as verbal screening (recent fevers, shortness of breath, cough, international travel, and close contact with known SARS-CoV-2 carriers), are inaccurate in the trauma population. These findings demonstrate the need for comprehensive rapid testing of all trauma patients upon presentation to the trauma bay.LEVEL OF EVIDENCEDiagnostic tests or criteria, level III, Therapeutic/care management, level IV.

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1. **Effect of Shelter-in-Place Orders and the COVID-19 Pandemic on Orthopaedic Trauma at a Community Level II Trauma Center.**  
   Stoker S. Journal of orthopaedic trauma 2020;34(9):e336-e342.

OBJECTIVES: To evaluate the effect of the COVID-19 pandemic and the "shelter-in-place" order on orthopaedic trauma presenting to a community level II trauma center. It is hypothesized that the overall number of orthopaedic trauma encounters (OTEs), the number of OTEs related to both high and low severity injuries, and the proportion of OTEs related to high severity versus low severity injuries decreased compared with previous years. METHODS: A retrospective analysis was conducted of OTEs between 2016 and 2020. High and low severity OTEs were classified according to an algorithm created by the researchers. Data were statistically analyzed and compared with external data for traffic counts, motor vehicle accidents, and Transportation Security Administration checkpoints. RESULTS: A 45.1% decrease (P = 0.0005) was seen in OTEs from March and April 2016-2019 compared with 2020. The decrease began approximately 12 days before the shelter-in-place order. There was a 58.8% decrease in high severity injuries with a fracture (P = 0.013) and a 42.9% decrease in low severities injuries (P = 0.0003). The proportion of high to low severity OTEs was unchanged. CONCLUSIONS: The quantity of OTEs was significantly affected by the COVID-19 pandemic and Michigan shelter-in-place order. A decrease in both high and low severity OTEs was found; however, there was no statistically significant change in the ratio of high to low severity OTEs compared with previous years. Although it is difficult to determine what portion of the decrease in OTE is attributable to the shelter-in-place order versus the COVID-19 pandemic in general, data suggest both play a role. LEVEL OF EVIDENCE: Therapeutic Level III. See Instructions for Authors for a complete description of Levels of Evidence.

1. **Effect of Statewide Social Distancing and Stay-At-Home Directives on Orthopaedic Trauma at a Southwestern Level 1 Trauma Center During the COVID-19 Pandemic.**  
   Lubbe RJ Journal of orthopaedic trauma 2020;34(9):e343-e348.

OBJECTIVES: To compare orthopaedic trauma volume and mechanism of injury before and during statewide social distancing and stay-at-home directives. DESIGN: Retrospective. SETTING: Level 1 trauma center. PATIENTS/PARTICIPANTS: One thousand one hundred thirteen patients sustaining orthopaedic trauma injuries between March 17 and April 30 of years 2018, 2019, and 2020. INTERVENTION: Statewide social distancing and stay-at-home directives. MAIN OUTCOME MEASUREMENTS: Number of consults, mechanism of injury frequency, and type of injury frequency. RESULTS: During the COVID-19 pandemic, orthopaedic trauma consult number decreased. Injuries due to gunshot wounds increased and those due to automobile versus pedestrian accidents decreased. Time-to-presentation increased and length of stay decreased. Operative consults remained unchanged. CONCLUSIONS: Orthopaedic trauma injuries continued to occur during the COVID-19 pandemic at an overall decreased rate, however, with a different distribution in mechanism and type of injury. LEVEL OF EVIDENCE: Therapeutic Level III. See Instructions for Authors for a complete description of levels of evidence.

1. **Effects of COVID-19 pandemic on general surgical emergencies: are some emergencies really urgent? Level 1 trauma center experience.**  
   Surek Ahmet European journal of trauma and emergency surgery : official publication of the European Trauma Society 2020;:No page numbers.

PURPOSEThe aim of this paper is to investigate the effect of COVID-19 pandemic on general surgical emergencies as well as analyzing the effectiveness of measures taken in reducing the incidence of COVID-19 in patients and healthcare professionals.METHODSPatients who underwent emergency surgery between the pandemic period of March 14th to May 15th 2020 and within the same period from the previous year were reviewed retrospectively. COVID-19 incidence in patients and health professionals working in the general surgery department during these periods was questioned.RESULTSDemographic data were similar between the two time periods. The number of patients who underwent surgery in the pandemic group (n = 103) was lower than the control group (n = 252). There was a 59.1% reduction in emergency surgeries. The biggest decreases were the admissions of incarcerated hernia, uncomplicated appendicitis and acute cholecystitis (92%, 81.3%, 47.3%, respectively). During the pandemic, an increase was of patient rates who underwent surgery for complicated appendicitis and AMIO (p = 0.001, p = 0.019, respectively). The rate of mortality was higher in patients who underwent emergency surgery during pandemic (p = 0.049). The results of COVID-19 screening were positive in 6 (6/103, 5.82%) patients undergoing emergency surgery. None of the doctors working in the ward were infected with COVID-19 infection (0/20). The screening tests were positive in only two nurses working on the ward (2/24, 8.33%).CONCLUSIONIn this and similar pandemics, we suggest that a new algorithm is necessary to approach emergencies and the results of this study can contribute to that end.

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1. **Emergency trauma care during the outbreak of corona virus disease 2019 (COVID-19) in China.**  
   Li Y. World journal of emergency surgery : WJES 2020;15(1):33.

BACKGROUND: A novel coronavirus pneumonia outbreak began in Wuhan, Hubei Province, in December 2019; the outbreak was caused by a novel coronavirus previously never observed in humans. China has imposed the strictest quarantine and closed management measures in history to control the spread of the disease. However, a high level of evidence to support the surgical management of potential trauma patients during the novel coronavirus outbreak is still lacking. To regulate the emergency treatment of trauma patients during the outbreak, we drafted this paper from a trauma surgeon perspective according to practical experience in Wuhan. MAIN BODY: The article illustrates the general principles for the triage and evaluation of trauma patients during the outbreak of COVID-19, indications for emergency surgery, and infection prevention and control for medical personnel, providing a practical algorithm for trauma care providers during the outbreak period. CONCLUSIONS: The measures of emergency trauma care that we have provided can protect the medical personnel involved in emergency care and ensure the timeliness of effective interventions during the outbreak of COVID-19.

1. **Epidemiological pattern of pediatric trauma in COVID-19 outbreak: Data from a tertiary trauma center in Iran.**  
   Nabian MH Injury 2020;:No page numbers.

INTRODUCTION: In Iran, like most other countries, COVID-19 has had a deep impact on children's lives. Our hypothesis was that, a significant change in the number of pediatric injuries has happened in trauma centers. In the current study, we intend to identify the possible epidemiological shift in pediatric fracture patterns, by comparing the data from 'COVID-19 era' and the mean data from the past 2 years. To the best of our knowledge there are only few reports on epidemiology of pediatric fractures during the COVID-19 outbreak. METHODS: Data are reported in two sections. In the descriptive section, epidemiological data regarding pediatric fractures referred to Taleghani tertiary trauma center, including demographics, distribution curves, etiologies and fracture types are presented during the 'COVID era', from 1 March 2020 to 15 April 2020. In the comparative section, the aforementioned data are compared with mean data from the past 2 years, the 'non-COVID era'. RESULTS: Altogether 117 of the 288 trauma children (40.62%) had a fractured bone (145 fractures). Patients were mostly boys, with a mean age of 9.87 years (SD=5.27). The three most common fracture types in children included distal radius, mid-forearm and humeral supracondylar fractures. Compared to non-COVID era, the number of pediatric trauma admissions dropped from 589 to 288. No significant change happened in the mean age, male/female ratio and percentage of motor vehicle accidents. Proportion of proximal humeral, proximal forearm, carpal, and hand fractures declined. The number of open fractures significantly dropped (from 12 to 2). CONCLUSIONS: In Iran, overall trend of pediatric trauma has been decreasing during the outbreak; but the lack of reduction in proportion of accidents may pose an alarm that an effective lock-down has not been imposed. This study has implications as to preparing appropriate resources particular to common "COVID era fractures".

1. **Epidemiology of trauma presentations to a major trauma centre in the North West of England during the COVID-19 level 4 lockdown.**  
   Rajput K. European journal of trauma and emergency surgery : official publication of the European Trauma Society 2020;:1-6.

PURPOSE: The COVID-19 pandemic has impacted healthcare systems globally, little is known about the trauma patterns during a national lockdown. The aim of this study is to delineate the trauma patterns and outcomes at Aintree University Teaching Hospital level 1 Major Trauma Centre (MTC) during the COVID-19 lockdown imposed by the U.K. government. METHODS: A retrospective cohort study data from the Merseyside and Cheshire Trauma Audit and Research Network database were analysed. The 7-week 'lockdown period' was compared to a 7-week period prior to the lockdown and also to an equivalent 7-week period corresponding to the previous year. RESULTS: A total of 488 patients were included in the study. Overall, there was 37.6% and 30.0% reduction in the number of traumatic injuries during lockdown. Road traffic collisions (RTC) reduced by 42.6% and 46.6%. RTC involving a car significantly reduced during lockdown, conversely, bike-related RTC significantly increased. No significant changes were noted in deliberate self-harm, trauma severity and crude mortality during lockdown. There was 1 mortality from COVID-19 infection in the lockdown cohort. CONCLUSION: Trauma continues during lockdown, our MTC has continued to provide a full service during lockdown. However, trauma patterns have changed and departments should adapt to balance these alongside the COVID-19 pandemic. As the U.K. starts its cautious transition out of lockdown, trauma services are required to be flexible during changes in national social restrictions and changing trauma patterns. COVID-19 and lockdown state were found to have no significant impact on survival outcomes for trauma.

1. **European Society of Trauma and Emergency Surgery (ESTES) recommendations for trauma and emergency surgery preparation during times of COVID-19 infection.**  
   Coimbra R. European journal of trauma and emergency surgery : official publication of the European Trauma Society 2020;46(3):505-510.

A series of recommendations regarding hospital perioperative preparation for the COVID-19 pandemic were compiled to inform surgeons worldwide on how to provide emergency surgery and trauma care during enduring times.The recommendations are divided into eight domains: (1) General recommendation for surgical services; (2) Emergency Surgery for critically ill COVID-19 positive or suspected patients -Preoperative planning and case selection; (3) Operating Room setup; (4) patient transport to the OR; (5) Surgical staff preparation; (6) Anesthesia considerations; (7) Surgical approach; and (8) Case Completion.The European Society of Emergency Surgery board endorsed these recommendations.

1. **Evaluation of containment measures' effect on orthopaedic trauma surgery during the COVID-19 pandemic: a retrospective comparison between 2019 and 2020.**  
   Druel T. International orthopaedics 2020;44(11):2229-2234.

BACKGROUND: There is no available information about the effect of containment measures on trauma surgery activity. The aim of this study was to analyse and report the containment measures' impact on trauma surgery activity during the COVID-19 pandemic in order to quickly react and adjust in case of a new sanitary crisis and containment. METHODS: An original epidemiological study was performed in our trauma centre in France. Data from trauma surgeries performed during the pre-containment (from March 1 to March 16, 2020), containment (from March 17 to April 17, 2020) and reference (from March 1 to April 17, 2019) periods were compared. The primary outcome was the number of patients operated on daily and the daily operating room time. Clinical data, delay for surgery, mechanism of injury and injury pattern were also reviewed. RESULTS: There was a statistically significant decrease in the number of patients operated upon daily (- 39,8%, p value < 0.001) and daily operating room time (- 35.5%, p value < 0.001) between the reference and containment periods and between the pre-containment and containment periods (respectively, - 35.0%, p value < 0.001 and - 28.7%, p value 0.002). No differences were reported between the reference and pre-containment periods for daily-operated patients (p value 0.359). CONCLUSION: Containment measures had a direct impact on trauma surgery activity with a decrease of a third of trauma surgery activity. Those results could be useful if a new containment occurred.

1. **Fracture surgery in known COVID-19 infected patients: What are the challenges?**  
   Sadighi M. Archives of Bone and Joint Surgery 2020;8(3):378-382.

Background: Surgery in the time of COVID-19 pandemic is a challenging issue while treatment of affected fracture patients is inevitable. The present study summarizes the challenges that an orthopedic surgeon is confronting during the surgical treatment of fracture patients with concomitant COVID-19 infection. <br/>Method(s): Demographic and fracture related data of 13 fracture patients with concomitant COVID-19 infection who were treated with surgery was collected from three trauma centers in Tehran and Kermanshah cities from 21, February 2020 to April 3, 2020. <br/>Result(s): All patients were male with mean age of 38.6+/-19.5 years. Eight patients had high energy fracture and seven patients had multiple fractures and trauma. Wrist and hand were the common sites of fracture following hip and pelvis. The mean interval time period between the diagnosis of COVID-19 infection and surgery was 2.3+/-1.5 days. Before surgery, all patients except one had been admitted to the corona dedicated wards, while two patients were admitted to the intensive care unit (ICU). One of the ICU admitted patients died. All the 12 alive patients remained in home isolation after discharge. <br/>Conclusion(s): Fracture surgery in COVID-19 patients has many challenges such as lack of medical resources, delay of surgery, medial staff fear, and patient isolation. However, a multidisciplinary approach using all potential hospital resources would lead to successful operation and acceptable outcome.<br/>Copyright &#xa9; BY THE ARCHIVES OF BONE AND JOINT SURGERY.

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1. **Global experience of orthopaedic trauma surgeons facing COVID-19: a survey highlighting the global orthopaedic response.**  
   Lezak Bradley A. International orthopaedics 2020;44(8):1519-1529.

BACKGROUNDThe COVID-19 (SARS-CoV-2) pandemic has significantly affected all aspects of healthcare, including orthopaedics. Due to the unique challenges presented by COVID-19 as well as the distinct timeframes that it will surge in different geographies, much can be learned from the experiences of orthopaedic professionals in many global settings. The goal of this project is to characterize the preparations, strategies, lessons, and personal experiences of orthopaedic trauma surgeons and departments across the world in combating COVID-19. In doing so, we will shed light on current practices and challenges, which may help us manage the current pandemic in addition to preparing for future global pandemics that may arise.METHODSA 20-item questionnaire was sent out to 150 orthopaedic trauma surgeons representing 42 countries who were identified based on professional relationships and/or prior involvement in international meetings either led or participated by the senior author.RESULTSThe questionnaire was completed by 63 orthopaedic trauma surgeons representing 28 countries and 14 US states. The results of this study show that orthopaedic trauma departments across the world have been greatly impacted by COVID-19 with 91% of participating hospitals currently having a reduced case load compared with pre-COVID-19 and only 17% of respondents currently performing elective orthopaedic surgery. Furthermore, 30% of orthopaedic departments have deployed orthopaedic personnel to non-orthopaedic floors in order to help mitigate the increased patient load and 86% of respondents noted at least some shortage of PPE. Lastly 73% of participating orthopedic departments including those in LMICs, have incorporated telemedicine into their practice with a majority stating that it would most likely become a permanent change to their practice post-COVID-19.CONCLUSIONTo our knowledge, this is the largest data set characterizing global COVID-19 situations and responses of orthopaedic trauma practices around the world. There is much to be learned from each of the participants' responses in order to persevere during the current pandemic, as well as to prepare for future pandemics as it relates specifically to orthopaedic trauma practices.

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1. **Hip Fracture Outcomes During the COVID-19 Pandemic: Early Results From New York.**  
   LeBrun Drake G. Journal of orthopaedic trauma 2020;34(8):403-410.

OBJECTIVETo evaluate inpatient outcomes among patients with hip fracture treated during the COVID-19 pandemic in New York City.DESIGNMulticenter retrospective cohort study.SETTINGOne Level 1 trauma center and one orthopaedic specialty hospital in New York City.PATIENTS/PARTICIPANTSFifty-nine consecutive patients (average age 85 years, range: 65-100 years) treated for a hip fracture (OTA/AO 31, 32.1) over a 5-week period, March 20, 2020, to April 24, 2020, during the height of the COVID-19 crisis.MAIN OUTCOME MEASUREMENTSCOVID-19 infection status was used to stratify patients. The primary outcome was inpatient mortality. Secondary outcomes were admission to the intensive care unit, unexpected intubation, pneumonia, deep vein thrombosis, pulmonary embolus, myocardial infarction, cerebrovascular accident, urinary tract infection, and transfusion. Baseline demographics, comorbidities, treatment characteristics, and COVID-related symptomatology were also evaluated.RESULTSTen patients (15%) tested positive for COVID-19 (COVID+) (n = 9; 7 preoperatively and 2 postoperatively) or were presumed positive (n = 1), 40 (68%) patients tested negative, and 9 (15%) patients were not tested in the primary hospitalization. American Society of Anesthesiologists' scores were higher in the COVID+ group (d = -0.83; P = 0.04); however, the Charlson Comorbidity Index was similar between the study groups (d = -0.17; P = 0.63). Inpatient mortality was significantly increased in the COVID+ cohort (56% vs. 4%; odds ratio 30.0, 95% confidence interval 4.3-207; P = 0.001). Including the one presumed positive case in the COVID+ cohort increased this difference (60% vs. 2%; odds ratio 72.0, 95% confidence interval 7.9-754; P < 0.001).CONCLUSIONSHip fracture patients with concomitant COVID-19 infection had worse American Society of Anesthesiologists' scores but similar baseline comorbidities with significantly higher rates of inpatient mortality compared with those without concomitant COVID-19 infection.LEVEL OF EVIDENCEPrognostic Level III. See Instructions for Authors for a complete description of levels of evidence.

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1. **How COVID-19 has affected emergent visits to a Latin-American trauma department: Experience at a Peruvian national trauma referral center.**  
   Pintado JF Injury 2020;:No page numbers.

INTRODUCTION: By May 2020, Peru was the country with the third most COVID-19 cases in the Americas. The current study's overall aim was to examine the impact of the current COVID-19 outbreak on the number of non-COVID-related patient presentations to a major national emergency traumatology/orthopedics referral center in Latin America. METHODS: An observational study was performed at one of Peru's main tertiary trauma referral centers, during the current COVID-19 pandemic. Numbers of non-follow-up patients presenting to the traumatology/ orthopedics service were counted and compared between January through April 2019 and January through April 2020; and between the month immediately prior to the Peruvian government's implementation of national lock-down measures (Feb 16-Mar 15; Period 1) and the month immediately following (Mar 16-Apr 15; Period 2). The number of surgery service hospitalizations also was compared pre- versus post lockdown initiation (Period 1 vs. 2), as were patient characteristics and outcomes, like age, sex, discharge disposition, mortality, indications for hospital admission, and COVID-19 status. RESULT: Comparing 2019 and 2020, no appreciable differences were detected in the number of patients seen in either January or February. However, relative to March and April 2019, the numbers of patients seen in March and April 2020 (the two months after the first Peruvian case of COVID-19 was detected) were reduced by 55.8 and 88.6%, respectively. Comparing the months immediately pre and post lockdown, the number of service patients declined by 79.9% in April, while the number of hospitalizations declined by 30.9%. The number of admissions for various surgical indications either remained stable or declined in parallel with the overall decline in admissions for all indications except for osteoporotic hip fractures and diabetic foot ulcers (both of which increased proportional to the overall number of admissions) and for hand and foot fractures, both of which decreased. CONCLUSION: At our hospital, not all indications for traumatology/orthopedics service utilization declined despite the national government's directive to reduce non-COVID-related consultations and admissions. Some disorders presented with even greater frequency, which must be considered when developing contingencies for the reallocation of healthcare resources during a pandemic.

1. **How COVID-19 is modifying trauma care.**  
   Katiyar Anand The British journal of surgery 2020;:No page numbers.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=f0bae2e6a5358a0b89bd67114e99f87d)

1. **How Did the Number and Type of Injuries in Patients Presenting to a Regional Level I Trauma Center Change During the COVID-19 Pandemic with a Stay-at-home Order?**  
   Sherman WF Clinical orthopaedics and related research 2020;:No page numbers.

BACKGROUND: During a pandemic, it is paramount to understand volume changes in Level I trauma so that with appropriate planning and reallocation of resources, these facilities can maintain and even improve life-saving capabilities. Evaluating nonaccidental and accidental trauma can highlight potential areas of improvement in societal behavior and hospital preparedness. These critical questions were proposed to better understand how healthcare leaders might adjust surgeon and team coverage of trauma services as well as prepare from a system standpoint what resources will be needed during a pandemic or similar crisis to maintain services. QUESTIONS/PURPOSES: (1) How did the total observed number of trauma activations, defined as patients who meet mechanism of injury requirements which trigger the notification and aggregation of the trauma team upon entering the emergency department, change during a pandemic and stay-at-home order? (2) How did the proportion of major mechanisms of traumatic injury change during this time period? (3) How did the proportion and absolute numbers of accidental versus nonaccidental traumatic injury in children and adults change during this time period? METHODS: This was a retrospective study of trauma activations at a Level I trauma center in New Orleans, LA, USA, using trauma registry data of all patients presenting to the trauma center from 2017 to 2020. The number of trauma activations during a government mandated coronavirus 2019 (COVID-19) stay-at-home order (from March 20, 2020 to May 14, 2020) was compared with the expected number of activations for the same time period from 2017 to 2019, called "predicted period". The expected number (predicted period) was assumed based on the linear trend of trauma activations seen in the prior 3 years (2017 to 2019) for the same date range (March 20, 2020 to May 14, 2020). To define the total number of traumatic injuries, account for proportion changes, and evaluate fluctuation in accidental verses nonaccidental trauma, variables including type of traumatic injury (blunt, penetrating, and thermal), and mechanism of injury (gunshot wound, fall, knife wound, motor vehicle collision, assault, burns) were collected for each patient. RESULTS: There were fewer total trauma activations during the stay-at-home period than during the predicted period (372 versus 532 [95% CI 77 to 122]; p = 0.016). The proportion of penetrating trauma among total activations was greater during the stay-at-home period than during the predicted period (35% [129 of 372] versus 26% [141 of 532]; p = 0.01), while the proportion of blunt trauma was lower during the stay-at-home period than during the predicted period (63 % [236 of 372] versus 71% [376 of 532]; p = 0.02). The proportion of gunshot wounds in relation to total activations was greater during the stay-at-home period than expected (26% [97 of 372] versus 18% [96 of 532]; p = 0.004). There were fewer motor vehicle collisions in relation to total activations during the stay-at-home period than expected (42% [156 of 372] versus 49% [263 of 532]; p = 0.03). Among total trauma activations, the stay-at-home period had a lower proportion of accidental injuries than the predicted period (55% [203 of 372] versus 61% [326 of 532]; p = 0.05), and there was a greater proportion of nonaccidental injuries than the predicted period (37% [137 of 372] versus 27% [143 of 532]; p < 0.001). In adults, the stay-at-home period had a greater proportion of nonaccidental injuries than the predicted period (38% [123 of 328] versus 26% [123 of 466]; p < 0.001). There was no difference between the stay-at-home period and predicted period in nonaccidental and accidental injuries among children. CONCLUSIONS: Data from the trauma registry at our region's only Level I trauma center indicate that a stay-at-home order during the COVID-19 pandemic was associated with a 70% reduction in the number of traumatic injuries, and the types of injuries shifted from more accidental blunt trauma to more nonaccidental penetrating trauma. Non-accidental trauma, including gunshot wounds, increased during this period, which suggest community awareness, crisis de-escalation strategies, and programs need to be created to address violence in the community. Understanding these changes allows for adjustments in staffing schedules. Surgeons and trauma teams could allow for longer shifts between changeover, decreasing viral exposure because the volume of work would be lower. Understanding the shift in injury could also lead to a change in specialists covering call. With the often limited availability of orthopaedic trauma-trained surgeons who can perform life-saving pelvis and acetabular surgery, this data may be used to mitigate exposure of these surgeons during pandemic situations. LEVEL OF EVIDENCE: Level III, therapeutic study.

1. **How Much has COVID-19 Pandemic Affected Indian Orthopaedic Practice? Results of an Online Survey.**  
   Keshav K. Indian journal of orthopaedics 2020;:1-10.

BACKGROUD: Coronavirus Disease 2019 (COVID-19) has spread globally affecting all strata of people including the orthopaedic surgeons of India. We have witnessed a drastic fall in the number of patients. The aim of study was to assess the extent to which the Indian orthopaedic practice has been affected by the pandemic. METHODS: We conducted an online survey amongst currently practicing Indian orthopaedic surgeons. Those currently not in practice or under training or having left clinical practice before the onset of pandemic were excluded. A total of 533 orthopaedic surgeons took part in the study amongst which, complete responses were obtained from 407 individuals. Statistical analysis was done to see the association between demographic profile of study participants and various variables of orthopaedic practice. RESULTS: There was drastic fall in all the parameters of orthopaedic practice. Over half of the practicing surgeons witnessed fall in out-patients over 90%. Most had stopped elective surgeries (64%) and even emergency ones (21%) altogether. More than 50% of doctors had their earnings reduced by > 75%. We found a statistically highly significant association of reduction in earnings with the sector, type of set-up and duration of practice. (p-value < 0.001). CONCLUSION: This study suggests that orthopaedic surgeons across all sectors in different kinds of set-ups have been affected in their out-patient and operative numbers. With regards to earnings, those working in private and running their own (individual) hospitals & clinics have been most severely affected while those in government sector and medical colleges have been affected the least.

1. **ICON Trauma (Impact of COVID-19 on Major Trauma workload) Study.**  
   Adiamah A. The British journal of surgery 2020;:No page numbers.

1. **Impact of coronavirus disease 2019 (COVID-19) on the epidemiology of orthopedics trauma in a region of central italy.**  
   Battiato Concetto Injury 2020;:No page numbers.

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1. **Impact of COVID-19-related social restrictions on orthopaedic trauma in a level 1 trauma centre in Sydney: the first wave.**  
   Probert AC ANZ journal of surgery 2020;:No page numbers.

BACKGROUND: The coronavirus disease 2019 (COVID-19) pandemic has affected communities worldwide. This study examines the impact that public health measures to control viral spread have had on orthopaedic trauma presenting to an Australian level 1 trauma centre. We hypothesized that the volume of orthopaedic trauma in the period of social distancing would decrease, and the mechanisms of injury differ, compared to pre-pandemic times. METHODS: We performed a retrospective analysis of patients requiring emergency orthopaedic surgery between 16 March and 21 April 2020 (the period after social distancing and lockdown commenced), and compared it to the group of patients from the same period in 2019. We collected demographic data, as well as injury type, anatomical location, mechanism of injury and surgical logistics. RESULTS: During the COVID-19 period, total emergency operations performed decreased by 15.6% compared to the same period in 2019. Orthopaedic admissions decreased by 30.8%. Demographics of the groups were unchanged. Anaesthetic time decreased, but total time spent in the operating theatre was unchanged. Road trauma comprised a similar proportion of cases overall; however, cycling-related accidents increased significantly, making up 11% of presentations during COVID-19. Sporting injuries, work-related injuries and multi-traumas reduced during the pandemic. CONCLUSION: The impact of COVID-19-related lockdown measures and social distancing on orthopaedic trauma in Australia has been an overall decrease in volume of cases, combined with significant changes in the mechanisms of injury necessitating surgery.

1. **Impact of shelter-in-place order for COVID-19 on trauma activations: Santa Clara County, California, March 2020.**  
   Forrester Joseph D. Trauma surgery & acute care open 2020;5(1):e000505.

IntroductionThe shelter-in-place order for Santa Clara County, California on 16 March was the first of its kind in the USA. It was unknown what impact this order would have on trauma activations.MethodsWe performed a retrospective analysis of institutional trauma registries among the two American College of Surgeons Level 1 trauma centers serving Santa Clara County, California. Trauma activation volumes at the trauma centers from January to March 2020 were compared with month-matched historical cohorts from 2018 to 2019.ResultsOnly 81 (3%) patients were trauma activations at the trauma centers in the 15 days after the shelter-in-place order went into effect on 16 March 2020, compared with 389 activations during the same time period in 2018 and 2019 (p<0.0001). There were no other statistically significant changes to the epidemiology of trauma activations. Only one trauma activation had a positive COVID-19 test.DiscussionOverall trauma activations decreased 4.8-fold after the shelter-in-place order went into effect in Santa Clara County on 16 March 2020, with no other effect on the epidemiology of persons presenting after traumatic injury.ConclusionShelter-in-place orders may reduce strain on healthcare systems by diminishing hospital admissions from trauma, in addition to reducing virus transmission.

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1. **Impact of societal restrictions and lockdown on trauma admissions during the COVID-19 pandemic: a single-centre cross-sectional observational study.**  
   Jacob S. ANZ journal of surgery 2020;:No page numbers.

BACKGROUND: Societal restrictions and lockdown during the coronavirus (COVID-19) pandemic have had a significant impact on the volume and nature of trauma admissions. We assessed the impact of COVID-19 related societal restrictions and lockdown on trauma admissions to single level 1 trauma centre in Westmead, Australia. We hypothesized that the number of trauma admissions would decrease and number of admissions due to self-harm and assault (specifically domestic violence) would increase. METHODS: Data was collected from the prospectively maintained Westmead Hospital Trauma Registry. The primary outcome compared was the average number of trauma admissions during March and April during years 2016 to 2020. Analysis of variance was used to analyse means. Pairwise differences among group means were evaluated with Tukey's honestly significant difference test. Secondary outcomes compared were in-hospital interventions and patient outcomes. RESULTS: There was a 23-34% decrease (P = 0.018) in the mean monthly average trauma admissions during March/April 2020 compared with previous years 2016-2019. In addition, there was a 40-52% decrease (P = 0.025) and 13-29% decrease (P = 0.020) in admissions due to road traffic collisions and falls respectively. CONCLUSION: There was a significant decrease in the overall number of trauma-related admissions during the COVID-19-related period of societal restrictions and lockdown. This was due to a decrease in minor traumas, falls and road traffic collisions. There was no difference in the number of admissions secondary to major traumas, self-harm or assault.

1. **Impact of the 2020 COVID-19 pandemic on the workload of the orthopaedic service in a busy UK district general hospital.**  
   Murphy T. Injury 2020;51(10):2142-2147.

INTRODUCTION: The COVID -19 outbreak has had a profound effect on the management of healthcare service provision in the UK. Orthopaedic departments have been no exception to this and have needed to adapt to the changing circumstances by releasing resources and focusing on 'essential' activity. The aim of this study is to quantify the reduction in trauma and, in addition, describe any changes in the type of referrals to the trust which may have been affected by the pandemic itself and the social distancing measures employed by the UK government. METHODS: The study was performed in a UK District Hospital which is also a Trauma Unit providing trauma and orthopaedic care to a population of 625,000 people. The trust based electronic database of trauma referrals was used to compare the numbers of, and types of referral to our trauma service during the COVID-19 pandemic and the corresponding time periods in the previous 3 years. RESULTS: The mean number of referrals per week to the service reduced by 33% in the time period following the confirmation of the outbreak as a pandemic (p<0.0001). Number of operations performed per week reduced by 26% (p = 0.001). There was no change in the number of referrals relating to domestic abuse or non-accidental injury. In addition, numbers of hip fractures, periprosthetic fractures and prosthetic joint dislocations were unchanged. There was a significant reduction in the number of referrals for simple fractures, native joint dislocations, wounds and soft tissue injuries. Within the paediatric population, similarly, a reduction in simple fracture referrals was demonstrated. DISCUSSION: An association between the outbreak of the pandemic and a reduction in referral numbers to our department has been demonstrated. The direct cause of this may be multifactorial but proposing that it is, in part, due to the social distancing measures introduced by the government is certainly conceivable. The patterns of injury would reflect this also with low energy and fragility trauma persisting whilst injuries associated with younger people have reduced. We would suggest that information such as this could be useful in healthcare planning and resource allocation in future pandemic situations.

1. **Impact of the COVID-19 Pandemic on an Emergency Traumatology Service: Experience at a Tertiary Trauma Centre in Spain.**  
   Nuñez Jorge H. Injury 2020;51(7):1414-1418.

INTRODUCTIONThe severe disruptions caused by the SARS-CoV-2 coronavirus have necessitated a redistribution of resources to meet hospitals' current service needs during this pandemic. The aim of this study was to provide an overview of the impact of the pandemic, and its corresponding State of Emergency, on a tertiary traumatology emergency service.METHODSAn observational study was performed at a tertiary hospital within the Spanish National Health System. Four different periods were studied, including the first 20 days of Spain's current State of Emergency, from March 14 to April 02, 2020 (Period 4). This period was compared to the 20-day period prior to the State of Emergency (Period 3), and to matching periods in the two previous years (Periods 1 and 2). A total of 6,565 patient visits were analyzed: 1909 in Period 1 (29.1%), 2161 in Period 2 (32.9%), 1983 in Period 3 (30.2%), and 512 in Period 4 (7.8%). Variables collected included patient age and sex, insurance type, discharge destination and reason for hospital admission.RESULTSThe patients' mean age was 55.1 years old (Standard Deviation (SD): 22.1), and 51.8% were women (3495/6565). During the COVID-19 pandemic, there were significant reductions in total visits to the trauma emergency department, workplace accidents, traffic accidents and number of hospital admissions, particularly during Period 4. However, no statistically-significant differences were found in the number of osteoporotic hip fractures admitted between the four periods. The numbers of hospital admissions for osteoporotic hip fracture were 42 during Period 1, 41 during Period 2, 43 during Period 3 and 36 during Period 4.CONCLUSIONSWhile most traumatological presentations decreased in frequency over the course of the outbreak, the number of osteoporotic hip fractures remained stable. Thus, contingency plans in times of crisis need to be carefully targeted, and to keep in mind certain public health issues that do not decrease, despite a State of Emergency, like osteoporotic hip fractures.

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1. **Impact of the COVID-19 pandemic on orthopedic trauma workload in a London level 1 trauma center: the "golden month".**  
   Park C. Acta orthopaedica 2020;:1-6.

Background and purpose - The COVID-19 pandemic has been recognized as an unprecedented global health crisis. This is the first observational study to evaluate its impact on the orthopedic workload in a London level 1 trauma center (i.e., a major trauma center [MTC]) before (2019) and during (2020) the "golden month" post-COVID-19 lockdown.Patients and methods - We performed a longitudinal observational prevalence study of both acute orthopedic trauma referrals, operative and anesthetic casemix for the first "golden" month from March 17, 2020. We compared the data with the same period in 2019. Statistical analyses included median (median absolute deviation), risk and odds ratios, as well as Fisher's exact test to calculate the statistical significance, set at p ≤ 0.05.Results - Acute trauma referrals in the post-COVID period were almost halved compared with 2019, with similar distribution between pediatric and adult patients, requiring a significant 19% more admissions (RR 1.3, OR 2.6, p = 0.003). Hip fractures and polytrauma cases accounted for an additional 11% of the modal number of injuries in 2020, but with 19% reduction in isolated limb injuries that were modal in 2019. Total operative cases fell by a third during the COVID-19 outbreak. There was a decrease of 14% (RR 0.85, OR 0.20, p = 0.006) in aerosol-generating anesthetic techniques used.Interpretation - The impact of the COVID-19 pandemic has led to a decline in the number of acute trauma referrals, admissions (but increased risk and odds ratio), operations, and aerosolizing anesthetic procedures since implementing social distancing and lockdown measures during the "golden month."

1. **Impact of the COVID-19 pandemic on paediatric orthopaedic trauma workload in central London: a multi-centre longitudinal observational study over the "golden weeks": The COVid Emergency Related Trauma and orthopaedics (COVERT) Collaborative**  
   Morgan C. Acta Orthopaedica 2020;:No page numbers.

Background and purpose - The COVID-19 pandemic has been recognised as an unprecedented global health crisis. This study assesses the impact on a large acute paediatric hospital service in London, evaluating the trends in the acute paediatric orthopaedic trauma referral caseload and operative casemix before (2019) and during (2020) COVID-19 lockdown. Patients and methods - A longitudinal retrospective observational prevalence study of both acute paediatric orthopaedic trauma referrals and operative caseload was performed for the first 6 "golden weeks" of lockdown. These data were compared with the same period in 2019. Statistical analyses included median (+/- median absolute deviation), risk and odds ratios as well as Fisher's exact test to calculate the statistical significance, set at p &lt;= 0.05. Results - Acute paediatric trauma referrals in 2020 were reduced by two-thirds compared with 2019 (n = 302 vs. 97) with a halving risk (RR 0.55) and odds ratios (OR 0.43) of sporting-related mechanism of injuries (p = 0.002). There was a greater use of outpatient telemedicine in the COVID-19 period with more Virtual Fracture Clinic use (OR 97, RR 84, p &lt; 0.001), and fewer patients being seen for consultation and followed up face to face (OR 0.55, RR 0.05, p &lt; 0.001). Interpretation - The impact of the COVID-19 pandemic has led to a decline in the number of acute paediatric trauma referrals, admissions, and operations during the COVID period. There has also been a significant change in the patient pathway with more being reviewed via the means of telemedicine to reduce the risk of COVID-19 transmission and exposure. More work is required to observe for similar trends nationwide and globally as the pandemic has permanently affected the entire healthcare infrastructure.<br/>Copyright &#xa9; 2020 The Author(s). Published by Taylor & Francis on behalf of the Nordic Orthopedic Federation.

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1. **IMPACT-Scot report on COVID-19 and hip fractures.**  
   Hall Andrew J. The bone & joint journal 2020;102:No page numbers.

AIMSThe primary aim was to assess the independent influence of coronavirus disease (COVID-19) on 30-day mortality for patients with a hip fracture. The secondary aims were to determine whether: 1) there were clinical predictors of COVID-19 status; and 2) whether social lockdown influenced the incidence and epidemiology of hip fractures.METHODSA national multicentre retrospective study was conducted of all patients presenting to six trauma centres or units with a hip fracture over a 46-day period (23 days pre- and 23 days post-lockdown). Patient demographics, type of residence, place of injury, presentation blood tests, Nottingham Hip Fracture Score, time to surgery, operation, American Society of Anesthesiologists (ASA) grade, anaesthetic, length of stay, COVID-19 status, and 30-day mortality were recorded.RESULTSOf 317 patients with acute hip fracture, 27 (8.5%) had a positive COVID-19 test. Only seven (26%) had suggestive symptoms on admission. COVID-19-positive patients had a significantly lower 30-day survival compared to those without COVID-19 (64.5%, 95% confidence interval (CI) 45.7 to 83.3 vs 91.7%, 95% CI 88.2 to 94.8; p < 0.001). COVID-19 was independently associated with increased 30-day mortality risk adjusting for: 1) age, sex, type of residence (hazard ratio (HR) 2.93; p = 0.008); 2) Nottingham Hip Fracture Score (HR 3.52; p = 0.001); and 3) ASA (HR 3.45; p = 0.004). Presentation platelet count predicted subsequent COVID-19 status; a value of < 217 × 109/l was associated with 68% area under the curve (95% CI 58 to 77; p = 0.002) and a sensitivity and specificity of 63%. A similar number of patients presented with hip fracture in the 23 days pre-lockdown (n = 160) and 23 days post-lockdown (n = 157) with no significant (all p ≥ 0.130) difference in patient demographics, residence, place of injury, Nottingham Hip Fracture Score, time to surgery, ASA, or management.CONCLUSIONCOVID-19 was independently associated with an increased 30-day mortality rate for patients with a hip fracture. Notably, most patients with hip fracture and COVID-19 lacked suggestive symptoms at presentation. Platelet count was an indicator of risk of COVID-19 infection. These findings have implications for the management of hip fractures, in particular the need for COVID-19 testing. Cite this article: Bone Joint J 2020;102-B(9):1219-1228.

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1. **Increased proportion of physical child abuse injuries at a level I pediatric trauma center during the Covid-19 pandemic.**  
   Kovler Mark L. Child abuse & neglect 2020;:104756.

BACKGROUND AND OBJECTIVESThe Covid-19 pandemic has forced mass closures of childcare facilities and schools. While these measures are necessary to slow virus transmission, little is known regarding the secondary health consequences of social distancing. The purpose of this study is to assess the proportion of injuries secondary to physical child abuse (PCA) at a level I pediatric trauma center during the Covid-19 pandemic.METHODSA retrospective review of patients at our center was conducted to identify injuries caused by PCA in the month following the statewide closure of childcare facilities in Maryland. The proportion of PCA patients treated during the Covid-19 era were compared to the corresponding period in the preceding two years by Fisher's exact test. Demographics, injury profiles, and outcomes were described for each period.RESULTSEight patients with PCA injuries were treated during the Covid-19 period (13 % of total trauma patients), compared to four in 2019 (4 %, p < 0.05) and three in 2018 (3 %, p < 0.05). The median age of patients in the Covid-19 period was 11.5 months (IQR 6.8-24.5). Most patients were black (75 %) with public health insurance (75 %). All injuries were caused by blunt trauma, resulting in scalp/face contusions (63 %), skull fractures (50 %), intracranial hemorrhage (38 %), and long bone fractures (25 %).CONCLUSIONSThere was an increase in the proportion of traumatic injuries caused by physical child abuse at our center during the Covid-19 pandemic. Strategies to mitigate this secondary effect of social distancing should be thoughtfully implemented.

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1. **Injuries in the time of COVID-19.**  
   Keays Glenn Health promotion and chronic disease prevention in Canada : research, policy and practice 2020;40(11-12):No page numbers.

INTRODUCTIONResearch has shown that during the 2003 SARS pandemic, emergency department (ED) visits among the pediatric population decreased. We set out to investigate if this was also true for injury-related ED visits during the COVID-19 pandemic.METHODSUsing data from the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP), we looked at 28 years of injury-related ED visits at the Montreal Children's Hospital, a provincially designated Pediatric Trauma Centre. We compared data from a two-month period during the COVID-19 lockdown (16 March to 15 May) to the same period in previous years (1993-2019) to determine whether the 2020 decrease in ED visit numbers was unprecedented (i.e. a similar decrease had never occurred) for different age groups, nature of injuries, mechanisms and severity.RESULTSThe 2020 decrease was unprecedented across all age groups between 1993 and 2019. When compared with the 2015 to 2019 average, the decrease was smallest in children aged 2 to 5 years (a 35% decrease), and greatest in the group aged 12 to 17 years (83%). Motor vehicle collisions and sports-related injuries practically vanished during the COVID-19 lockdown. Surprisingly, more children aged 6 to 17 years presented with less urgent injuries during the COVID-19 lockdown than in previous years.CONCLUSIONAs was the case with SARS in 2003, COVID-19 acted as a deterrent for pediatric ED visits. The lockdown in particular had a profound impact on injury-related visits. The de-confinement period will be monitored to determine the impact in both the short and the long term.

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1. **Italy and COVID-19: the changing patient flow in an orthopedic trauma center emergency department.**  
   Luceri Francesco Journal of orthopaedic surgery and research 2020;15(1):323.

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1. **Maintaining Trauma Care Access During the COVID-19 Pandemic: An Urban, Level-1 Trauma Center's Experience.**  
   Coleman JR Annals of surgery 2020;272(2):e58-e60.

1. **Management of Orthopaedic Accidental Emergencies Amidst COVID-19 Pandemic: Our Experience in Preparing to Live with Corona.**  
   Dabas Vineet Indian journal of orthopaedics 2020;:1-6.

IntroductionWith increasing prevalence of coronavirus cases (including among health care providers), the current advice for orthopaedic surgeons is to favor non-operative management of most injuries and reduce face-to-face follow-up. We present our experience in managing the patients at Government-run non-COVID-19 trauma center in Delhi in an algorithmic form. Our standard operating protocols were mainly based on recommendations of Indian Orthopaedic Association and targeted to provide healthcare at a minimum risk to the treating team as well as other patients admitted to the hospital.MethodologyWe describe the inflow, in-hospital management and outflow of patients at our facility during the lockdown period and in the following unlock period (from 23 March to 8 July 2020). Those patients who had absolute indications for surgery were offered surgery, while conservative treatment was more favored in those with relative indications. We also highlight the changes incorporated in OT settings as well as in rehabilitative and follow-up period.ResultsFollowing the described protocol helped us maintain a balance between the safety of patients and our front line workers which was evident by very low COVID-19-positive rate in admitted patients (4.22%) and health care providers (16.67%) in the above-mentioned time period.ConclusionsWe need to be prepared to cohabitate with this deadly Novel Coronavirus and adapt our surgical practices according to the need of the hour by minimizing surgical indications and strengthening the training in conservative principles.

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1. **Modification of a Validated Risk Stratification Tool to Characterize Geriatric Hip Fracture Outcomes and Optimize Care in a Post-COVID-19 World.**  
   Konda Sanjit R. Journal of orthopaedic trauma 2020;34(9):e317.

OBJECTIVES(1) To demonstrate how a risk assessment tool modified to account for the COVID-19 virus during the current global pandemic is able to provide risk assessment for low-energy geriatric hip fracture patients. (2) To provide a treatment algorithm for care of COVID-19 positive/suspected hip fractures patients that accounts for their increased risk of morbidity and mortality.SETTINGOne academic medical center including 4 Level 1 trauma centers, 1 university-based tertiary care referral hospital, and 1 orthopaedic specialty hospital.PATIENTS/PARTICIPANTSOne thousand two hundred seventy-eight patients treated for hip fractures between October 2014 and April 2020, including 136 patients treated during the COVID-19 pandemic between February 1, 2020 and April 15, 2020.INTERVENTIONThe Score for Trauma Triage in the Geriatric and Middle-Aged ORIGINAL (STTGMAORIGINAL) score was modified by adding COVID-19 virus as a risk factor for mortality to create the STTGMACOVID score. Patients were stratified into quartiles to demonstrate differences in risk distribution between the scores.MAIN OUTCOME MEASUREMENTSInpatient and 30-day mortality, major, and minor complications.RESULTSBoth STTGMA score and COVID-19 positive/suspected status are independent predictors of inpatient mortality, confirming their use in risk assessment models for geriatric hip fracture patients. Compared with STTGMAORIGINAL, where COVID-19 patients are haphazardly distributed among the risk groups and COVID-19 inpatient and 30 days mortalities comprise 50% deaths in the minimal-risk and low-risk cohorts, the STTGMACOVID tool is able to triage 100% of COVID-19 patients and 100% of COVID-19 inpatient and 30 days mortalities into the highest risk quartile, where it was demonstrated that these patients have a 55% rate of pneumonia, a 35% rate of acute respiratory distress syndrome, a 22% rate of inpatient mortality, and a 35% rate of 30 days mortality. COVID-19 patients who are symptomatic on presentation to the emergency department and undergo surgical fixation have a 30% inpatient mortality rate compared with 12.5% for patients who are initially asymptomatic but later develop symptoms.CONCLUSIONThe STTGMA tool can be modified for specific disease processes, in this case to account for the COVID-19 virus and provide a robust risk stratification tool that accounts for a heretofore unknown risk factor. COVID-19 positive/suspected status portends a poor outcome in this susceptible trauma population and should be included in risk assessment models. These patients should be considered a high risk for perioperative morbidity and mortality. Patients with COVID-19 symptoms on presentation should have surgery deferred until symptoms improve or resolve and should be reassessed for surgical treatment versus definitive nonoperative treatment with palliative care and/or hospice care.LEVEL OF EVIDENCEPrognostic Level III. See Instructions for Authors for a complete description of Levels of Evidence.

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1. **Nosocomial infection with SARS-CoV-2 and main outcomes after surgery within an orthopaedic surgery department in a tertiary trauma centre in Spain.**  
   Lakhani K. International orthopaedics 2020;:1-9.

AIMS: The purpose of the present study is to analyse clinical data of a series of cases who developed nosocomial infection with SARS-CoV-2 in an orthopaedic and traumatology department. PATIENTS AND METHODS: In this non-interventional retrospective study, carried out at a tertiary hospital within the Spanish National Health System, all adult patients who were admitted in the Orthopaedic Surgery and Traumatology Department between March 9th and May 4th, 2020, were included. Clinical, biological and radiological data, as well as mortality rates, were collected from hospital medical records. RESULTS: A total of 293 periods of hospitalization were analysed in 288 patients. Mean age was 66.1 years old and 57.3% were females. Nineteen patients (6.48%) met the inclusion criteria to be categorized as a nosocomial infection with SARS-CoV-2. In a comparison between patients with and without nosocomial infection, age, mortality and hospital length of stay were statistically significant (p < 0.05). The median time from admission to diagnosis of SARS-CoV-2 infection in our cohort was 16 days (6-86 days). No statistically significant differences were found in sex, living situation, reason of admission or period of admission (even if we observed that most of the nosocomial infections (78.9%) occurred in March). CONCLUSION: We have found a 6.48% of nosocomial infection with SARS-CoV-2, but with an important reduction of it after undergoing preventing protocols that included screening RT-PCR test for COVID-19. Age and hospital length stay were statistically significant risk factors for nosocomial infection with SARS-CoV-2. For the progressive restoration of the surgical activity, we recommend to correctly select the patients in elective surgery and to encourage fast-track programs and early discharge of patients with fractures.

1. **Novel coronavirus and trauma surgery: successful infection control from a level I trauma centre.**  
   Jávor P. European journal of trauma and emergency surgery : official publication of the European Trauma Society 2020;46(4):737-741.

PURPOSE: In the absence of effective treatment options, the recent SARS-CoV2 pandemic poses a great challenge to the health and social sectors worldwide. Hereby, we would like to share our proposals in the hope that it will prove helpful for our colleagues in this difficult time. METHODS: The present recommendations are based on the opinion of experts as well as the experience of a group of traumatologists directly involved in the organization of traumatology wards. The reassignment of the healthcare personnel, the separation of the potentially infected patients and the different levels of restriction on the trauma care are all key elements of our protocol. RESULTS: Since the first SARS-CoV2-positive case was confirmed in Hungary, our trauma surgeons were able to avoid contamination with the help of the new guidelines, without reducing the quality of trauma care. CONCLUSION: Reasonably adjusted patient care protocols in every medical field are key to contain the spread of infection and to avoid public health crisis. Sharing experience can be an important element of a successful fight against the recent pandemic.

1. **Operational strategies of a trauma hub in early coronavirus disease 2019 pandemic.**  
   Casiraghi Alessandro International orthopaedics 2020;44(8):1511-1518.

PURPOSEThe "Spedali Civili", one of the largest hospitals in the Italian region most affected by SARS-CoV-2 infection, is managing a large number of traumatic injuries. The objective of this article is to share our operational protocols to deliver an appropriate hospital trauma care in the context of the COVID-19 pandemic.METHODSWe changed our work shifts, in consideration of the high number of patients; colleagues from smaller hospitals in the area joined us to increase the number of surgeons available. Thanks to the collaboration between orthopaedists, anaesthesiologists, and nurses, we created a flow chart and separate routes (in the emergency room, in the wards, and in the operating rooms) to optimize patient management. Our protocols allow us to always provide healthcare professionals with the correct personal protective equipment for the task they are performing.RESULTSOur strategies proved to be practical and feasible. Having a well thought plan helped us to provide for the most robust response possible. We have not yet been able to study the effectiveness of our protocols, and our recommendations may not be applicable to all healthcare facilities. Nonetheless, sharing our early experience can help other institutions conducting and adapting such plans more quickly.CONCLUSIONSHaving a clear strategy during the COVID-19 pandemic kept our systems resilient and effective and allowed us to provide high-quality trauma care. We offer this approach for other institutions to adopt and adapt to their local setting.

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1. **Optimizing the trauma resuscitation bay during the covid-19 pandemic.**  
   Livingston David Hugh Trauma surgery & acute care open 2020;5(1):e000488.

The covid-19 global pandemic due to the SARS-CoV2 (CoV2) virus has created the need to adapt hospital workspaces and staffing models, and trauma is no exception. While the optimal configuration of a trauma resuscitation area is debatable, the space needs to be large enough to accommodate the trauma team and ancillary staff. It also needs to have ready access to supplies and equipment to quickly and easily control hemorrhage, secure an airway and initiate fluid resuscitation. Lastly, stores of personal protective equipment in the form of fluid resistant gowns, head covering, face shield, and gloves (both sterile and non-sterile) should be readily available but under strict access. As CoV2 carriers increased in our population in New Jersey, we treated each incoming trauma patient as a potentially CoV2-positive case and sought to reconfigure out trauma resuscitation area to minimize exposure of our supplies to aerosolized virus.

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1. **Our Experience of Trauma Management During Novel Coronovirus 2019 (COVID-19) Pandemic in a Busy Trauma Center in Southern Iran.**  
   Akbarialiabad H. Bulletin of emergency and trauma 2020;8(3):199-201.

During the past few months, the novel coronavirus 2019 (COVID-19) pandemic has significantly affected medical service provision. In Iran, it has caused around 197,000 inflictions and 9200 deaths up to June 18, 2020. While many departments turned to telehealth in this era, the trauma service should provide non-stop in presence service to the trauma victims. Our trauma center is the largest in the southwest of Iran, with the mean annual admission of 18,500 polytrauma patients. In this center, we designed a safety protocol to mitigate the spread of disease and also have a more robust case finding system, especially among asymptomatic carriers who attend hospitals based on their trauma. In brief, all unstable patients were considered SARS-COV-2 positive and were directed toward the Specialized COVID-19 related ICU. For all stable patients, history, physical examination, CXR, and lab test (Complete Blood Count, Erythrocyte Sedimentation Rate, C-Reactive Protein) were ordered before entering the wards. If there was any suspicion of COVID-19, the stable patient was admitted to the COVID-19 specialized ward. Among all 1805 patients admitted during a ten weeks interval (from January 30, 2020, to April 14, 2020), 84 had a red flag and toward to COVID-19 related wards. Of those, 67 had positive PCR or evidence in CT in favor of the COOVID-19. Moreover, during regular workups, we found that 19 completely asymptomatic trauma victims had typical Chest CT scan findings of COVID-19.

1. **Pandemic Adaptive Measures in a Major Trauma Center: Coping With COVID-19.**  
   Sheridan Gerard A. Journal of patient safety 2020;16(2):177-178.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=b5629a9a4e31f71e2b78942306efde82)

1. **Patientenaufkommen, Diagnosen und Verletzungsmechanismen eines uberregionalen Traumazentrums mit Beginn der COVID-19-Pandemie im Vergleich zum Mittelwert der 3 Vorjahre : Eine retrospektive, epidemiologische Auswertung von 4967 PatientenPatient volume, diagnosis and injury mechanisms in a level 1 trauma center at the beginning of the COVID-19 pandemic in comparison to the mean of the 3 previous years : A retrospective, epidemiological evaluation of 4967 patients**  
   Graulich T. Der Unfallchirurg 2020;:No page numbers.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=3025655e4a6aa18ffea65c54f66457bc)

1. **Pediatric Trauma and the COVID-19 Pandemic: A 12-Year Comparison in a Level-1 Trauma Center.**  
   Sheridan GA HSS journal : the musculoskeletal journal of Hospital for Special Surgery 2020;:1-5.

BACKGROUND: The effect of COVID-19 on pediatric trauma rates is still largely under investigation. With the potential need to reallocate human and financial resources at this challenging time, it will be useful to have detailed descriptions of the rates of pediatric trauma and understanding of how the pandemic affects these rates. QUESTIONS/PURPOSES: We sought to describe the effect of the COVID-19 pandemic on the number of acute pediatric trauma admissions and procedures performed in a level-I trauma center in Cork University Hospital, Ireland. METHODS: We compared the number of acute traumatic pediatric admissions and procedures that occurred during the first 4 weeks of a nationwide lockdown due to COVID-19 with that of the same 4-week period in each of the preceding 11 years. Seasonal variables were measured and controlled for using multivariate regression analysis. RESULTS: A total of 545 pediatric patients (under 16 years of age) were included. Over 12 years, the lowest number of acute traumatic pediatric admissions and procedures was recorded during the 2020 pandemic. There was a significant correlation between the number of school days and the number of acute traumatic admissions, as well as the procedures performed. The relationship between the number of school days and the number of trauma procedures was evident even when controlling for confounder variables of seasonal variation. CONCLUSION: The COVID-19 pandemic significantly reduced the number of acute traumatic pediatric admissions and procedures performed in our level-I trauma center, likely because of a reduction in school days. With the reopening of schools, playgrounds, and sporting events, an increase in pediatric trauma admissions is anticipated. The results of this study can help prepare institutions and regulatory bodies to plan appropriately for this new phase.

1. **Preparing an orthopedic department for COVID-19.**  
   Jensen Rune Dall Acta orthopaedica 2020;:1-6.

Background and purpose - The COVID-19 pandemic has disrupted healthcare services around the world. We (1) describe the organizational changes at a level 1 trauma center, (2) investigate how orthopedic healthcare professionals perceived the immense amount of information and educational activities, and (3) make recommendations on how an organization can prepare for disruptive situations such as the COVID-19 pandemic in the future.Methods - We conducted a retrospective survey on the organizational restructuring of the orthopedic department and the learning outcomes of a needs-driven educational program. The educational activities were evaluated by a non-validated, 7-item questionnaire.Results - The hospital established 5 COVID-19 clusters, which were planned to be activated in sequential order. The orthopedic ward comprised cluster 4, where orthopedic nursing staff were teamed up with internal medicine physicians, while the orthopedic team were redistributed to manage minor and major injuries in the emergency department (ED). The mean learning outcome of the educational activities was high-very high, i.e., 5.4 (SD 0.7; 7-point Likert scale). Consequently, the staff felt more confident to protect themselves and to treat COVID-19 patients.Interpretation - Using core clinical competencies of the staff, i.e., redistribution of the orthopedic team to the ED, while ED physicians could use their competencies treating COVID-19 patients, may be applicable in other centers. In-situ simulation is an efficient tool to enhance non-technical and technical skills and to facilitate organizational learning in regard to complying with unforeseen changes.

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1. **Rapid ethnographic assessment of the COVID-19 pandemic April 2020 'surge' and its impact on service delivery in an Acute Care Medical Emergency Department and Trauma Center.**  
   Palinkas LA BMJ open 2020;10(10):e041772.

OBJECTIVES: Assess the impacts of the COVID-19 pandemic on service delivery by frontline healthcare providers in acute care medical and emergency department settings and identify strategies used to cope with pandemic-related physical and mental health demands. DESIGN: Rapid clinical ethnography of patient-provider encounters during an initial pandemic 'surge' conducted by a team of clinician-researchers using a structured protocol for qualitative data collection and analysis. SETTING: Level 1 trauma centre at Harborview Hospital in Seattle Washington in April 2020. PARTICIPANTS: Frontline clinical providers serving as participant observers during performance of their clinical duties recorded observations and summaries of conversations with other providers and patients. RESULTS: We identified four different kinds of impacts: procedural, provider, patient and overall. Each impact highlighted two or more levels of a socioecological model of services delivery: (1) the epidemiology of COVID-19, (2) outer setting, (3) inner or organisational setting and (4) individual patient and provider. Despite significant changes in procedures that included COVID-19 screening of all admitted patients, social distancing and use of personal protective equipment, as well as changes in patient and provider behaviour, the overall impact of the pandemic on the emergency department and acute care service delivery was minimal. This is attributed to having a smaller surge than expected, a quick response by the healthcare system to anticipated demands for service delivery and protection of patients and providers, adequate supplies and high provider morale. CONCLUSIONS: Although limited to one setting in one healthcare system in one community, the findings offer some important lessons for healthcare systems that have yet to be impacted as well as systems that have been more severely impacted. Each of the socioecological framework levels was found to impact service delivery to patients, and variations at each of these levels account for variations in that quality of care globally.

1. **Recommendations of protective measures for orthopedic surgeons during COVID-19 pandemic.**  
   Wang Yulong Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA 2020;28(7):2027-2035.

PURPOSEIt was the primary purpose of the present systematic review to identify the optimal protection measures during COVID-19 pandemic and provide guidance of protective measures for orthopedic surgeons. The secondary purpose was to report the protection experience of an orthopedic trauma center in Wuhan, China during the pandemic.METHODSA systematic search of the PubMed, Cochrane, Web of Science, Google Scholar was performed for studies about COVID-19, fracture, trauma, orthopedic, healthcare workers, protection, telemedicine. The appropriate protective measures for orthopedic surgeons and patients were reviewed (on-site first aid, emergency room, operating room, isolation wards, general ward, etc.) during the entire diagnosis and treatment process of traumatic patients.RESULTSEighteen studies were included, and most studies (13/18) emphasized that orthopedic surgeons should pay attention to prevent cross-infection. Only four studies have reported in detail how orthopedic surgeons should be protected during surgery in the operating room. No detailed studies on multidisciplinary cooperation, strict protection, protection training, indications of emergency surgery, first aid on-site and protection in orthopedic wards were found.CONCLUSIONStrict protection at every step in the patient pathway is important to reduce the risk of cross-infection. Lessons learnt from our experience provide some recommendations of protective measures during the entire diagnosis and treatment process of traumatic patients and help others to manage orthopedic patients with COVID-19, to reduce the risk of cross-infection between patients and to protect healthcare workers during work.LEVEL OF EVIDENCEIV.

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1. **Reduced Number of Pediatric Orthopedic Trauma Requiring Operative Treatment during COVID-19 Restrictions: A Nationwide Cohort Study.**  
   Raitio A. Scandinavian journal of surgery : SJS : official organ for the Finnish Surgical Society and the Scandinavian Surgical Society 2020;:1457496920968014.

BACKGROUND AND AIMSThe coronavirus outbreak significantly changed the need of healthcare services. We hypothesized that the COVID-19 pandemic decreased the frequency of pediatric fracture operations. We also hypothesized that the frequency of emergency pediatric surgical operations decreased as well, as a result of patient-related reasons, such as neglecting or underestimating the symptoms, to avoid hospital admission.MATERIALS AND METHODSNationwide data were individually collected and analyzed in all five tertiary pediatric surgical/trauma centers in Finland. Operations related to fractures, appendicitis, and acute scrotum in children aged above 16 years between March 1 and May 31 from 2017 to 2020 were identified. The monthly frequencies of operations and type of traumas were compared between prepandemic 3 years and 2020.RESULTSAltogether, 1755 patients were identified in five tertiary hospitals who had an emergency operation during the investigation period. There was a significant decrease (31%, p = 0.03) in trauma operations. It was mostly due to reduction in lower limb trauma operations (32%, p = 0.006). Daycare, school, and organized sports-related injuries decreased significantly during the pandemic. These reductions were observed in March and in April. The frequencies of appendectomies and scrotal explorations remained constant.CONCLUSIONAccording to the postulation, a great decrease in the need of trauma operations was observed during the peak of COVID-19 pandemic. In the future, in case similar public restrictions are ordered, the spared resources could be deployed to other clinical areas. However, the need of pediatric surgical emergencies held stable during the COVID-19 restrictions.

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1. **Reflections from London's Level-1 Major Trauma Centres during the COVID crisis.**  
   Tahmassebi Ramon European journal of orthopaedic surgery & traumatology : orthopedie traumatologie 2020;30(6):951-954.

Emergence of the Covid-19 pandemic resulted in dramatic changes in global healthcare provision. Resources were redirected across all healthcare sectors to support the treatment of viral pneumonia with resultant effects on other essential services. We describe the impact of this on the provision of major trauma care in a major capital city.

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1. **Regional trauma patterns during the COVID-19 pandemic.**  
   Staunton Peter The surgeon : journal of the Royal Colleges of Surgeons of Edinburgh and Ireland 2020;:No page numbers.

BACKGROUNDThe current pandemic has impacted heavily on health systems, making unprecedented demands on resources, and forcing reconfiguration of services. Trauma and orthopaedic units have cancelled elective surgery, moved to virtual based clinics and have been forced to reconsider the provision of trauma. Our national elective orthopaedic centre has been re-designated as a trauma centre to allow tertiary centres re-direct triaged trauma. Many governments, as part of their COVID-19 management, have significantly restricted activity of the general population. We proposed that trauma patterns would change alongside these changes and maintaining existing standards of treatment would require dedicated planning and structures.METHODSReferrals over a six-week period (March 15th to April 30th) were retrospectively reviewed. Data was collected directly from our referral database and a database populated. Analysis was performed to assess trauma volume, aetiology, and changes in trends.RESULTSThere were one hundred and fifty-nine referrals from three individual hospitals within the timeframe. Mean age of patient's referred was 55 (range17-92). Males accounted for 45% of cases. F&A injuries were the most common (32%), followed by H&W (28%), UL (17%), H&F (16%) and K&T (7%). In comparison to the corresponding time-period in 2019, trauma theatre activity reduced by almost one half (45.3%) CONCLUSION: The majority of trauma referred to our Dublin based centre during COVID-19 related population restrictions appears to be home based and trauma volumes have decreased. Significant reductions are apparent in work and sport related injuries suggestive of compliance with COVID-19 activity guidelines. Maintaining existing standards of treatment requires dedicated planning.

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1. **Rethinking Trauma Hospital Services in one of Spain's Largest University Hospitals during the COVID-19 pandemic. How can we organize and help? Our experience.**  
   Nuñez JH Injury 2020;:No page numbers.

INTRODUCTION: The severe disruptions caused by the SARS-CoV-2 coronavirus have necessitated a redistribution of resources to meet hospitals' current service needs during this pandemic. The aim is to share our experiences and outcomes during the first month of the Covid-19 pandemic, based on the strategies recommended and strategies we have implemented. METHODS: Our experience comes from our work at a referral hospital within the Spanish National Health System. Changes to clinical practice have largely been guided by the current evidence and four main principles: (1) patient and health-care worker protection, (2) uninterrupted necessary care, (3) conservation of health-care resources, (4) uninterrupted formation for residents. Based on these principles, changes in the service organization, elective clinical visits, emergency visits, surgical procedures, and inpatient and outpatient care were made. RESULTS: Using the guidance of experts, we were able to help the hospital address the demands of the Covid-19 outbreak. We reduced to a third of our orthopaedics and trauma hospital beds, provided coverage for general emergency services, and five ICUs, all continuing to provide care for our patients, in the form of 102 trauma surgeries, 6413 phone interviews and 520 emergency clinic visits. Also in the third week, we were able to restart morning meetings via telematics, and teaching sessions for our residents. On the other hand, eight of the healthcare personnel on our service (10.8%) became infected with Covid-19. CONCLUSIONS: As priorities and resources increasingly shift towards the COVID-19 pandemic, it is possible to maintain the high standard and quality of care necessary for trauma and orthopaedics patients while the pandemic persists. We must be prepared to organize our healthcare workers in such a way that the needs of both inpatients and outpatients are met. It is still possible to operate on those patients who need it. Unfortunately, some healthcare workers will become infected. It is essential that we protect those most susceptible to severer consequences of Covid-19. Also crucial are optimized protective measures.

1. **SAFE PATIENT HANDLING AND MOBILITY PLAN FOR THE COVID-19 UNITS AT A LEVEL 1 TRAUMA CENTER IN FLORIDA.**  
   LABRECHE MANON International Journal of Safe Patient Handling & Mobility (SPHM) 2020;10(2):59-66.

With COVID-19 cases on the rise in many states, it is important for healthcare facilities to take action to protect their frontline staff from musculoskeletal injuries. Many of these staff are working alone in the COVID-19 rooms in an effort to limit exposure to others as well as preserve personal protective equipment (PPE). This can place them at a greater risk of injury. This article will review how a level 1 trauma center came together and created a plan to maximize the safety of their frontline staff who work in their designated COVID-19 units. This plan included placing patient lift equipment in every COVID-19 ICU room to ensure that equipment is utilized for the proning and turning of all patients regardless of their size. Hands-on education sessions were provided and short videos were created as a resource to all team members working on these units. The role of the injury prevention (IP) team is described in this article, as they continue to play an instrumental part to ensuring that patient lift equipment is accessible, available, and in good working condition as well as assisting with the more complex/bariatric patient handling tasks on the COVID-19 units.

1. **Telemedicine in orthopaedics and its potential applications during COVID-19 and beyond: A systematic review.**  
   Haider Z. Journal of telemedicine and telecare 2020;:1357633X20938241.

INTRODUCTION: Telemedicine is the delivery of healthcare from a remote location using integrated computer/communication technology. The current COVID-19 pandemic has led to increased adoption of telemedicine with national orthopaedic governing bodies advocating its use, as evidence suggests that social distancing maybe necessary until 2022. This systematic review aims to explore evidence for telemedicine in orthopaedics to determine its advantages, validity, effectiveness and utilisation. METHODS: Databases of PubMed, Web of Science, Scopus and CINAHL were systematically searched and articles were included if they involved any form of telephone or video consultation in an orthopaedic population. Findings were synthesised into four themes: patient/clinician satisfaction, accuracy and validity of examination, safety and patient outcomes and cost effectiveness. Quality assessment was undertaken using Cochrane and Joanna Briggs Institute appraisal tools. RESULTS: Twenty-one studies were included consisting of nine randomised controlled trials (RCTs). Studies revealed high patient satisfaction with telemedicine for convenience, less waiting and travelling time. Telemedicine was cost effective particularly if patients had to travel long distances, required hospital transport or time off work. No clinically significant differences were found in patient examination nor measurement of patient-reported outcome measures. Telemedicine was reported to be a safe method of consultation. DISCUSSION: Evidence suggests that telemedicine in orthopaedics can be safe, cost effective, valid in clinical assessment and with high patient/clinician satisfaction. However, more high-quality RCTs are required to elucidate long-term outcomes. This systematic review presents up-to-date evidence on the use of telemedicine and provides data for organisations considering its use in the current COVID-19 pandemic and beyond.

1. **The Early Effect of COVID-19 Restrictions on an Academic Orthopedic Surgery Department.**  
   Earp Brandon E. Orthopedics 2020;43(4):228-232.

The SARS-CoV-2 (COVID-19) pandemic has had a global influence on health care. The authors examined the early effect of hospital- and state-mandated restrictions on an orthopedic surgery department and hypothesized that the volume of ambulatory clinic encounters, office and surgical procedures, and cases would dramatically decrease. A retrospective review was performed of all encounters in an orthopedic surgery department at a level I academic trauma center during a 4-week period, from March 16, 2020, to April 12, 2020. The results were compared with two control 4-week periods, February 17, 2020, to March 15, 2020, and March 16, 2019, to April 12, 2019. Weekly volume and work relative value units (RVUs) of clinic encounters, office and surgical procedures, and cases were assessed. The type of ambulatory visit also was recorded. Comparisons of mean weekly volume and RVUs between the study and control periods were performed with Student's t test. Surgical cases were categorized into fracture or dislocation, acute soft tissue or nerve injury, infection, oncology, and elective or nonurgent. After implementation of hospital- and state-mandated restrictions on elective health care, the volume of ambulatory orthopedic surgery clinic encounters decreased by 74% to 77%, the volume of clinic procedures decreased by 95%, and the volume of surgical cases decreased by 88%. The percentage of clinic visits performed via telemedicine increased from 0.3% to 81.2%. Elective surgical cases ceased, and the volume of nonelective surgical cases decreased by 51%. During the first 4 weeks after COVID-19-related restrictions were imposed, an immediate and dramatic effect was observed. Compared with the control periods, significant reductions were seen in the volume of ambulatory encounters, office-based procedures, and surgical cases. In addition, the volume of nonelective surgical cases decreased by 51%. [Orthopedics. 2020;43(4):228-232.].

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1. **The early effects of social distancing resultant from COVID-19 on admissions to a Level I trauma center.**  
   Aljuboori Z. Injury 2020;51(10):2332.

1. **The Effect of Shelter-in-Place Orders and the COVID-19 Pandemic on Orthopaedic Trauma at a Community Level II Trauma Center.**  
   Stoker S. Journal of orthopaedic trauma 2020;:No page numbers.

OBJECTIVES: Evaluate the effect of the COVID-19 pandemic and the "shelter-in-place" order on orthopaedic trauma presenting to a community level II trauma center. It is hypothesized the overall number of orthopaedic trauma encounters (OTE), the number of OTEs related to both high and low severity injuries, as well as the proportion of OTEs related to high severity versus low severity injuries decreased compared to previous years. METHODS: A retrospective analysis was conducted of OTEs between 2016-2020. High and low severity OTEs were classified according to an algorithm created by the researchers. Data were statistically analyzed and compared to external data for traffic counts, motor vehicle accidents, and TSA checkpoints. RESULTS: A 45.1% decrease (p=.0005) was seen in OTEs from March and April 2016-2019 compared to 2020. The decrease began approximately 12 days prior to the shelter-in-place order. There was a 58.8% decrease in high severity injuries with a fracture (p=.013) and a 42.9% decrease in low severities injuries (p=.0003). Proportion of high to low severity OTEs was unchanged. CONCLUSIONS: The quantity of OTEs was significantly affected by the COVID-19 pandemic and Michigan shelter-in-place order. A decrease in both high and low severity OTEs was found, however there was no statistically significant change in the ratio of high to low severity OTEs compared to previous years. While it is difficult to determine what portion of the decrease in OTE is attributable to the shelter-in-place order verses the COVID-19 pandemic in general, data suggest both play a role. LEVEL OF EVIDENCE: Level III. See Instructions for Authors for a complete description of Levels of Evidence.

1. **The Effect on Trauma Care Secondary to the COVID-19 Pandemic: Collateral Damage from Diversion of Resources.**  
   Haut ER Annals of surgery 2020;272(3):e204-7.

1. **The Effects of Lockdown During the SARS-CoV-2 Pandemic on Neuro-Trauma Related Hospital Admissions.**  
   Figueroa JM World neurosurgery 2020;:No page numbers.

Background The response to the global SARS-CoV-2 pandemic culminated in mandatory isolation throughout the world, with nation-wide confinement orders issued to decrease viral spread. These drastic measures were successful in "flattening the curve" and maintaining the prior rate of COVID-19 infections and deaths. To date, the effects of the COVID-19 pandemic on neuro-trauma has not been reported. Methods We retrospectively analyzed hospital admissions from Ryder Trauma Center at Jackson Memorial Hospital, during the months of March and April from 2016-2020. Specifically, we identified all patients who had cranial neuro trauma consisting of traumatic brain injury (TBI) and/or skull fractures, as well as spinal neuro trauma consisting of vertebral fractures and/or spinal cord injury (SCI). We then performed chart review to determine mechanism of injury and if emergent surgical intervention was required. Results Compared to previous years, we saw a significant decline in the number of neuro-traumas during the pandemic, with a 62% decline after the lockdown began. The number of emergent neuro-trauma surgical cases also significantly decreased by 84% in the month of April. Interestingly, while the number of vehicular traumas decreased by 77%, there was a significant 100% increase in the number of gunshot wounds. Conclusions Population seclusion had a direct effect on the frequency of neuro-trauma, while the change in relative proportion of certain mechanisms may be associated with the psychosocial effects of social distancing and quarantine.

1. **The impact of COVID-19 on shoulder and elbow trauma in skeletally immature population. An Italian survey.**  
   Gumina S. JSES international 2020;:No page numbers.

BACKGROUND: Aim of this study was to evaluate the impact of COVID-19 on the shoulder and elbow trauma in a skeletally immature population in 30 days starting from the March 8 2020, the first day of restrictions in Italy, and to compare it with the same days of 2019. MATERIALS AND METHODS: All the skeletally immature (younger than 18 ys) patients managed in the Emergency Unit of our Hospital between March 8 2020 and 8(th)April 2020 (COVID-19 period, C19) for a shoulder and elbow trauma were retrospectively included and compared to patients with similar ages admitted in the same period of 2019 (no COVID-19 period, NC19). Six categories of diagnosis were distinguished: 1) contusions, 2) no physeal fractures, 3) physeal fractures (Salter-Harris), 4) sprains/subluxations,5) dislocations, 6) others (tendinitis, wounds, low back pain, joint inflammation). According to the mechanism of injury we arbitrarily distinguished 6 subgroups: a) Accidental fall;b) Sport trauma; c) Accident at school; d) High energy trauma occurred by car, public transport, pedestrian investment; e) Fall from high. RESULTS: During the C19 period, the number of total accesses in our Trauma Center steeply decreased: two thirds less. Regardless of the patient age, we performed 65% less first aid shoulder/elbow services. Skeletally immature patients treated at our Trauma Center for all types of injury during the NC19 period were 350 and 54 during the C19 period; therefore, the influx of pediatric patients during the C19 period decreased by 84.6%. Furthermore: a) in the C19 period there were no cases of fractures, physeal fractures and dislocations of the shoulder; b) in the C19 period we had no cases of contusion, physeal fractures, and dislocations of the elbow; c) during the C19 period we observed the absence of high-energy, sports and school injuries; d) during the pandemic, shoulder and elbow injuries mainly occurred as a result of accidental fall at home. CONCLUSIONS: The pandemic forced us to become aware of the ways and places where skeletally immature subjects report shoulder and elbow traumas; therefore, it would be desirable that more considerable attention be directed towards the prevention of injury in areas at risk.

1. **The impact of COVID-19 on shoulder and elbow trauma: an Italian survey.**  
   Gumina Stefano Journal of shoulder and elbow surgery 2020;29(9):1737-1742.

BACKGROUNDBecause of the rapid spread of COVID-19, on March 8, 2020 Italy became a "protected area": people were told not to leave their homes unless it was essential. The aim of this study was to evaluate the activity of our trauma center, relative to shoulder and elbow, in the 30 days starting from March 8, 2020, the first day of restrictions in Italy, and to compare it with the same days of 2019 to weigh the impact of COVID-19 on shoulder and elbow trauma.MATERIALS AND METHODSPatients managed in our trauma center between March 8, 2020, and April 8, 2020 (COVID period), for shoulder and elbow trauma were retrospectively included and compared to patients admitted in the same period of 2019 (no-COVID period). Clinical records of all participants were examined to obtain information regarding age, sex, mechanism of injury, and diagnosis.RESULTSDuring the no-COVID period, 133 patients were admitted for a shoulder or elbow trauma; in the COVID period, there were 47 patients (65% less first aid). In the no-COVID and COVID period, patients with shoulder contusion totaled 60 (14.78% of all; male [M]: 34; female [F]: 26; mean age 51.8 years, range 18-88) and 11 (12.09% of all contusions; M: 7, F: 4; mean age 43 years, range 24-60), respectively. In the no-COVID period, 27 fractures (9.34% of all fractures) involved the shoulder, whereas 18 fractures (8.69%) were registered in the COVID period. In the no-COVID period, 14 elbow fractures were treated (4.8% of all fractures), compared with 4 in the COVID period. In the no-COVID and COVID periods, 6 patients (M: 5, F: 1; mean age 42 years, range 21-64) and 2 patients (M: 1, F: 1; mean age 29.5 years, range 24-35) reported having a feeling of momentary post-traumatic shoulder instability, and 0 and 1 patients (M: 1, F: 0; age 56 years), respectively, reported similar symptoms at the elbow. Finally, first or recurrent dislocations in the no-COVID period were 10, and in the COVID period, 7; elbow dislocations in the no-COVID period were 2, and in the COVID period, there were 3.CONCLUSIONSDuring the COVID period, we provided a reduced number of health services, especially for patients with low-energy trauma and for those who underwent sports and traffic accidents. However, during the COVID period, elderly subjects remain exposed to shoulder and elbow trauma due to low-energy (domestic) falls. The subsequent hospitalization of these patients has contributed to making it more difficult to manage the hospital wards that are partly occupied by COVID-19 patients.

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1. **The impact of SARS-CoV-2 (COVID-19) pandemic on trauma bay management and guideline adherence in a European level-one-trauma centre.**  
   Halvachizadeh S. International orthopaedics 2020;44(9):1621-1627.

PURPOSE: SARS CoV-2 (COVID-19) represents a pandemic that has led to adjustments of routine clinical practices. The initial management in the trauma bay follows detailed international valid algorithms. This study aims to work out potential adjustments of trauma bay algorithms during a global pandemic in order to reduce contamination and to increase safety for patients and medical personnel. METHODS: This retrospective cohort study compared patients admitted to the trauma bay of one academic level-one trauma centre in March and April 2019 with patients admitted in March and April 2020. Based on these datasets, possible adjustments of the current international guidelines of trauma bay management were discussed. RESULTS: Group Pan (2020, n = 30) included two-thirds the number of patients compared with Group Ref (2019, n = 44). The number of severely injured patients comparable amongst these groups: mean injury severity score (ISS) was significantly lower in Group Pan (10.5 ± 4.4 points) compared with Group Ref (15.3 ± 9.2 points, p = 0.035). Duration from admission to whole-body CT was significantly higher in Group Pan (23.8 ± 9.4 min) compared with Group Ref (17.3 ± 10.7 min, p = 0.046). Number of trauma bay admissions decreased, as did the injury severity for patients admitted in March and April 2020. In order to contain spreading of SARS Cov-2, the suggested recommendations of adjusting trauma bay protocols for severely injured patients include (1) minimizing trauma bay team members with direct contact to the patient; (2) reducing repeated examination as much as possible, with rationalized use of protective equipment; and (3) preventing potential secondary inflammatory insults. CONCLUSION: Appropriate adjustments of trauma bay protocols during pandemics should improve safety for both patients and medical personnel while guaranteeing the optimal treatment quality. The above-mentioned proposals have the potential to improve safety during trauma bay management in a time of a global pandemic.

1. **The impact of the novel coronavirus on trauma and orthopaedics in the UK.**  
   Morgan Catrin British journal of hospital medicine (London, England : 2005) 2020;81(4):1-6.

At first glance, the novel coronavirus pandemic and orthopaedic surgery appear separate entities. Orthopaedic surgeons are not generally considered front-line staff in terms of the treatment of the disease that the novel coronavirus causes compared with anaesthetic and medical colleagues. However, the impact that the novel coronavirus is likely to have on the musculoskeletal injury burden and the morbidity associated with chronic musculoskeletal disease is significant. This article summarises the strategies currently being developed for the remodelling of orthopaedic services in the UK and the emergency British Orthopaedic Association Standards for Trauma and Orthopaedic guidelines released on 24 March 2020 in managing urgent orthopaedic patients during the novel coronavirus pandemic.

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1. **The orthopaedic and traumatology scenario during Covid-19 outbreak in Italy: chronicles of a silent war.**  
   Benazzo F. International orthopaedics 2020;44(8):1453-1459.

BACKGROUND: From February 21, the day of hospitalisation in ICU of the first diagnosed case of Covid-19, the social situation and the hospitals' organisation throughout Italy dramatically changed. METHODS: The CIO (Club Italiano dell'Osteosintesi) is an Italian society devoted to the study of traumatology that counts members spread in public and private hospitals throughout the country. Fifteen members of the CIO, Chairmen of 15 Orthopaedic and Trauma Units of level 1 or 2 trauma centres in Italy, have been involved in the study. They were asked to record data about surgical, outpatients clinics and ER activity from the 23rd of February to the 4th of April 2020. The data collected were compared with the data of the same timeframe of the previous year (2019). RESULTS: Comparing with last year, overall outpatient activity reduced up to 75%, overall Emergency Room (ER) trauma consultations up to 71%, elective surgical activity reduced up to 100% within two weeks and trauma surgery excluding femoral neck fractures up to 50%. The surgical treatment of femoral neck fractures showed a stable reduction from 15 to 20% without a significant variation during the timeframe. CONCLUSIONS: Covid-19 outbreak showed a tremendous impact on all orthopaedic trauma activities throughout the country except for the surgical treatment of femoral neck fractures, which, although reduced, did not change in percentage within the analysed timeframe.

1. **The response of Trauma & Orthopaedic Departments to the first four weeks of lockdown for the COVID-19 pandemic - A trainee-led analysis of the East of England.**  
   Anon. The surgeon : journal of the Royal Colleges of Surgeons of Edinburgh and Ireland 2020;:No page numbers.

Through a trainee research collaborative, we have studied the changes in practice of 12 T&O departments across the East of England over the first four weeks of the UK lockdown and COVID-19 pandemic, comparing to activity levels with the corresponding period in 2019. We focused on changes in T&O practice, training and redeployment of Trainees. Units differ considerably in several aspects of practice. We found a 97% reduction in elective operating, 64% reduction in elective outpatient activity and 37% reduction in operative trauma. 58% of trainees continued working in T&O clinics, with an average of 6 operative cases over this period. Our modelling suggests that the impact on training will persist; counter-measures must be incorporated into central recovery planning.

1. **Trauma and orthopaedics in the COVID-19 pandemic: breaking every wave.**  
   Tay Keng Jin Darren Singapore medical journal 2020;61(8):396-398.

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1. **Trauma care and COVID-19 pandemic.**  
   Sawhney Chhavi Journal of anaesthesiology, clinical pharmacology 2020;36:S115.

The Coronavirus SARS- CoV-2 (COVID-19) pandemic has overwhelmed the ability of health care systems all over the world. With the spread of the disease, countries have adopted different models to reorganize infrastructure and reallocate the resources to deal with the pandemic. All the nonurgent hospital services have been postponed. But, trauma and emergency services continue to function according to the established protocols with few modifications. During the pandemic, trauma care is based on clinical urgency, safety of the patient as well as health care workers (HCWs) and conservation of resources. The strategies include non-operative management if possible, restricting the number of personnel and utilization of remote consultation or telemedicine. In the present article, we discuss the triage and management of trauma victim during the pandemic, indications for emergency surgery and psychological impact of the pandemic. We also discuss the future challenges during the post-COVID-19 phase.

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1. **Trauma center activity and surge response during the early phase of the COVID-19 pandemic-the Philadelphia story.**  
   Qasim Z. The journal of trauma and acute care surgery 2020;89(4):821-828.

Supplemental digital content is available in the text.

1. **Trauma Trends During the Initial Peak of the COVID-19 Pandemic in the Midst of Lockdown: Experiences From a Rural Trauma Center.**  
   Rhodes HX Cureus 2020;12(8):e9811.

Background  As the early peak phase in the coronavirus outbreak has intensified, stay at home mandates were advised requiring individuals to remain home to prevent community transmission of the disease. Further mandates escalated isolated environments such as school closures, social distancing, travel restrictions, closure of public gathering spaces, and business closures. As citizens were forced to stay home during the pandemic, the crisis created unique trends in trauma referrals, which consisted of atypical trends in injuries related to trauma.  Methods  A retrospective review of all trauma registry patients presenting to a rural American College of Surgeons (ACS) verified Level I trauma center with associated trauma activation before and during the Coronavirus 2019 (COVID-19) pandemic, integral dates January 1, 2020, to May 1, 2020. A comparison was made regarding trauma trends based on the previous year (January 1, 2019, to May 1, 2019). The data collected included patient characteristics, grouping by trauma activation, injury type, injury severity score (ISS), alcohol screen, drug screen, and mode of injury.  Results   A statistically significant increase was found largely among males (p = 0.02) with positive alcohol screens (p < 0.001). The statistically significant mode of injury among this trauma population included falling, jumping, pushed (p = 0.02); self-harm-jump (p = 0.01); assault (p = 0.03); and assault with sharp object (p = 0.036).  Conclusions  Although overall trauma volume was reduced preceding and during the COVID-19 stay at home mandates, a significant increase in specific trauma trends were observed, such as falls, jumps, and pushed; self-harm-jumps; assaults; and assaults with sharp objects. Largely, the trauma trends were among men with higher levels of alcohol than previously reported.

1. **Traumatic paediatric neurosurgical emergencies during the COVID-19 pandemic: experience in a single regional paediatric major trauma centre.**  
   Andalib A. Child's nervous system : ChNS : official journal of the International Society for Pediatric Neurosurgery 2020;:1-2.

1. **Upscaling Virtual Fracture Clinic Use Is a Safe, Effective Measure in the Delivery of Trauma Care.**  
   Hughes Andrew J. Journal of orthopaedic trauma 2020;34(9):e349.

The Virtual Fracture Clinic (VFC) has proved beneficial in reducing footfall within the hospital setting, improving the cost of running a trauma service, while satisfying the majority of referred patients. The mandatory upscaling of telemedicine use, specifically the enhancement of the VFC, amidst the COVID-19 pandemic, was analyzed. The remit of the VFC within our hospital was expanded so as to include all referred ambulatory trauma. Outcomes of our VFC review over the 6-week period following the introduction of the national Irish COVID-19-related restrictions were gathered. These outcomes were analyzed and compared with the corresponding 6-week period from 2019. A 77.2% increase in the VFC referral volume was observed throughout the COVID-19-related period. Patients were directly discharged in 55.2% of cases in 2020, as opposed to 47.8% in 2019 (P = 0.044); referred directly for physiotherapy in 32.9% of cases in 2020, as opposed to 28.9% in 2019 (P = 0.173); and referred to a fracture clinic in 11.9% of cases in 2020, as opposed to 23.7% in 2019 (P < 0.001). Also, 3.0% of patients returned to the clinic after discharge in 2020, compared with 4.4% in 2019 (P = 0.237); 4.5% of patients were referred for surgery in 2020, as opposed to 2.2% in 2019 (P = 0.105). The VFC proved to be an efficient tool in managing ambulatory trauma throughout the pandemic. Upscaling the VFC to include all ambulatory trauma is a safe, effective method in reducing clinic attendances and hospital footfall, whilst ensuring that high care standards are maintained. LEVEL OF EVIDENCE:: Therapeutic Level III. See Instructions for Authors for a complete description of levels of evidence.

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1. **Variation in volumes and characteristics of trauma patients admitted to a level one trauma centre during national level 4 lockdown for COVID-19 in New Zealand.**  
   Christey G. The New Zealand medical journal 2020;133(1513):81-88.

AIM: The aims of this study were to describe the variation in volumes and types of injuries admitted to a level one trauma centre in New Zealand over two 14-day periods before and during the national level 4 lockdown for COVID-19; and highlight communities at risk of preventable injury that may impact negatively on hospital resources. METHOD: A retrospective, descriptive study of prospectively collected data in the Midland Trauma Registry in New Zealand. RESULTS: Overall there was a reduction of 43% in all injury-related admissions with significant reductions seen in major injury (50% reduction), males (50% reduction) and children aged 0-14 years (48% reduction). Results for ethnicity and persons aged over 14 years were within 3% deviation of this overall 43% reduction. Injuries at home, particularly falls, predominate. CONCLUSION: Despite the significant reduction in admissions during level 4 lockdown, hospitals should continue to provide full services until resource limitations are unavoidable. Immediate messaging is recommended to reduce rates of injury on the farm and at home, specifically falls prevention. Ongoing attention of road users to road safety is essential to reduce the incidence of preventable major injury. These immediate measures can potentially reduce unnecessary pressure on hospital beds and resources during the pandemic.

1. **Were protective procedures against SARS-CoV-2 effective in an orthopaedic and trauma centre during the lockdown period? A retrospective study.**  
   Bouche PA International orthopaedics 2020;:1-6.

PURPOSE: The SARS-CoV-2 epidemic started in December 2019 in Wuhan. The lockdown was declared on March 16, 2020 in France. Our centre had to adapt daily practices to continue to take care of bone and soft tissue tumours and emergencies. Through this study, we wanted to assess the various procedures implemented during the lockdown period between March 17 and May 10. METHODS: A monocentric retrospective cohort study was conducted in Cochin Hospital (Paris, France). Patients included were those who had surgery during the lockdown period. To take care of COVID-19 positive and negative patients, various procedures have been set up: reverse transcriptase polymerase chain reaction (RT-PCR) tests for all hospitalized patients, a specific unit for COVID-positive patients, a specific surgical room, and use of protective personal equipment. To allow the effectiveness of the procedures implemented, we evaluated the number of complications attributed to SARS-CoV-2 and the number of patients who became COVID positive during hospitalization. RESULTS: During the lockdown period, there were 199 procedures of three types of procedures in our centre: 79 traumatology procedures (39.7%), 76 of bone and soft tissues tumours (38.2%), and 44 procedures related to infection (22.1%). We observed 13 complications (6.5%) during hospitalization, and only one patient became COVID-19 positive during the hospitalization. CONCLUSION: The COVID-19 epidemic has been a challenge for organization and adaptation to manage all COVID-19 positive and COVID negative. Through this study, we wanted to assess our procedures taken. They had been effective due to the low number of contamination and complications.

1. **What Was the Change in Telehealth Usage and Proportion of No-show Visits for an Orthopaedic Trauma Clinic During the COVID-19 Pandemic?**  
   Siow MY Clinical orthopaedics and related research 2020;478(10):2257-2263.

BACKGROUND: In response to the coronavirus disease 2019 (COVID-19) pandemic, the Centers for Medicare and Medicaid Services pledged payment for telehealth visits for the duration of this public health emergency in an effort to decrease COVID-19 transmission and allow for deployment of residents and attending physicians to support critical-care services. Although the COVID-19 pandemic has vastly expanded telehealth use, no studies to our knowledge have analyzed the implementation and success of telehealth for orthopaedic trauma. This population is unique in that patients who have experienced orthopaedic trauma range in age from early childhood to late adulthood, they vary across the socioeconomic spectrum, may need to undergo emergent or urgent surgery, often have impaired mobility, and, historically, do not always follow-up consistently with healthcare providers. QUESTIONS/PURPOSES: (1) To what extent did telehealth usage increase for an outpatient orthopaedic trauma clinic at a Level 1 trauma center from the month before the COVID-19 stay-at-home order compared with the month immediately following the order? (2) What is the proportion of no-show visits before and after the implementation of telehealth? METHODS: After nonurgent clinic visits were postponed, telehealth visits were offered to all patients due to the COVID-19 stay-at-home order. Patients with internet access who had the ability to download the MyChart application on their mobile device and agreed to a telehealth visit were seen virtually between March 16, 2020 and April 10, 2020 (COVID-19) by three attending orthopaedic trauma surgeons at a large, urban, Level 1 trauma center. Clinic schedules and patient charts were reviewed to determine clinical volumes and no-show proportions. The COVID-19 period was compared with the 4 weeks before March 16, 2020 (pre-COVID-19), when all visits were conducted in-person. The overall clinic volume decreased from 340 to 233 (31%) between the two periods. The median (range) age of telehealth patients was 46 years (20 to 89). Eighty-four percent (72 of 86) of telehealth visits were postoperative and established nonoperative patient visits, and 16% (14 of 86) were new-patient visits. To avoid in-person suture or staple removal, patients seen for their 2-week postoperative visit had either absorbable closures, staples, or nonabsorbable sutures removed by a home health registered nurse or skilled nursing facility registered nurse. If radiographs were indicated, they were obtained at outside facilities or our institution before patients returned home for their telehealth visit. RESULTS: There was an increase in the percentage of office visits conducted via telehealth between the pre-COVID-19 and COVID-19 periods (0% [0 of 340] versus 37% [86 of 233]; p < 0.001), and by the third week of implementation, telehealth comprised approximately half of all clinic visits (57%; [30 of 53]). There was no difference in the no-show proportion between the two periods (13% [53 of 393] for the pre-COVID-19 period and 14% [37 of 270] for the COVID-19 period; p = 0.91). CONCLUSIONS: Clinicians should consider implementing telehealth strategies to provide high-quality care for patients and protect the workforce during a pandemic. In a previously telehealth-naïve clinic, we show successful implementation of telehealth for a diverse orthopaedic trauma population that historically has issues with mobility and follow-up. Our strategies include postponing long-term follow-up visits, having sutures or staples removed by a home health or skilled nursing facility registered nurse, having patients obtain pertinent imaging before the visit, and ensuring that patients have access to mobile devices and internet connectivity. Future studies should evaluate the incidence of missed infections or stiffness as a result of telehealth, analyze the subset of patients who may be more vulnerable to no-shows or technological failures, and conduct patient surveys to determine the factors that contribute to patient preferences for or against the use of telehealth. LEVEL OF EVIDENCE: Level III, therapeutic study.

1. **Where did all the trauma go? A rapid review of the demands on orthopaedic services at a UK Major Trauma Centre during the COVID-19 pandemic.**  
   Greenhalgh M. International journal of clinical practice 2020;:e13690.

AIMS: This retrospective study aims to quantify the early impact of the COVID-19 pandemic on trauma and orthopaedic surgery at a Major Trauma Centre (MTC) in the United Kingdom. We hypothesise that the social restrictions placed on the public by the government will reduce the amount of trauma presentations and operations performed. METHODS: A database of all trauma patients at the MTC was retrospectively reviewed from start of social restrictions on 16 March 2020, to 22nd April 2020 inclusive. Referrals to the orthopaedic team were identified and included; these were sub-classified into major trauma patients, fragility hip fractures and paediatric trauma. All patients undergoing surgical intervention were identified. The outcome measures were the total number of referrals and trauma operations performed in the time period. This was compared with the corresponding dates of the 2019. RESULTS: There was an overall decrease in the number of referrals to the orthopaedic team from 537 in 2019 to 265 in 2020 (50.7% reduction). The number of trauma operations carried out at the trust decreased from 227 in 2019 to 129 in 2020 (43.2% reduction). The number of paediatric referrals decreased from 56 in 2019 to 26 in 2020 (53.6% reduction), and the number of major trauma patients reduced from 147 in 2019 to 95 in 2020 (35.4%). Fragility hip fracture referrals remained similar, with 52 in 2019 compared to 49 in 2020. CONCLUSION: The COVID-19 pandemic has had a profound effect of the provision of trauma and orthopaedic surgery. We report a significant decrease in all orthopaedic referrals during the pandemic, leading to a greatly reduced number of trauma operations performed. This has allowed for reallocation of staff and resources. We must plan for the lifting of social restrictions, which may lead to an increase in patients presenting with trauma requiring operative intervention.

### Opening Internet Links

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**Word documents**  
Select Edit from the menu, the Find and type in your term in the search box which is presented. The search function will locate the first use of the term in the document. By pressing 'next' you will jump to further references.

## B. Search History

|  | **Source** | **Criteria** | **Results** |
| --- | --- | --- | --- |
| 1. | Medline | (Covid-19 OR "Covid 19").ti,ab | 60330 |
| 2. | Medline | (Coronavirus).ti,ab | 35660 |
| 3. | Medline | \*CORONAVIRUS/ | 3277 |
| 4. | Medline | ("Severe acute respiratory syndrome coronavirus 2").ti,ab | 6432 |
| 5. | Medline | (SARS-COV-2 OR "SARS COV 2").ti,ab | 18414 |
| 6. | Medline | (2019-nCOV OR 2019nCOV OR 2019n-COV).ti,ab | 939 |
| 7. | Medline | ("2019 Novel").ti,ab | 974 |
| 8. | Medline | (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7) | 79229 |
| 9. | Medline | ("Trauma care").ti,ab | 4045 |
| 10. | Medline | ("Trauma cent\*").ti,ab | 17214 |
| 11. | Medline | ("Trauma unit\*").ti,ab | 772 |
| 12. | Medline | ("Trauma department\*").ti,ab | 188 |
| 13. | Medline | ("Trauma team\*").ti,ab | 1173 |
| 14. | Medline | (Trauma ADJ2 Orthop?edics).ti,ab | 452 |
| 15. | Medline | (9 OR 10 OR 11 OR 12 OR 13 OR 14) | 22005 |
| 16. | Medline | (8 AND 15) | 108 |
| 17. | Medline | 16 [DT 2015-2020] | 108 |
| 18. | EMBASE | (Covid-19 OR "Covid 19").ti,ab | 59816 |
| 19. | EMBASE | (Coronavirus).ti,ab | 35889 |
| 20. | EMBASE | \*CORONAVIRUS/ | 3545 |
| 21. | EMBASE | ("Severe acute respiratory syndrome coronavirus 2").ti,ab | 6284 |
| 22. | EMBASE | (SARS-COV-2 OR "SARS COV 2").ti,ab | 18040 |
| 23. | EMBASE | (2019-nCOV OR 2019nCOV OR 2019n-COV).ti,ab | 1006 |
| 24. | EMBASE | ("2019 Novel").ti,ab | 1060 |
| 25. | EMBASE | (18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24) | 80273 |
| 26. | EMBASE | ("Trauma care").ti,ab | 4722 |
| 27. | EMBASE | ("Trauma cent\*").ti,ab | 22728 |
| 28. | EMBASE | ("Trauma unit\*").ti,ab | 1043 |
| 29. | EMBASE | ("Trauma department\*").ti,ab | 241 |
| 30. | EMBASE | ("Trauma team\*").ti,ab | 1572 |
| 31. | EMBASE | (Trauma ADJ2 Orthop?edics).ti,ab | 580 |
| 32. | EMBASE | (26 OR 27 OR 28 OR 29 OR 30 OR 31) | 28573 |
| 33. | EMBASE | (25 AND 32) | 109 |
| 34. | EMBASE | 33 [DT 2015-2020] [Publication types Article OR Report OR Review] | 85 |
| 35. | CINAHL | (Covid-19 OR "Covid 19").ti,ab | 20387 |
| 36. | CINAHL | (Coronavirus).ti,ab | 8816 |
| 37. | CINAHL | \*CORONAVIRUS/ | 671 |
| 38. | CINAHL | ("Severe acute respiratory syndrome coronavirus 2").ti,ab | 1179 |
| 39. | CINAHL | (SARS-COV-2 OR "SARS COV 2").ti,ab | 3094 |
| 40. | CINAHL | (2019-nCOV OR 2019nCOV OR 2019n-COV).ti,ab | 203 |
| 41. | CINAHL | ("2019 Novel").ti,ab | 294 |
| 42. | CINAHL | (35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41) | 24136 |
| 43. | CINAHL | ("Trauma care").ti,ab | 2077 |
| 44. | CINAHL | ("Trauma cent\*").ti,ab | 9178 |
| 45. | CINAHL | ("Trauma unit\*").ti,ab | 320 |
| 46. | CINAHL | ("Trauma department\*").ti,ab | 49 |
| 47. | CINAHL | ("Trauma team\*").ti,ab | 618 |
| 48. | CINAHL | (Trauma ADJ2 Orthop?edics).ti,ab | 166 |
| 49. | CINAHL | (43 OR 44 OR 45 OR 46 OR 47 OR 48) | 11558 |
| 50. | CINAHL | (42 AND 49) | 31 |
| 51. | CINAHL | 50 [DT 2015-2020] | 31 |

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