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## Evidence Search Service Results of your search request

## Title: Management of Osteoporosis Post/During Covid-19

Thank you for requesting this evidence search. We hope you find the results useful. If you would like to discuss the findings or require an additional search, please contact: Karen Skinner at [karen.skinner2@nhs.net](mailto:karen.skinner2@nhs.net%20)

Please acknowledge this work in any resulting paper or presentation as: Evidence search: Management of Osteoporosis Post/During Covid-19. Karen Skinner. ( 9th June, 2020). REDHILL, UK: Surrey and Sussex Library and Knowledge Services.

## Summary

Results in hospital settings have been included

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## A. National and International Guidance

#### A consensus statement from the Faculty of Intensive Care Medicine, Intensive Care Society, Association of Anaesthetists and Royal College of Anaesthetists

**Perioperative care of patients with hip and major fragility fractures during the COVID-19 pandemic** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=877b2a3cb4d80e7d9a6990df82dab158)

This document provides principles, recommendations and comments on the care given to patients with hip fracture, but these can be extended to the care of patients with fragility fractures at other sites.

#### Drafted by members of the Association of Anaesthetists Working Group on Hip Fracture, the British Orthopaedic Association and expert colleagues.

**Clinical guide for the perioperative care of people with fragility fractures during the Coronavirus pandemic** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=82879bb63e171fc4037c7d291b707863)

Specialty guides for patient management during the Coronavirus pandemic

## B. Synopses or Summaries

#### International Osteoporosis Foundation (IOF)

**IOF member societies around the world inform on COVID-19 and osteoporosis** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=12743bd6a816dba1face79c5cc0cca2c)

Varied information from IOF partner organisations. "IOF and many of our member societies worldwide have provided helpful information and guidance for patients and doctors."

## C. Institutional Publications

#### Royal Osteoporosis Society

**Coronavirus and osteoporosis** (2020)

Advice for patients (1st URL)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=cb39de82124f1af88c9bb619012ae72a)

Advice for healthcare professionals (2nd URL)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=a1c1148bec9b36f4b8d03ea381c68e9f)

#### From the Royal Osteoporosis Society; see advice on Denosumab in 2nd link.

## D. Original Research

1. **Challenges and strategies in management of osteoporosis and fragility fracture care during COVID-19 pandemic**  
   Gaurav K. Upadhyaya et al Journal of Orthopaedics 2020;une:Journal pre-proof.

Background:"COVID-19 has resulted in restriction of face to face consultations and mechanisms to access health care. Osteoporosis and fragility fractures forms a significant proportion of adult trauma and orthopaedic workload even during the pandemic." Aims: "We assess the challenges and strategies used in the management of osteoporosis and fragility fracture care during the COVID-19 pandemic"

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=076981bf93957b3293ddb9629c97e9cd)

1. **Characteristics and early prognosis of covid-19 infection in fracture patients**  
   Mi B. Journal of Bone and Joint Surgery - American Volume 2020; 02(9):750-758.

Background: Studies of the novel coronavirus-induced disease COVID-19 in Wuhan, China, have elucidated the epidemiological and clinical characteristics of this disease in the general population. The present investigation summarizes the clinical characteristics and early prognosis of COVID-19 infection in a cohort of patients with fractures. Method(s): Data on 10 patients with a fracture and COVID-19 were collected from 8 different hospitals located in the Hubei province from January 1, 2020, to February 27, 2020. Analyses of early prognosis were based on clinical outcomes and trends in laboratory results during treatment. Result(s): All 10 patients presented with limited activity related to the fracture. The most common signs were fever, cough, and fatigue at the time of presentation (7 patients each). Other, less common signs included sore throat (4 patients), dyspnea (5 patients), chest pain (1 patient), nasal congestion (1 patient), headache (1 patient), dizziness (3 patients), abdominal pain (1 patient), and vomiting (1 patient). Lymphopenia (&lt; 1.0 . 10<sup>9</sup> cells/L) was identified in 6 of 10 patients, 9 of 9 patients had a high serum level of D-dimer, and 9 of 9 patients had a high level of C-reactive protein. Three patients underwent surgery, whereas the others were managed non-operatively because of their compromised status. Four patients died on day 8 (3 patients) or day 14 (1 patient) after admission. The clinical outcomes for the surviving patients are not yet determined. Conclusion(s): The clinical characteristics and early prognosis of COVID-19 in patients with fracture tended to be more severe than those reported for adult patients with COVID-19 without fracture. This finding may be related to the duration between the development of symptoms and presentation. Surgical treatment should be carried out cautiously or non-operative care should be chosen for patients with fracture in COVID-19-affected areas, especially older individuals with intertrochanteric fractures.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=fc63497d111a2700b460380dd629582c)

1. **Critical adjustments in a department of orthopaedics through the COVID-19 pandemic.**  
   Luengo-Alonso G. International orthopaedics 2020 ;: No page numbers.

PURPOSE: SARS-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. METHODS: A 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. RESULTS: A 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. CONCLUSION: Detailed 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.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=ff079b64a76cd39b7bc45545c7ab485c)

1. **Disruption of joint arthroplasty services in Europe during the COVID-19 pandemic: an online survey within the European Hip Society (EHS) and the European Knee Associates (EKA)**  
   Thaler M. Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA 2020;28(6):1712-1719.

PURPOSE: The aim of the present study was to evaluate the impact of the coronavirus (COVID-19) pandemic on joint arthroplasty service in Europe by conducting an online survey of arthroplasty surgeons. METHOD(S): The survey was conducted in the European Hip Society (EHS) and the European Knee Associates (EKA). The survey consisted of 20 questions (single, multiple choice, ranked). Four topics were addressed: (1) origin and surgical experience of the participant (four questions); (2) potential disruption of arthroplasty surgeries (12 questions); (3) influence of the COVID-19 pandemic on the particular arthroplasty surgeon (four questions); (4) a matrix provided 14 different arthroplasty surgeries and the participant was asked to state whether dedicated surgery was stopped, delayed or cancelled. RESULT(S): Two-hundred and seventy-two surgeons (217 EHS, 55 EKA) from 40 different countries participated. Of the respondents, 25.7% stated that all surgeries were cancelled in their departments, while 68.4% responded that elective inpatient procedures were no longer being performed. With regard to the specific surgical procedures, nearly all primary TJA were cancelled (92.6%) as well as aseptic revisions (94.7%). In most hospitals, periprosthetic fractures (87.2%), hip arthroplasty for femoral neck fractures and septic revisions for acute infections (75.8%) were still being performed. CONCLUSION(S): During the current 2020 COVID-19 pandemic, we are experiencing a near-total shutdown of TJA. A massive cutback was observed for primary TJA and revision TJA, even in massively failed TJA with collapse, dislocation, component failure or imminent dislocation. Only life-threatening pathologies like peri-prosthetic fractures and acute septic TJA are currently undergoing surgical treatment.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=e16dcf1da540fbe75ac5b05790e1389b)

1. **Endocrinology in the time of COVID-19: Management of calcium disorders and osteoporosis.**  
   Gittoes Neil J. European journal of endocrinology 2020;: No page numbers.

Endocrinologists have had to make rapid changes to services so that resources can be focused on the COVID-19 response to help prevent spread of the virus. Herein we provide pragmatic advice on the management of commonly encountered calcium problems and osteoporosis. Non-urgent elective appointments should be postponed, and remote consultations and digital health solutions promoted. Patients should be empowered to self-manage their conditions safely. Patients, their caregivers and healthcare providers should be directed to online resources e.g. Society for Endocrinology, Royal Osteoporosis Society, International Osteoporosis Foundation, specific patient groups and the European Reference Networks (ERNs) for Rare Endocrine and Rare Bone disorders. For patients in acute hospital settings, existing emergency guidance on the management of hyper- and hypo-calcaemia should be followed. A pragmatic, symptom-based approach should be implemented in patients at the end of life. An approach to osteoporosis management is outlined. IV zoledronic acid infusions can be delayed for 6-9 months during the pandemic. Patients established on denosumab and teriparatide should continue planned therapy. The challenge of this pandemic will act as a catalyst to innovate within our management of metabolic bone and mineral disorders to ensure best use of resources and resilience of healthcare systems in its aftermath.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=64dc0ec51bafffaef0a2b7ce99104853)

1. **Epidemiologic characteristics of traumatic fractures in elderly patients during the outbreak of coronavirus disease 2019 in China**  
   Zhu Y. International Orthopaedics 2020;: No page numbers.

Purpose: This study aimed to describe the epidemiologic characteristics of fracture in the elderly during the COVID-19. Method(s): This was a retrospective multi-centre study, which included patients who sustained fractures between 20 January and 19 February 2020. The collected data included patients' demographics (age and gender), injury-related (injury type, fracture location, injury mechanism, places where fracture occurred), and treatment modality. SPSS 23.0 was used to describe the data and perform some analysis. Result(s): A total of 436 patients with 453 fractures were included; there were 153 males and 283 females, with an average age of 76.2 years (standard deviation, SD, 7.7 years; 65 to 105). For either males or females, 70-74 years was the most commonly involved age group. A total of 317 (72.7%) patients had their fractures occurring at home. Among 453 fractures, there were 264 (58.3%) hip fractures, accounting for 58.3%. Fall from standing height was the most common cause of fracture, making a proportion of 89.4% (405/453). Most fractures (95.8%, 434/453) were treated surgically, and 4.2% (19/453) were treated by plaster fixation or traction. Open reduction and internal fixation (ORIF) was the most used surgical method, taking a proportion of 49.2% (223/453). Conclusion(s): These findings highlighted the importance of primary prevention (home prevention) measures and could be used for references for individuals, health care providers, or health administrative department during the global pandemic of COVID-19.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=841ebd34ed959be8dcbd4bb7cef3e0fb)

1. **Impact of the COVID-19 Pandemic on an Emergency Traumatology Service: Experience at a Tertiary Trauma Centre in Spain**  
   Nunez J.H. 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 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. Method(s): An 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. Result(s): The 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. Conclusion(s): While 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.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=68ea575df1596f44d1df68789da6a492)

1. **Osteoporosis in the age of COVID-19.**  
   Girgis C. M Osteoporosis international : a journal established as result of cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA 2020;:No page numbers.

As the world grapples with the crisis of COVID-19, established economies and healthcare systems have been brought to their knees. Tough decisions regarding redirection of resources away from the management of conditions deemed "nonessential" are being made. How can we balance urgent resourcing of our acute crisis while not abandoning the real need of patients with osteoporosis? This article offers a few practical solutions.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=4d4fcf026f20d49160745e52d082cc3d)

1. **Osteoporosis Management in the Era of COVID-19.**  
   Yu Elaine W. Journal of bone and mineral research : the official journal of the American Society for Bone and Mineral Research 2020;:No page numbers.

Osteoporosis is a chronic condition that reflects reduced bone strength and an associated increased risk for fracture. As a chronic condition, osteoporosis generally requires sustained medical intervention(s) to limit the risks for additional bone loss, compromise of skeletal integrity, and fracture occurrence. Further complicating this issue is the fact that the abrupt cessation of some therapies can be associated with an increased risk for harm. It is in this context that the COVID-19 pandemic has brought unprecedented disruption to the provision of health care globally, including near universal requirements for social distancing. In this Perspective, we provide evidence, where available, regarding the general care of patients with osteoporosis in the COVID-19 era and provide clinical recommendations based primarily on expert opinion when data are absent. Particular emphasis is placed on the transition from parenteral osteoporosis therapies. It is hoped that these recommendations can be used to safely guide care for patients with osteoporosis until a return to routine clinical care standards is available. ©2020 American Society for Bone and Mineral Research.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=142966773361b25fb6958d4154f7d473)

1. **Out Patient Department practices in orthopaedics amidst COVID-19: The evolving model**  
   Lal H. Journal of Clinical Orthopaedics and Trauma 2020; :No page numbers.

Severe Acute Respiratory Syndrome COVID-19 was declared as a pandemic on 11th March 2020 by the World Health Organization and consequent lockdown imposed in several areas resulted in a marked reduction in orthopaedic practices. Although some guidelines for patient care in orthopaedic practice have been published, overall, publications focusing exclusively on guidelines on starting orthopaedic outpatient departments (OPD) after the COVID-19 lockdown amidst the on-going pandemic are lacking. We hereby propose the evolving knowledge in changes in OPD management practices for orthopaedic surgeons in the COVID- 19 era. The emphasis on online registration (e-registration) should be given impetus and become the new norm supplemented by telephonic and spot registration for the uneducated patients. The review highlights the safety of patient and orthopaedic surgeons in OPD by screening and maintaining hygiene at various levels. The article also mentions the duties of the help desk, OPD hall supervisor and the new norms of air conditioning, ventilation, safe use of elevators, sanitization of OPD premises and biomedical waste disposal. The optimum and safe utilization of human & material resources, DO's and DON'Ts for patients & health staff have also been proposed. The reorganization of plaster room, the precaution during plastering, fracture clinic, dressing and injection room services are discussed as per evolving guidelines. This article will also give deep insight into the OPD plan & telemedicine graphically. The authors suggest updating and downward permeation of existing e-infrastructure of government health services that is up-gradation of existing tertiary level online registration services, a paperless model of OPD consultation & dispensation. The future updating of Aarogya Setu App (https://mygov.in/aarogya-setu-app/) for convenient online OPD registration and dispensation has been discussed and proposed. This review will help in containing the spread of COVID 19 and build upon the health gains achieved after lockdown. The easy concept of CCCATTT has been introduced, and the OPD Plan has also been suggested. We have endeavoured to holistically detail an orthopaedic OPD setup and its upkeep in COVID-19 pandemic, but since the knowledge of COVID 19 is ever-evolving it needs replenishment by regular education for health staff.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=d232de221eaa1014bddfbaa1dd6a0a42)

1. **Preventive strategy for the clinical treatment of hip fractures in the elderly during the COVID-19 outbreak: Wuhan's experience**  
   Liu J. Aging 2020; 12(9):7619-7625.

Hip fractures in the elderly account for more than half of osteoporotic fractures and represent a substantial economic and social burden. Novel coronavirus pneumonia (COVID-19), which began to spread in December 2019, has created challenges in the management of elderly hip fracture patients, not only by influencing the choice of operation and postoperative rehabilitation methods, but also by generating new risks for the medical staff. During this period, our infection and orthopedic treatment unit in the center of the epidemic area effectively treated 82 elderly patients with hip fracture, and no cross-infection occurred. Therefore, our experience in prevention and treatment is worth recommending to frontline anti-epidemic personnel.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=3ce847865d2724a332a6ad9c3260c668)

1. **Proximal femur fractures in covid-19 emergency: The experience of two orthopedics and traumatology departments in the first eight weeks of the Italian epidemic**  
   Maniscalco P. Acta Biomedica 2020; 91(2):89-96.

Introduction: CoVID-19 (Coronavirus disease) is a worldwide infection which is causing millions of deaths. A significant number of elderly patients require hospitalization and develop serious and sometimes life-threatening complications. The aim of this study is to evaluate the preliminary impact (8 weeks) of CoVID-19, focusing on proximal femur fractures, analyzing data and results compared to the same period of 2019. Material(s) and Method(s): From February 22nd to April 18th, 2020 we surgically treated 121 proximal femur fractures (61 in Piacenza; 60 in Parma, 16 male, 44 female, mean age 81.1). In the same period of 2019, we treated 169 proximal femur fractures (90 in Piacenza, 33 male, 57 female, mean age 81.9; 79 in Parma, 29 males, 50 female, mean age 80.2). We had 21/61 (34.4%) patients resulted positive for COVID-19 and 11/61 in Parma (18.3%), based on nasal-pharyngeal swab, chest CT scan and/or lung US findings. Result(s): The incidence of proximal femur fractures had a significant reduction during CoVID-19 spread in Piacenza and Parma. Authors have noticed an elevated number of deaths within 21 days after surgery. Piacenza: 4 cases in 2019 (4.4%) and 11 in 2020 (18.0%), of which 9 cases CoVID positive. In Parma in 2019 two deaths were encountered; in 2020 6 patients died and 5 cases were CoVID positive. Conclusion(s): In the first two months of the Italian epidemic, in the cities of Piacenza and Parma over 80% of deaths have occurred in patients over 70 years old. Even if preliminary, our study shows a significant increase in death in elderly patients surgically treated for proximal femur fractures, particularly in the Piacenza Hospital.

1. **Revisiting conservative orthopaedic management of fractures during COVID-19 pandemic**  
   Iyengar K. Journal of Clinical Orthopaedics and Trauma 2020;: No page numbers.

COVID-19 pandemic has brought the need to revisit the conservative management of orthopaedic injuries back into sharp focus. On the advent of COVID-19 pandemic, it has been acknowledged by the British Orthopaedic Association (BOA) emergency COVID-19 and the National Health Service England (NHSE) guidelines to manage urgent orthopaedic and trauma conditions pragmatically balancing optimum treatment of patients against clinical safety with resource utilization .The current Coronavirus outbreak has refocussed orthopaedic minds on managing many injuries conservatively, which would have otherwise been managed with operative fixations. We revisit the role of conservative orthopaedic management of fractures in the context of COVID-19 and current guidelines.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=8565652c879c575ab7b5d9e2400efac6)

1. **Standardized out-patient diagnosis and treatment process for osteoporosis clinics during the COVID-19 pandemic.**  
   Zou J. European review for medical and pharmacological sciences 2020; 24(10):5778-5782.

Since the end of 2019, China and other regions around the world have been facing a pandemic of novel coronavirus pneumonia (COVID-19). The virus is highly transmissible, and the human population is generally susceptible. Most patients with osteoporosis are postmenopausal women or elderly people with hypo-immunity, so the osteoporosis clinic has become a new hotspot for corona virus infection. During the COVID-19 pandemic, it is necessary to establish standardized out-patient protocols to provide safe and effective treatment for osteoporosis patients and medical staff. In an osteoporosis clinic, we advocate the following suggestions to prevent and control osteoporosis during the pandemic period: (1) specialized diagnosis and treatment techniques for osteoporosis patients in the outpatient care, including enhancing the prevention for outpatient medical staff, strengthening awareness of COVID-19 prevention, strictly screening outpatients with COVID-19 infection, and insistent administration of anti-osteoporosis drugs during outbreaks; (2) home prevention for osteoporosis patients including keeping windows open, exposing them to sunlight, supplementing them with enough protein, exercising regularly, and administrating calcium supplements; and (3) simplifying the follow-up and evaluation of osteoporosis using online platforms.

1. **The deep impact of novel CoVID-19 infection in an Orthopedics and Traumatology Department: the experience of the Piacenza Hospital.**  
   Maniscalco Pietro Acta bio-medica : Atenei Parmensis 2020;91(2):97-105.

Since February 21st, 2020 CoVID-19 spread throughout all Italy expanding like a "tsunami" from Codogno (Lodi, Lombardy, Northern Italy) to neighboring cities. In a few days Lodi, Piacenza, Milano, Brescia and Bergamo were forced to deal with this disaster starting the lockdown at different time. No national plan had been prepared. As result, CoVID-19 has paralyzed the Italian healthcare system. At time of writing, in Italy there are 169 323 infected patients and 22 260 deaths. Italy is fighting hard to manage CoVID-19 crisis even if most hospitals were unprepared to deal with massive influx of critically ill CoVID-19 patients. Piacenza in Emilia-Romagna region (Northern Italy) is one of the epicenters of the Italian pandemic, and the local hospital - Guglielmo da Saliceto - has quickly become a "CoVID-19 hospital" with the great effort of all the medical staff. Here we report the experience of our hospital, particularly the strategy adopted in the Orthopedics and Traumatology Department.

**ID of request:** 23578  
**Date of request:** 4th June, 2020  
**Date of completion:** 9th June, 2020

Search requested by Community Lead Fracture Liaison Nurse Specialist

**Sources searched**  
EMBASE   
Google (Advanced)   
MEDLINE   
PubMed  
Royal Osteoporosis Society   
TRIP Database

**Date range used** (5 years, 10 years): 2019-   
**Limits used** (gender, article/study type, etc.): English language   
**Search terms and notes** (full search strategy for database searches below):

COVID OR coronavirus osteoporosis management fracture prevention/management

## E. Search History

Reviewer’s note:

Consider using a different search hedge for the Covid part, especially one that includes thesaurus terms. For ideas, see [COVID-19 Search Bank | Knowledge for Healthcare (libraryservices.nhs.uk)](https://kfh.libraryservices.nhs.uk/covid-19-coronavirus/for-lks-staff/literature-searches/#readymade).

|  | **Source** | **Criteria** | **Results** |
| --- | --- | --- | --- |
| 1. | Medline | ("COVID-19" OR "Covid-19" OR "covid-19" OR Coronavirus OR novel coronavirus OR novel covid-19 OR Wuhan coronavirus OR coronavirus disease 2019 OR "SARS-cov-2" OR "SARS2" OR "2019-nCoV" OR "2019 novel coronavirus").ti,ab | 28983 |
| 2. | Medline | exp OSTEOPOROSIS/ OR "OSTEOPOROSIS, POSTMENOPAUSAL"/ | 55263 |
| 3. | Medline | (osteoporosis).ti,ab | 64967 |
| 4. | Medline | "OSTEOPOROTIC FRACTURES"/ | 5444 |
| 5. | Medline | "FRACTURES, BONE"/ | 63790 |
| 6. | Medline | (prevention OR management).ti,ab | 1566806 |
| 7. | Medline | (denosumab).ti,ab | 2648 |
| 8. | Medline | DENOSUMAB/ | 1593 |
| 9. | Medline | (2 OR 3 OR 4 OR 5) | 142401 |
| 10. | Medline | (7 OR 8) | 2884 |
| 11. | Medline | (1 AND 9) | 7 |
| 12. | Medline | (1 AND 10) | 1 |
| 13. | CINAHL | ("COVID-19" OR "Covid-19" OR "covid-19" OR Coronavirus OR novel coronavirus OR novel covid-19 OR Wuhan coronavirus OR coronavirus disease 2019 OR "SARS-cov-2" OR "SARS2" OR "2019-nCoV" OR "2019 novel coronavirus").ti,ab | 5230 |
| 14. | CINAHL | (osteoporosis).ti,ab | 19499 |
| 15. | CINAHL | "OSTEOPOROTIC FRACTURES"/ OR OSTEOPOROSIS/ | 24312 |
| 16. | CINAHL | exp FRACTURES/ | 60601 |
| 17. | CINAHL | ("bone fracture\*").ti,ab | 2505 |
| 18. | CINAHL | (prevention OR management).ti,ab | 583735 |
| 19. | CINAHL | (14 OR 15) | 30494 |
| 20. | CINAHL | (16 OR 17) | 61642 |
| 21. | CINAHL | (13 AND 19) | 1 |
| 22. | CINAHL | (13 AND 20) | 1 |
| 23. | EMBASE | ("COVID-19" OR "Covid-19" OR "covid-19" OR Coronavirus OR novel coronavirus OR novel covid-19 OR Wuhan coronavirus OR coronavirus disease 2019 OR "SARS-cov-2" OR "SARS2" OR "2019-nCoV" OR "2019 novel coronavirus").ti,ab | 33255 |
| 24. | EMBASE | (osteoporosis).ti,ab | 101605 |
| 25. | EMBASE | exp OSTEOPOROSIS/ | 128077 |
| 26. | EMBASE | (fracture\*).ti,ab | 297336 |
| 27. | EMBASE | FRACTURE/ | 82828 |
| 28. | EMBASE | (denosumab).ti,ab | 5283 |
| 29. | EMBASE | DENOSUMAB/ | 8739 |
| 30. | EMBASE | (prevention OR management).ti,ab | 2129156 |
| 31. | EMBASE | (24 OR 25) | 147732 |
| 32. | EMBASE | (26 OR 27) | 315691 |
| 33. | EMBASE | (28 OR 29) | 9075 |
| 34. | EMBASE | (23 AND 31) | 9 |
| 35. | EMBASE | (23 AND 32) | 24 |
| 36. | EMBASE | (23 AND 33) | 5 |
| 37. | EMBASE | (23 AND 30 AND 32) | 10 |
| 38. | PubMed | ("COVID-19" OR "Covid-19" OR "covid-19" OR Coronavirus OR novel coronavirus OR novel covid-19 OR Wuhan coronavirus OR coronavirus disease 2019 OR "SARS-cov-2" OR "SARS2" OR "2019-nCoV" OR "2019 novel coronavirus").ti,ab | 35460 |
| 39. | PubMed | (osteoporosis).ti,ab | 88399 |
| 40. | PubMed | (fracture\*).ti,ab | 304973 |
| 41. | PubMed | (denosumab).ti,ab | 3007 |
| 42. | PubMed | (prevention OR management).ti,ab | 4223495 |
| 43. | PubMed | (38 AND 39) | 13 |
| 44. | PubMed | (38 AND 40) | 44 |

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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.

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