# Evidence Search Service Results of your search request

## Evidence for harm in COVID-19 patients on treatment for underlying rheumatic inflammatory diseases

**ID of request:** 23287  
**Date of request:** 18th May, 2020  
**Date of completion:** 22nd May, 2020

If you would like to request any articles or any further help, please contact:  Rachel Playforth at [rachel.playforth@nhs.net](mailto:rachel.playforth@nhs.net)

Please acknowledge this work in any resulting paper or presentation as: Evidence search: Evidence for harm in COVID-19 patients on treatment for underlying rheumatic inflammatory diseases. Rachel Playforth. (22nd May, 2020). BRIGHTON, UK: Brighton and Sussex Library and Knowledge Service.

**Sources searched**  
Annals of the Rheumatic Diseases (3)  
Arthritis and Musculoskeletal Alliance (ARMA) (0)  
British Society for Rheumatology (0)  
Cochrane Covid-19 Study Register (4)  
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NICE Evidence Search (4)  
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TRIP PRO (0)

**Date range used** (5 years, 10 years): no date limit   
**Limits used** (gender, article/study type, etc.): English   
**Search terms and notes** (full search strategy for database searches below):

NICE Evidence Search, Trip Database: rheumatology coronavirus

Cochrane Covid-19 Study Register: rheumatic OR rheumatology

EULAR, BSR, NASS, ARMA: sites browsed

Annals of the Rheumatic Diseases: recent articles and citations hand-searched

KnowledgeShare: recent resources hand-searched

Medline, EMBASE: relevant natural language and controlled vocabulary terms were selected and combined, and final result sets were de-duplicated and reviewed for relevance.

For more information about the resources please go to: <https://www.bsuh.nhs.uk/library/>.

## Summary of Results

High level evidence is so far lacking due to the emerging nature of the COVID-19 pandemic. With this in mind I have included international expert correspondence on the topic, as well as full research studies and the relevant national and institutional guidance.

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## A. National and International Guidance

#### NHS England

**Clinical guide for the management of patients with musculoskeletal and rheumatic conditions on corticosteroids during the coronavirus pandemic** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=0a45a090a4474e3f59bb72f07dbba2d4)

Don’t stop current steroids but taper their dose if possible and clinically safe to do so. • Think before starting steroids in the current pandemic. • Use the lowest possible dose of oral steroids. • Only give steroid injections if patient has significant disease activity and there are no alternatives.

**Clinical guide for the management of Rheumatology patients during the coronavirus pandemic** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=f3b5fec2e91b63ecbeb7d9491da33195)

Specialty patients to consider • Obligatory inpatients: Continue to require admission and management, eg we must expedite treatment to avoid delay and minimise length of stay. • At-risk patients. Patients with reduced immune responses. • Escalation matrix. Overall chart for consideration of services.

#### National Institute for Health and Care Excellence (NICE)

**COVID-19 rapid guideline: rheumatological autoimmune, inflammatory and metabolic bone disorders** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=16306b329aa5b888106fc05511d23eda)

In patients known or suspected to have COVID‑19: - continue hydroxychloroquine and sulfasalazine - do not suddenly stop prednisolone - only give corticosteroid injections if the patient has significant disease activity and there are no alternatives, and refer to NHS England's clinical guide on the management of patients with musculoskeletal and rheumatic conditions on corticosteroids. - temporarily stop other disease-modifying antirheumatic drugs, JAK inhibitors and biological therapies, and tell them to contact their rheumatology department for advice on when to restart treatment. Be aware that patients having immunosuppressant treatments may have atypical presentations of COVID‑19. For example, patients taking prednisolone may not develop a fever, and those taking interleukin‑6 inhibitors may not develop a rise in C‑reactive protein.

## B. Synopses or Summaries

#### Annals of the Rheumatic Diseases

**Role of immunosuppressive therapy in rheumatic diseases concurrent with COVID-19** (2020)

Lu C.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=4fba28e3cb4cb157349fb70bc97baab5)

With tens of millions of individuals suffering rheumatic diseases (RDs) around the world who routinely receive glucocorticoids and disease-modifying anti-rheumatic drugs (DMARDs) (table 1), RD patients with compromised immune systems make up a large population of susceptible patients in which novel coronavirus infection may cause devastating consequences. Accumulating evidence suggests that a subgroup of patients with severe COVID-19 might have a cytokine storm syndrome represented by acute respiratory distress syndrome (ARDS) and secondary haemophagocytic lymphohistiocytosis, which are two of main causes of mortality.

#### Pediatric Dermatology

**Systemic immunosuppressive therapy for inflammatory skin diseases in children: Expert consensus‐based guidance for clinical decision‐making during the COVID‐19 pandemic** (2020)

Reynolds SD

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=58e67977bc4cf5d2eb777bf7c656ae15)

Background/Objectives: The COVID‐19 pandemic has raised questions about the approach to management of systemic immunosuppressive therapies for dermatologic indications in children. Change to: Given the absence of data to address concerns related to SARS‐CoV‐2 infection and systemic immunosuppressive therapies in an evidence‐based manner, a Pediatric Dermatology COVID‐19 Response Task Force (PDCRTF) was assembled to offer time‐sensitive guidance for clinicians. Methods: A survey was distributed to an expert panel of 37 pediatric dermatologists on the PDCRTF to assess expert opinion and current practice related to three primary domains of systemic therapy: initiation, continuation, and laboratory monitoring. Results: Nearly all respondents (97%) reported that the COVID‐19 pandemic had impacted their decision to initiate immunosuppressive medications. The majority of pediatric dermatologists (87%) reported that they were pausing or reducing the frequency of laboratory monitoring for certain immunosuppressive medications. In asymptomatic patients, continuing therapy was the most popular choice across all medications queried. The majority agreed that patients on immunosuppressive medications who have a household exposure to COVID‐19 or test positive for new infection should temporarily discontinue systemic and biologic medications, with the exception of systemic steroids, which may require tapering. Conclusions: The ultimate decision regarding initiation, continuation, and laboratory monitoring of immunosuppressive therapy during the pandemic requires careful deliberation, consideration of the little evidence available, and discussion with families. Consideration of an individual's adherence to COVID‐19 preventive measures, risk of exposure, and the potential severity if infected must be weighed against the dermatological disease, medication, and risks to the patient of tapering or discontinuing therapies.

## C. Institutional Publications

#### Arthritis and Musculoskeletal Alliance (ARMA)

**ARMA Covid-19 / Coronavirus info** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=572020ec8cdd48f9b1348155d7d12287)

ARMA is working to support our members to share information and respond effectively to the coronavirus outbreak. Patient organisations are working to ensure people have the advice they need related to their condition or medication. Our professional members are working to ensure healthcare professionals have access to the information they need about the virus and also how to continue to provide healthcare support in the current situation. ARMA is signposting the most relevant information we can find and will update this page as new information becomes available.

#### British Society for Rheumatology

**COVID-19: guidance for rheumatologists** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=9761155150b584d51fdaa64a28922a56)

If patients develop symptoms of any infection, established practice should be followed and immunosuppressive therapy paused for the duration of the infection and until they feel well, in consultation with their rheumatology team. For those on glucocorticoids, the expectation is that treatment should not be stopped abruptly and advice should be sought from their treating team. Patients with adrenal insufficiency need to temporarily increase their steroid dose if they have any significant intercurrent infection. Patients with COVID-19 may have high fever or other systemic symptoms for many hours of the day. In COVID-19, therefore, the standard advice to double the prednisolone dose in the event of significant intercurrent illness may not be sufficient. This can be applied to rheumatology patients as follows: Patients on 5-15 mg prednisolone daily should take 10 mg prednisolone every 12 hours Patients on oral prednisolone >15 mg should continue their usual dose but take it split into two equal doses of at least 10 mg every 12 hours Patients with COVID-19 may have large insensible water losses, and should be advised to drink plenty of fluids especially if they may have adrenal insufficiency Patients can be issued with the new NHS emergency steroid card which signposts healthcare providers to the latest guidance on management of adrenal crisis

#### COVID-19 Global Rheumatology Alliance

**The COVID-19 Global Rheumatology Alliance** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=feb26b8437a0c9ffc8c3847b63fb018c)

Bringing together the global rheumatology community to curate and disseminate accurate and comprehensive knowledge to advance rheumatology care in the COVID-19 pandemic. We are asking that clinicians use this site to report any and all cases of COVID-19 in rheumatology patients, including those with mild or no symptoms. We plan to use the relevant information from these cases to provide expeditious updates to the global rheumatology community.

#### European League Against Rheumatism (EULAR)

**Rheumatic Musculoskeletal Diseases and COVID-19 Repository** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=6137eec65df0866ca8140f7e48a21532)

EULAR guidance for patients and collected resources about the current COVID-19 outbreak.

#### Specialist Pharmacy Service (SPS)

**Azathioprine, leflunomide, mercatopurine, and methotrexate, drug monitoring in primary care during COVID-19** (2020)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=53ec9c2802e15b3853ab15ab111afdfe)

Advice for the management of patients taking DMARDs for rheumatology related conditions. For patients with symptoms of COVID-19, recommendations are: Consider stopping medication (see “Should patients cease their medication as a precaution?” advice from BSR) and seek specialist advice on when to re-start Undertake additional blood tests after self-isolation and within two weeks of re-starting medication If results okay—revert to monitoring every 6 months; if abnormal—seek specialist advice Refer patients to advice from Versus Arthritis

## D. Original Research

1. **Baseline use of hydroxychloroquine in systemic lupus erythematosus does not preclude SARS-CoV-2 infection and severe COVID-19.**  
   Konig Maximilian F. Annals of the rheumatic diseases 2020;:No page numbers.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=40fe5b88ee918b55defd8950d46b107f)

1. **Can hydroxychloroquine protect patients with rheumatic diseases from COVID-19? Response to: 'Does hydroxychloroquine prevent the transmission of COVID-19?' by Heldwein and Calado and 'SLE, hydroxychloroquine and no SLE patients with COVID-19: a comment' by Joob and Wiwanitkit.**  
   Monti Sara Annals of the rheumatic diseases 2020;79(6):e62.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=a2f038b0e551142d8a280c85947b0abb)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=4b8f13350624e7720d1e315af18da7f0)

1. **Chloroquine paradox may cause more damage than help fight COVID-19.**  
   Sharma Anuj Microbes and infection 2020;:No page numbers.

Novel coronavirus disease 2019 (COVID-19) pandemic is the most recent health care crisis without specific prophylactic or therapeutic drugs. Antimalarial drug chloroquine (CHL) and its safer derivative hydroxychloroquine (HCHL) have been proposed to be repurposed to treat SARS coronavirus-2 (SARS-CoV-2), the causative agent of COVID-19. CHL/HCHL have anti-inflammatory activity and are used to treat rheumatoid arthritis, osteoarthritis and lupus. Although, CHL/HCHL have an anti-viral activity against several viruses in cell-cultures, the anti-viral activity in-vivo is questionable. Repurposing of CHL/HCHL to treat SARS-CoV-2 infection is appealing. However, there is empirical evidence from animal studies with other viruses suggesting that CHL/HCHL may have an untoward paradoxical effect. One thus cannot exclude the possibility that CHL may increase the severity of the disease and prove deleterious both for the patients and public health efforts to contain the highly contagious and explosive spread of SARS-CoV-2.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=927274e9e96a14ea6488d479afc8436b)

1. **Clinical course of coronavirus disease 2019 (COVID-19) in a series of 17 patients with systemic lupus erythematosus under long-term treatment with hydroxychloroquine.**  
   Mathian Alexis Annals of the rheumatic diseases 2020;79(6):837-839.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=b4ee8999b0e622769a5131a0ce4a9b12)

1. **Clinical course of COVID-19 in a series of patients with chronic arthritis treated with immunosuppressive targeted therapies [correspondence]**  
   Monti S. Annals of the Rheumatic Diseases 2020;79:667-668.

Our preliminary experience shows that patients with chronic arthritis treated with bDMARDs or tsDMARDs do not seem to be at increased risk of respiratory or life-threatening complications from SARS-CoV-2 compared with the general population.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=182d43204bdca6f4b7a21ce7c82af9f3)

1. **Continuous hydroxychloroquine or colchicine therapy does not prevent infection with SARS-CoV-2: Insights from a large healthcare database analysis.**  
   Gendelman Omer Autoimmunity reviews 2020;:102566.

BACKGROUNDSome disease-modifying agents commonly used to treat patients with rheumatic diseases/autoimmune disorders, such as hydroxychloroquine and colchicine, are under investigation as potential therapies for the "coronavirus disease 2019" (COVID-19). However, the role of such agents as prophylactic tools is still not clear.METHODSThis is a retrospective study based on a large healthcare computerized database including all patients that were screened for the "Severe Acute Respiratory Syndrome Coronavirus type 2" (SARS-CoV-2) in the study period from February 23rd 2020 to March 31st 2020. A comparison was conducted between subjects tested positive for SARS-CoV-2 and those found negative in terms of rate of administration of hydroxychloroquine/colchicine therapy.RESULTSAn overall sample of 14,520 subjects were screened for SARS-CoV-2 infection and 1317 resulted positive. No significant difference was found in terms of rates of usage of hydroxychloroquine or colchicine between those who were found positive for SARS-CoV-2 and those who were found negative (0.23% versus 0.25% for hydroxychloroquine, and 0.53% versus 0.48% for colchicine, respectively).CONCLUSIONThese findings raise doubts regarding the protective role of these medications in the battle against SARS-CoV-2 infection.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=c0e1e4f17a3fde7455cc6fa46bfa736a)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=ce39b5d3081e0817db0ac69a31a031f9)

1. **Coronavirus disease (COVID-19): Rheumatological Prospects/Relevance**  
   Nasonov E.L. Nauchno-Prakticheskaya Revmatologiya 2020;58(2):123-130.

In December 2019, an outbreak of a novel infection under the working name 2019-nCoV was registered in Wuhan (the Hubei Province located in China's central region), which has quickly spread throughout almost the entire world and become pandemic. The World Health Organization (WHO) proposed a new name coronavirus disease (COVID-19) for this disease, whereas the International Committee on Virus Taxonomy renamed 2019-nCov as SARS-Cov-2 (Severe Acute Respiratory Syndrome Coronavirus-2). The development of the COVID-19 pandemic is not only of great social importance, but also draws the attention of a medical community to the fundamentally new clinical and fundamental problems of the immunopathology of human diseases that are yet to be formulated. The unique experience gained in rheumatology from studies of the pathogenetic mechanisms and pharmacotherapy of immune-mediated inflammatory rheumatic diseases (IMIRDs) can be of great importance for deciphering the nature of the pathological processes that underlie the severe, potentially fatal complications of COVID-19, and may assist in improving their therapy. As for prospects in patients with IMIRDs, although the development of COVID-19 in the presence of IMIRDs has not yet fortunately been described, infection with SARS-CoV-2, like other viruses, can be assumed to cause an exacerbation of the pathological process, whereas severe immune system pathology and comorbidities can worsen the course of infection. Since, according to the current concepts, it is the &lt;&lt;hyperimmune&gt;&gt; response, and not just the effect only of the virus itself, that underlies lung damage and deaths from COVID-19, special attention is drawn to the effects of antirheumatic therapy that includes glucocorticoids, disease-modifying anti-rheumatic drugs (DMARDs), biological agents, and targeted DMARDs, which can have a multidirectional effect on the course of COVID-19. There are significant theoretical prerequisites for the repurposing of some drugs widely used in rheumatology for the treatment of COVID-19 and its complications. Consideration is given to the prospects of studying the immunopathology of COVID-19 and to the theoretical justifications for the use of antimalarial 4-aminoquinolines, anti-cytokine monoclonal antibodies (mAbs), and Janus kinase inhibitors for the prevention of complications and for the treatment of COVID-19.<br/>Copyright &#xa9; 2020 Ima-Press Publishing House. All rights reserved.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=b17fefb4cc47245ab613013a4f627f4e)

1. **Coronavirus Disease 19 (COVID-19) complicated with pneumonia in a patient with rheumatoid arthritis receiving conventional disease-modifying antirheumatic drugs.**  
   Song Jehun Rheumatology international 2020;40(6):991-995.

In December 2019, numerous coronavirus disease 2019 (COVID-19) cases were reported in Wuhan, China, which has since spread throughout the world. However, its impact on rheumatoid arthritis (RA) patients is unknown. Herein, we report a case of COVID-19 pneumonia in a 61-year-old female RA patient who was receiving conventional disease-modifying antirheumatic drugs (cDMARDs). The patient presented with a 4-day history of myalgia and febrile sensation. COVID-19 was confirmed by real-time polymerase chain reaction (PCR). Chest X-ray showed increased opacity on the right lower lung area, and C-reactive protein level was slightly elevated. The patient was treated with antiviral agents (lopinavir/ritonavir), and treatment with cDMARDs was discontinued except hydroxychloroquine. Her symptoms and laboratory results gradually improved. Three weeks later, real-time PCR for COVID-19 showed negative conversion, and the patient was discharged without any complications.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=b120b3f5111170aabedef6c6d4ddeb9f)

1. **Coronavirus disease 2019 (COVID-19) and anti-rheumatic drugs.**  
   Georgiev Tsvetoslav Rheumatology international 2020;40(5):825-826.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=0468bfef2dda217465731e014574202d)

1. **Coronavirus Disease-2019: Implication for the care and management of patients with systemic lupus erythematosus.**  
   Sawalha Amr H. European journal of rheumatology 2020;:No page numbers.

Systemic lupus erythematosus is a chronic remitting-relapsing autoimmune disease that affects multiple organ systems. In this article we discuss aspects in the management of lupus patients that are particularly relevant during the current SARS-CoV-2 pandemic. We speculate that lupus patients might be more susceptible for a more severe COVID-19 disease course and emphasize the importance of maintaining remission in lupus patients. We discuss the critical role hydroxychloroquine plays in the management of lupus patients and suggest considering the psychosocial implications of the current pandemic on lupus care.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=790c44faae33ffaad7a3bde93a42a52d)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=1b9e79ea5a0e1c56b7456d42c30dd0d9)

1. **COVID-19 and what pediatric rheumatologists should know: a review from a highly affected country.**  
   Licciardi Francesco Pediatric rheumatology online journal 2020;18(1):35.

On March 11th, 2020 the World Health Organization declared COVID-19 a global pandemic. The infection, transmitted by 2019 novel coronavirus (2019-nCov), was first discovered in December 2019, in Wuhan, Hubei Province, and then rapidly spread worldwide. Italy was early and severely involved, with a critical spread of the infection and a very high number of victims. Person-to-person spread mainly occurs via respiratory droplets and contact. The median incubation period is 5 days. The spectrum of respiratory symptoms may range from mild to severe, strictly depending on the age of the patient and the underlying comorbidities.In children COVID-19 related disease is less frequent and less aggressive. In Italy 1% of positive cases are under 18 years of age, and no deaths have been recorded before 29 years of age. For patients affected by rheumatic disease, despite the concerns related to the imbalance of their immune response and the effect of immunosuppressive treatments, there are still few data to understand the real consequences of this infection. Major scientific societies have issued recommendations to help rheumatologists in caring their patients. Interestingly, some of the drugs mostly used by rheumatologists appear to be promising in critical COVID-19 infected patients, where the hyperinflammation and cytokine storm seem to drive to the multiorgan failure.Pediatric rheumatologists are expected to play a supporting role in this new front of COVID-19 pandemic, both as general pediatricians treating infected children, and as rheumatologists taking care of their rheumatic patients, as well as offering their experience in the possible alternative use of immunomodulatory drugs.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=318f706c473ca158a808e8644d55a4ca)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=86cc41c8ee4a01365e241050b8056889)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=0c34f157a52e48f8ce280b49b3fec009)

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=17c7607d202f2edb2396afbe5a8777d9)

1. **COVID-19 in a patient with systemic sclerosis treated with tocilizumab for SSc-ILD.**  
   Mihai Carina Annals of the rheumatic diseases 2020;79(5):668-669.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=f5c25731fd89f573e6c95f176c3d691b)

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1. **COVID-19 infection and rheumatoid arthritis: Faraway, so close!**  
   Favalli Ennio Giulio Autoimmunity reviews 2020;19(5):102523.

The outbreak of the new coronavirus infections COVID-19 in December 2019 in China has quickly become a global health emergency. Given the lack of specific anti-viral therapies, the current management of severe acute respiratory syndrome coronaviruses (SARS-CoV-2) is mainly supportive, even though several compounds are now under investigation for the treatment of this life-threatening disease. COVID-19 pandemic is certainly conditioning the treatment strategy of a complex disorder as rheumatoid arthritis (RA), whose infectious risk is increased compared to the general population because of an overall impairment of immune system typical of autoimmune diseases combined with the iatrogenic effect generated by corticosteroids and immunosuppressive drugs. However, the increasing knowledge about the pathophysiology of SARS-CoV-2 infection is leading to consider some anti-rheumatic drugs as potential treatment options for the management of COVID-19. In this review we will critically analyse the evidences on either positive or negative effect of drugs commonly used to treat RA in this particular scenario, in order to optimize the current approach to RA patients.

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1. **COVID-19 pneumonia in a large cohort of patients treated with biological and targeted synthetic antirheumatic drugs [correspondence]**  
   Conticini E. Annals of the Rheumatic Diseases 2020;:doi: 10.1136/annrheumdis-2020-217681.

Our preliminary survey shows that patients treated with bDMARDs or tsDMARDs did not develop life-threatening complications from COVID-19.

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1. **COVID-19 With Rheumatic Diseases: A Report of 5 Cases**  
   Cheng C. Clinical Rheumatology 2020;:doi: 10.1007/s10067-020-05160-x.

The coronavirus disease 2019 (COVID-19), the result of an infection with the new virus, SARS-CoV-2, is rapidly spreading worldwide. It is largely unknown whether the occurrence of COVID-19 in patients with rheumatic immune diseases has some specific manifestations, or makes them more prone to rapidly progress into severe COVID-19. In this case report, we describe the clinical features of 5 rheumatic immune disease patients with the concomitant presence of COVID-19. Amongst these patients, 4 had rheumatoid arthritis (RA) and 1 had systemic sclerosis (SSc). Two patients had a history of close contact with a COVID-19 patient. The age of the patients ranged between 51 and 79 years. Fever (80%), cough (80%), dyspnea (40%), and fatigue (20%) were the most common presenting symptoms. Laboratory investigations revealed leukopenia and lymphopenia in 2 patients. In all the patients, chest computerized tomography (CT) revealed patchy ground glass opacities in the lungs. During the hospital stay, the condition of two patients remained the same (i.e., mild COVID-19), two patients progressed to the severe COVID-19, and one patient worsened to the critically ill COVID-19. These patients were treated with antiviral agents for COVID-19, antibiotics for secondary bacterial infections, and immunomodulatory agents for rheumatic immune diseases. All the patients responded well, were cured of COVID-19, and subsequently discharged.

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1. **COVID-19, immune system response, hyperinflammation and repurposing antirheumatic drugs**  
   Tufan Abdurrahman Turkish journal of medical sciences 2020;50:620-632.

In the Wuhan Province of China, in December 2019, the novel coronavirus 2019 (COVID-19) has caused a severe involvement of the lower respiratory tract leading to an acute respiratory syndrome. Subsequently, coronavirus 2 (SARS-CoV-2) provoked a pandemic which is considered a life-threatening disease. The SARS-CoV-2, a family member of betacoronaviruses, possesses single-stranded positive-sense RNA with typical structural proteins, involving the envelope, membrane, nucleocapsid and spike proteins that are responsible for the viral infectivity, and nonstructural proteins. The effectual host immune response including innate and adaptive immunity against SARS-Cov-2 seems crucial to control and resolve the viral infection. However, the severity and outcome of the COVID-19 might be associated with the excessive production of proinflammatory cytokines "cytokine storm" leading to an acute respiratory distress syndrome. Regretfully, the exact pathophysiology and treatment, especially for the severe COVID-19, is still uncertain. The results of preliminary studies have shown that immune-modulatory or immune-suppressive treatments such as hydroxychloroquine, interleukin (IL)-6 and IL-1 antagonists, commonly used in rheumatology, might be considered as treatment choices for COVID-19, particularly in severe disease. In this review, to gain better information about appropriate anti-inflammatory treatments, mostly used in rheumatology for COVID-19, we have focused the attention on the structural features of SARS-CoV-2, the host immune response against SARS-CoV-2 and its association with the cytokine storm.

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1. **Experiences of Patients With Rheumatic Diseases in the United States During Early Days of the COVID-19 Pandemic.**  
   Michaud Kaleb ACR open rheumatology 2020;:No page numbers.

OBJECTIVEPatients with rheumatic diseases such as rheumatoid arthritis (RA) and lupus have increased risk of infection and are treated with medications that may increase this risk yet are also hypothesized to help treat COVID-19. We set out to understand how the COVID-19 pandemic has impacted the lives of these patients in the United States.METHODSParticipants in a US-wide longitudinal observational registry responded to a supplemental COVID-19 questionnaire by e-mail on March 25, 2020, about their symptoms, COVID-19 testing, health care changes, and related experiences during the prior 2 weeks. Analysis compared responses by diagnosis, disease activity, and new onset of symptoms. Qualitative analysis was conducted on optional free-text comment fields.RESULTSOf the 7061 participants invited to participate, 530 responded, with RA as the most frequent diagnosis (61%). Eleven participants met COVID-19 screening criteria, of whom two sought testing unsuccessfully. Six others sought testing, three of whom were successful, and all test results were negative. Not quite half of participants (42%) reported a change to their care in the prior 2 weeks. Qualitative analysis revealed four key themes: emotions in response to the pandemic, perceptions of risks from immunosuppressive medications, protective measures to reduce risk of COVID-19 infection, and disruptions in accessing rheumatic disease medications, including hydroxychloroquine.CONCLUSIONAfter 2 weeks, many participants with rheumatic diseases already had important changes to their health care, with many altering medications without professional consultation or because of hydroxychloroquine shortage. As evidence accumulates on the effectiveness of potential COVID-19 treatments, effort is needed to safeguard access to established treatments for rheumatic diseases.

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1. **Hydroxychloroquine and covid-19.**  
   Sinha Neeraj Postgraduate medical journal 2020;:No page numbers.

Hydroxychloroquine and chloroquine are medications that have been used for a long time. Their most common use is for the treatment and prophylaxis of malaria. However, these antimalarial drugs are known to also have anti-inflammatory and antiviral effects and are used for several chronic diseases such as systemic lupus erythematosus with low adverse effects. The antiviral action of hydroxychloroquine and chloroquine has been a point of interest to different researchers due to its mechanism of action. Several in vitro studies have proven their effectiveness on severe acute respiratory syndrome virus and currently both in vitro and in vivo studies have been conducted on 2019 novel coronavirus (covid-19). The purpose of this article is to review the history and mechanism of actions of these drugs and the potential use they can have on the current covid-19 pandemic.

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1. **Hydroxychloroquine in Patients with Rheumatic Disease Complicated by COVID-19: Clarifying Target Exposures and the Need for Clinical Trials.**  
   Balevic Stephen J. The Journal of rheumatology 2020;:No page numbers.

OBJECTIVETo characterize hydroxychloroquine exposure in patients with rheumatic disease receiving long-term hydroxychloroquine compared to target concentrations with reported antiviral activity against the 2019 coronavirus SARS-CoV-2.METHODSWe evaluated total hydroxychloroquine concentrations in serum and plasma from published literature values, frozen serum samples from a pediatric lupus trial, and simulated concentrations using a published pharmacokinetic model during pregnancy. For each source, we compared observed or predicted hydroxychloroquine concentrations to target concentrations with reported antiviral activity against SARS-CoV-2.RESULTSThe average total serum/plasma hydroxychloroquine concentrations were below the lowest SARS-CoV-2 target of 0.48 mg/L in all studies. Assuming the highest antiviral target exposure (total plasma concentration of 4.1 mg/L), all studies had approximately one-tenth the necessary concentration for in-vitro viral inhibition. Pharmacokinetic model simulations confirmed that pregnant adults receiving common dosing for rheumatic diseases did not achieve target exposures; however, the models predict that a dosage of 600 mg once a day during pregnancy would obtain the lowest median target exposure for most patients after the first dose.CONCLUSIONWe found that the average patient receiving treatment with hydroxychloroquine for rheumatic diseases, including children and non-pregnant/pregnant adults, are unlikely to achieve total serum or plasma concentrations shown to inhibit SARS-CoV-2 in-vitro. Nevertheless, patients receiving hydroxychloroquine long-term may have tissue concentrations far exceeding that of serum/plasma. Because the therapeutic window for hydroxychloroquine in the setting of SARS-CoV-2 is unknown, well-designed clinical trials that include patients with rheumatic disease are urgently needed to characterize the efficacy, safety, and target exposures for hydroxychloroquine.

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1. **Hydroxychloroquine reduces the risk of covid-19 in patients with rheumatic diseases: myth or reality?**  
   Xie Wenhui Annals of the rheumatic diseases 2020;:No page numbers.

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1. **Hydroxychloroquine: A Potential Ethical Dilemma for Rheumatologists during the COVID-19 Pandemic.**  
   Scuccimarri Rosie The Journal of rheumatology 2020;:No page numbers.

Two antimalarial agents, chloroquine (CQ) and hydroxychloroquine (HCQ), have been trusted treatments for a range of rheumatic diseases over the past 70 years1 These agents have attracted intense media attention in the past few weeks with suggestions that this category of drugs may have potential in the management of the coronavirus (SARS-CoV2)-associated disease called COVID-192,3.

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1. **Incidence of COVID-19 in a cohort of adult and paediatric patients with rheumatic diseases treated with targeted biologic and synthetic disease-modifying anti-rheumatic drugs.**  
   Michelena Xabier Seminars in arthritis and rheumatism 2020;:No page numbers.

OBJECTIVESTo investigate the incidence of COVID-19 in a cohort of adult and paediatric patients with rheumatic diseases receiving targeted biologic and synthetic disease modifying anti-rheumatic drugs (tDMARDs) and to explore the possible effect of these treatments in the clinical expression of COVID-19.METHODSA cross-sectional study comprising of a telephone survey and electronic health records review was performed including all adult and paediatric patients with rheumatic diseases treated with tDMARDs in a large rheumatology tertiary centre in Barcelona, Spain. Demographics, disease activity, COVID-19 related symptoms and contact history data were obtained from the start of the 2020 pandemic. Cumulative incidence of confirmed cases (SARS-CoV-2 positive PCR test) was compared to the population estimates for the same city districts from a governmental COVID-19 health database. Suspected cases were defined following WHO criteria and compared to those without compatible symptoms.RESULTS959 patients with rheumatic diseases treated with tDMARDs were included. We identified 11 confirmed SARS-CoV-2 positive cases in the adult cohort and no confirmed positive cases in the paediatric cohort. COVID-19 incidence rates of the rheumatic patient cohort were very similar to that of the general population [(0.48% (95% CI 0.09 to 8.65%)] and [0.58% (95% CI 5.62 to 5.99%)], respectively. We found significant differences in tDMARDs proportions between the suspected and non-suspected cases (p=0.002).CONCLUSIONAdult and paediatric patients with rheumatic diseases on tDMARDs do not seem to present a higher risk of COVID-19 or a more severe disease outcome when compared to general population.

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1. **Intravenous Anakinra for Macrophage Activation Syndrome May Hold Lessons for Treatment of Cytokine Storm in the Setting of Coronavirus Disease 2019.**  
   Wampler Muskardin Theresa L. ACR open rheumatology 2020;2(5):283-285.

Macrophage activation syndrome (MAS) and hemophagocytic lymphohistiocytosis (HLH) are increasingly recognized as being on a continuum of cytokine storm syndromes, with different initiating pathways culminating in cytotoxic dysfunction and uncontrolled activation and proliferation of T lymphocytes and macrophages. The activated immune cells produce large amounts of proinflammatory cytokines, including interleukin 1β (IL)-1β. Management depends on the recognized diagnosis. In the setting of a cytokine storm syndrome and infection, collaborative involvement of specialists, including infectious disease and rheumatology is ideal. Anakinra, a recombinant IL-1 receptor antagonist, has been used subcutaneously and intravenously in pediatric patients and is considered a first-line treatment for MAS and secondary HLH (sHLH) among many pediatric rheumatologists. Previous reports of anakinra used in adults for treatment of MAS or sHLH are limited to subcutaneous administration. In this issue, Moneagudo et al. present a series of adult patients with sHLH treated with intravenous anakinra, including patients in whom subcutaneous anakinra was insufficient. As the authors suggest, there is a potential therapeutic use for anakinra in sHLH or the cytokine storm syndrome triggered by COVID19. Trial design will be key, with the patient subpopulation, timing of intervention, and doses tested important.

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1. **Keeping lupus patients on hydroxychloroquine during the COVID-19 pandemic.**  
   Littlejohn Emily Cleveland Clinic journal of medicine 2020;:No page numbers.

Hydroxychloroquine (HCQ) is in short supply as a result of the coronavirus disease 2019 (COVID-19) pandemic, presenting a challenge to rheumatologists to ensure their patients with systemic lupus erythematosus (SLE) continue to take this essential drug. HCQ is the only SLE treatment shown to increase survival and any change in the HCQ regimen is potentially dangerous. Changes in the HCQ regimen should be made jointly with the patient after a discussion of the available evidence and expert opinion and the patient's preferences. Providers need to make thoughtful, informed decisions in this time of medication shortage.

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1. **Management of rheumatic diseases in the time of covid-19 pandemic: perspectives of rheumatology practitioners from India [correspondence]**  
   Gupta L. Annals of the Rheumatic Diseases 2020;:doi: 10.1136/annrheumdis-2020-217509.

A survey featuring 31 questions related to rheumatic diseases (RDs) during the covid-19 pandemic was administered to members of the Indian Rheumatology Association. Of 861 invitees, 221 (25.7%; 92.7% adult rheumatologists, 52.2% academicians) responded. Most perceived the need for a change in the management of RDs (online supplementary files). Almost half (47.5%) reduced the usage of biological disease modifyinig anti rheumatic drugs (bDMARDs), whereas only 12.2% did so for csDMARDs (figure 1). Of the respondents, 66.5% were more inclined to initiate hydroxychloroquine (HCQ) in patients with borderline indications, whereas 14% disagreed with this approach. Nearly two-thirds (64.2%) were less inclined to change the major immunosuppressant (IS) for impending flare, with 58.3% deferring rituximab (RTX), followed closely by cyclophosphamide, antitumour necrosis factors (anti-TNFs), Janus kinase inhibitors (JAKinibs) and other bDMARDs. An earlier taper of glucocorticoids was preferred by 57.9% in inactive disease. There was lack of consensus on continuing IS infusions.

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1. **Managing patients with rheumatic conditions during the covid-19 pandemic [correspondence]**  
   Caporali R. BMJ 2020;369:m1633.

Recommendations on how to manage patients with autoimmune diseases, how to deal with anti-cytokine drugs used by about 20% of these patients, and how to keep disease activity under strict control in the context of covid-19 are all still lacking.

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1. **Pilot Prospective Open, Single-Arm Multicentre Study on Off-Label Use of Tocilizumab in Patients With Severe COVID-19**  
   Sciascia S. Clinical and Experimental Rheumatology 2020;:15723.

Objectives: No agent has yet been proven to be effective for the treatment of patients with severe COVID-19. Methods: We conducted a pilot prospective open, single-arm multicentre study on off-label use of tocilizumab (TCZ) involving 63 hospitalised adult patients (56 males, age 62.6±12.5) with severe COVID-19. Clinical and laboratory parameters were prospectively collected at baseline, day 1, 2, 7 and 14. No moderate-to severe adverse events attributable to TCZ were recorded. Results: We observed a significant improvement in the levels of ferritin, C-reactive protein, D-dimer. The ratio of the partial pressure of oxygen (Pa02) to the fraction of inspired oxygen (Fi02) improved (mean±SD Pa02/Fi02 at admission: 152±53; at day 7: 283.73 ± 115.9, at day 14: 302.2 ± 126, p<0.05). The overall mortality was 11%; D-dimer level at baseline, but not IL-6 levels were predictors of mortality. TCZ administration within 6 days from admission in the hospital was associated with an increased likelihood of survival (HR 2.2 95%CI 1.3-6.7, p<0.05). Conclusions: In hospitalised adult patients with severe COVID-19, TCZ could be a safe option. An improvement in respiratory and laboratory parameters was observed. Future controlled trials in patients with severe illness are urgently needed to confirm the definite benefit with IL-6 target therapy.

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1. **Possible Consequences of a Shortage of Hydroxychloroquine for Patients with Systemic Lupus Erythematosus amid the COVID-19 Pandemic.**  
   Peschken Christine A. The Journal of rheumatology 2020;:No page numbers.

As the coronavirus disease 2019 (COVID-19; the disease caused by SARS-CoV-2) pandemic took hold in North America, rheumatology clinics across the continent were inundated with phone calls from patients with systemic lupus erythematosus (SLE) who were understandably fearful of COVID-19. One of the most common questions from patients was whether they should stop taking their medications.

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1. **Potential use of hydroxychloroquine, ivermectin and azithromycin drugs in fighting COVID-19: trends, scope and relevance**  
   Choudhary R. New Microbes and New Infections 2020;35:No page numbers.

Alarming situation has been caused due to the emergence of COVID-19 infection around the world. There is an urgency of developing a therapeutic strategy in order to control the spread of COVID-19. Towards that initiative, potential drugs like hydroxychloroquine, ivermectin and azithromycin have been tested by diverse group of researchers worldwide for their potential against novel coronavirus. The present report presents together the comprehensive knowledge derived from the major researches about the above drugs altogether in context of the current health emergency around the world. Hydroxychloroquine and ivermectin were known to act by creating the acidic environment and inhibiting the importin (IMPalpha/beta1) mediated viral import. Azithromycin was found to act similar to the hydroxychloroquine as an acidotropic lipophilic weak base. All the three categories of drugs seemed to potentially act against novel coronavirus infection. However, their efficacies need to be studied in detail individually and in combination in-vivo in order to combat COVID-19 infection.<br/>Copyright &#xa9; 2020

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1. **Recommendations for coronavirus infection in rheumatic diseases treated with biologic therapy.**  
   Ceribelli Angela Journal of autoimmunity 2020;109:102442.

The Coronavirus-associated disease, that was first identified in 2019 in China (CoViD-19), is a pandemic caused by a bat-derived beta-coronavirus, named SARS-CoV2. It shares homology with SARS and MERS-CoV, responsible for past outbreaks in China and in Middle East. SARS-CoV2 spread from China where the first infections were described in December 2019 and is responsible for the respiratory symptoms that can lead to acute respiratory distress syndrome. A cytokine storm has been shown in patients who develop fatal complications, as observed in past coronavirus infections. The management includes ventilatory support and broad-spectrum antiviral drugs, empirically utilized, as a targeted therapy and vaccines have not been developed. Based upon our limited knowledge on the pathogenesis of CoViD-19, a potential role of some anti-rheumatic drugs may be hypothesized, acting as direct antivirals or targeting host immune response. Antimalarial drugs, commonly used in rheumatology, may alter the lysosomal proteases that mediates the viral entry into the cell and have demonstrated efficacy in improving the infection. Anti-IL-1 and anti-IL-6 may interfere with the cytokine storm in severe cases and use of tocilizumab has shown good outcomes in a small cohort. Baricitinib has both antiviral and anti-inflammatory properties. Checkpoints inhibitors such as anti-CD200 and anti-PD1 could have a role in the treatment of CoViD-19. Rheumatic disease patients taking immunosuppressive drugs should be recommended to maintain the chronic therapy, prevent infection by avoiding social contacts and pausing immunosuppressants in case of infection. National and international registries are being created to collect data on rheumatic patients with CoViD-19.

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1. **Review: Hydroxychloroquine and chloroquine for treatment of SARS-CoV-2 (COVID-19)**  
   Pastick K.A. Open Forum Infectious Diseases 2020;7(4):No page numbers.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a rapidly emerging viral infection causing coronavirus disease 2019 (COVID-19). Hydroxychloroquine and chloroquine have garnered unprecedented attention as potential therapeutic agents against COVID-19 following several small clinical trials, uncontrolled case series, and public figure endorsements. While there is a growing body of scientific data, there is also concern for harm, particularly QTc prolongation and cardiac arrhythmias. Here, we perform a rapid narrative review and discuss the strengths and limitations of existing in vitro and clinical studies. We call for additional randomized controlled trial evidence prior to the widespread incorporation of hydroxychloroquine and chloroquine into national and international treatment guidelines.<br/>Copyright &#xa9; The Author(s) 2020. Published by Oxford University Press on behalf of Infectious Diseases Society of America. This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs licence (http://creativecommons.org/licenses/ by-nc-nd/4.0/), which permits non-commercial reproduction and distribution of the work, in any medium, provided the original work is not altered or transformed in any way, and that the work is properly cited.

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1. **Rheumatologists' perspective on coronavirus disease 19 (COVID-19) and potential therapeutic targets.**  
   Misra Durga Prasanna Clinical rheumatology 2020;:No page numbers.

The ongoing pandemic coronavirus disease 19 (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a matter of global concern. Environmental factors such as air pollution and smoking and comorbid conditions (hypertension, diabetes mellitus and underlying cardio-respiratory illness) likely increase the severity of COVID-19. Rheumatic manifestations such as arthralgias and arthritis may be prevalent in about a seventh of individuals. COVID-19 can result in acute interstitial pneumonia, myocarditis, leucopenia (with lymphopenia) and thrombocytopenia, also seen in rheumatic diseases like lupus and Sjogren's syndrome. Severe disease in a subset of patients may be driven by cytokine storm, possibly due to secondary hemophagocytic lymphohistiocytosis (HLH), akin to that in systemic onset juvenile idiopathic arthritis or adult-onset Still's disease. In the absence of high-quality evidence in this emerging disease, understanding of pathogenesis may help postulate potential therapies. Angiotensin converting enzyme 2 (ACE2) appears important for viral entry into pneumocytes; dysbalance in ACE2 as caused by ACE inhibitors or ibuprofen may predispose to severe disease. Preliminary evidence suggests potential benefit with chloroquine or hydroxychloroquine. Antiviral drugs like lopinavir/ritonavir, favipiravir and remdesivir are also being explored. Cytokine storm and secondary HLH might require heightened immunosuppressive regimens. Current international society recommendations suggest that patients with rheumatic diseases on immunosuppressive therapy should not stop glucocorticoids during COVID-19 infection, although minimum possible doses may be used. Disease-modifying drugs should be continued; cessation may be considered during infection episodes as per standard practices. Development of a vaccine may be the only effective long-term protection against this disease.Key Points• Patients with coronavirus disease 19 (COVID-19) may have features mimicking rheumatic diseases, such as arthralgias, acute interstitial pneumonia, myocarditis, leucopenia, lymphopenia, thrombocytopenia and cytokine storm with features akin to secondary hemophagocytic lymphohistiocytosis.• Although preliminary results may be encouraging, high-quality clinical trials are needed to better understand the role of drugs commonly used in rheumatology like hydroxychloroquine and tocilizumab in COVID-19.• Until further evidence emerges, it may be cautiously recommended to continue glucocorticoids and other disease-modifying antirheumatic drugs (DMARDs) in patients receiving these therapies, with discontinuation of DMARDs during infections as per standard practice.

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1. **SARS-CoV-2 infection among patients with systemic autoimmune diseases.**  
   Emmi Giacomo Autoimmunity reviews 2020;:102575.

OBJECTIVESThis study aimed to evaluate the prevalence of clinically overt SARS-CoV-2 infection (COVID-19) among patients with systemic autoimmune diseases residing in Tuscany, and to compare it with that observed in the general Tuscan population.METHODSIn this cross-sectional study, Tuscan outpatients with systemic autoimmune diseases followed at a tertiary referral centre were telephonically interviewed between April 1st-14th 2020 to collect demographic and clinical data, information on ongoing immunomodulating/immunosuppressive treatments, and on the presence of symptoms suspected of SARS-CoV-2 or of a confirmed infection.RESULTS458 patients were interviewed [74% female, median age 56 years (IQR 43-68)]; 56% of them were receiving corticosteroids, 44% traditional disease-modifying anti-rheumatic drugs (DMARDs), of whom 23% hydroxychloroquine, 5% colchicine, while 41% were on biologic DMARDs (of whom 9% on tocilizumab). Thirteen patients reported symptoms suggesting SARS-CoV-2 infection. Of them, 7 had undergone nasopharyngeal swab and only one was positive and developed severe SARS-CoV-2 complications. Within our cohort, the prevalence of SARS-CoV-2 infection was therefore 0.22% (0.01-1.21%), comparable to that observed in the general population of Tuscany [0.20% (0.20-0.21%), p = .597].CONCLUSIONSPatients with systemic autoimmune diseases do not seem to carry an increased risk of SARS- CoV-2 infection as compared to the general population.

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1. **Should coronavirus disease 2019 concern rheumatologists?**  
   Kucharz Eugeniusz J. Polish archives of internal medicine 2020;:No page numbers.

Coronavirus disease 2019 (COVID-19) is an infectious disease that became a global health emergency. The paper reviews aspects of COVID-19 that pertain to rheumatology, including symptoms and signs akin to those observed in rheumatic disorders, risk of infection or severe course of the disease in patients with a pre-existing rheumatic disease and those receiving antirheumatic or immunosuppressive medication as well as potential applications of antirheumatic or anticytokine therapeutic strategies that are already applied in rheumatology (including chloroquine, hydroxychloroquine, tocilizumab, baricitinib, and others) for patients with COVID-19.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=5bf8c7aef47e9b7c652b141012c52cf3)

1. **Smooth or Risky Revisit of an Old Malaria Drug for COVID-19?**  
   Pahan Priyanka Journal of neuroimmune pharmacology : the official journal of the Society on NeuroImmune Pharmacology 2020;:No page numbers.

Hydroxychloroquine (HCQ) is an old medication for malaria. In addition to handling this parasitic disease, HCQ is also used to treat a number of autoimmune disorders including rheumatoid arthritis and systemic lupus erythematosus when other medications are not effective. Recently a new viral infection (COVID-19) is rocking the entire world so much that it has already taken more than 200,000 lives throughout the world within the last two months and the World Health Organization was forced to declare it as a pandemic on March 11, 2020. Interestingly, some reports indicate that this wonder drug may be also beneficial for COVID-19 and accordingly, many clinical trials have begun. Here, we discuss different modes of action (anti-inflammatory, antioxidant, inhibition of endosomal acidification, suppression of angiotensin-converting enzyme 2 or ACE2 glycosylation, etc.) of HCQ that might be responsible for its possible anti-COVID-19 effect. On the other hand, this review also makes an honest attempt to delineate mechanisms (increase in vasoconstriction, inhibition of autophagy, depletion of T cells, etc.) indicating how it may aggravate certain conditions and why caution should be taken before granting widespread repurposing of HCQ for COVID-19. Graphical Abstract.

1. **Targeting the Inflammatory Cascade With Anakinra in Moderate to Severe COVID-19 Pneumonia: Case Series [correspondence]**  
   Aouba A. Annals of the Rheumatic Diseases 2020;:doi: 10.1136/annrheumdis-2020-217706.

Besides interleukin (IL)-6 blockade,2 we and others1 hypothesised that targeting IL-1 should be a safe and effective approach to avoid mechanic ventilation in patients with moderate to severe COVID-19 pneumonia (P-MSP) hospitalised in a non-intensive care unit (ICU).

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=df975ba4c9619512aea23b008cce1411)

1. **The anti-viral facet of anti-rheumatic drugs: Lessons from COVID-19.**  
   Perricone Carlo Journal of autoimmunity 2020;:102468.

The outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has posed the world at a pandemic risk. Coronavirus-19 disease (COVID-19) is an infectious disease caused by SARS-CoV-2, which causes pneumonia, requires intensive care unit hospitalization in about 10% of cases and can lead to a fatal outcome. Several efforts are currently made to find a treatment for COVID-19 patients. So far, several anti-viral and immunosuppressive or immunomodulating drugs have demonstrated some efficacy on COVID-19 both in vitro and in animal models as well as in cases series. In COVID-19 patients a pro-inflammatory status with high levels of interleukin (IL)-1B, IL-1 receptor (R)A and tumor necrosis factor (TNF)-α has been demonstrated. Moreover, high levels of IL-6 and TNF-α have been observed in patients requiring intensive-care-unit hospitalization. This provided rationale for the use of anti-rheumatic drugs as potential treatments for this severe viral infection. Other agents, such as hydroxychloroquine and chloroquine might have a direct anti-viral effect. The anti-viral aspect of immunosuppressants towards a variety of viruses has been known since long time and it is herein discussed in the view of searching for a potential treatment for SARS-CoV-2 infection.

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[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=88cfbe8a37d67f0579ce91e1cec530cd)

1. **The Question of Whether to Remain on Therapy for Chronic Rheumatic Diseases in the Setting of the Covid-19 Pandemic.**  
   Cron Randy Q. The Journal of rheumatology 2020;:No page numbers.

We appreciate our Italian colleagues' interest in our editorial denoting the rheumatologist's role in helping to diagnose and treat cytokine storm syndrome (CSS) in the setting of the Covid-19 panemic (1). It is encouraging that none of the 123 pediatric rheumatology patients (primarily juvenile idiopathic arthritis) on background biological disease modifying anti-rheumatic drug (bDMARD) therapies in Milan, Italy surveyed over a 7-week period from February 25 through April 14, 2020 (during which time Covid-19 was hyper-endemic there) had either confirmed or suspected Covid-19 (2).

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=6264426afda8d59594a3e78c49adc8d1)

1. **Thoughts on COVID-19 and autoimmune diseases**  
   Askanase A.D. Lupus Science and Medicine 2020;7(1):No page numbers.

Over the 2 months since coronavirus first appeared in China, cases have emerged on every continent, and it is clear that patients with autoimmune diseases might also be affected. Coronavirus disease 2019 (COVID-19) is a highly contagious viral illness with a mortality rate approaching 2%. Here we discuss the challenges that patients with autoimmune diseases might face and the information on using immunomodulatory therapies like chloroquine, tocilizumab and baricitinib to quench the cytokine storm in patients with very severe COVID-19 pneumonia.<br/>Copyright &#xa9; Author(s) (or their employer(s)) 2020.

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[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=c12ed33cd487d8e4bb10b07831f636fd)

1. **Tocilizumab: From the Rheumatology Practice to the Fight Against COVID-19, a virus infection with multiple faces.**  
   González-Gay Miguel A. Expert opinion on biological therapy 2020;:No page numbers.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=49eccee6e6fc914b1a7df9c609a7aa42)

1. **What Does the COVID-19 Pandemic Mean for Rheumatology Patients?**  
   Pope Janet E. Current treatment options in rheumatology 2020;:1-4.

Purpose of reviewThe COVID-19 outbreak has resulted in uncertainty for patients with autoimmune rheumatic diseases for several reasons. They are concerned about their risk of developing COVID-19 as many are immune suppressed from their disease and/or treatment, whether they should stop their advanced therapies, if they will have a worse outcome if/when infected due to their underlying medication condition(s) and if they will have drug availability, especially with press (without much data) coverage suggesting hydroxychloroquine may be used in COVID-19 infection causing diversion of medication supply. This article discusses how the pandemic affects people with systemic autoimmune rheumatic diseases.Recent findingsPreliminarily, articles seem to suggest that patients with rheumatic diseases may not have more infections from SARS-CoV-2 and similar outcomes to age and gender matched patients, but fear of rheumatic medications increasing their risk, drug shortages, and work exposure all are concerns for patients.Recent findingsThe long term effects of the pandemic in patients with rheumatic diseases will not be known until much later and likely include stressors flaring disease (fear, illness, job loss, social isolation), post-traumatic stress, flaring due to stopping medications, less physician visits with subsequent under-treatment, and increases in chronic concomitant fatigue, pain, fibromyalgia.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=19ff6df6f97bb66abd8370872f05afc9)

1. **What is the role of rheumatologists in the era of COVID-19?**  
   Marotto Daniela Autoimmunity reviews 2020;19(6):102539.

[Available online at this link](https://www.knowledgeshare.nhs.uk/index.php?PageID=link_resolver&link=3476f012054a6e8339e74806b1f0ba97)

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|  | **Source** | **Criteria** | **Results** |
| --- | --- | --- | --- |
| 1. | Medline | exp CORONAVIRUS/ OR exp CORONAVIRUS INFECTIONS/ | 17730 |
| 2. | Medline | (coronavirus).ti,ab | 15063 |
| 3. | Medline | ("Severe Acute Respiratory Syndrome Coronavirus 2").ti,ab | 943 |
| 4. | Medline | (ncov OR 2019-nCoV OR 2019nCoV OR COVID-19 OR COVID19 OR SARS-CoV-2).ti,ab | 13060 |
| 5. | Medline | (1 OR 2 OR 3 OR 4) | 31673 |
| 6. | Medline | "RHEUMATIC DISEASES"/ OR "ARTHRITIS, RHEUMATOID"/ OR "POLYMYALGIA RHEUMATICA"/ OR "RHEUMATOID VASCULITIS"/ | 120386 |
| 7. | Medline | POLYMYOSITIS/ | 2485 |
| 8. | Medline | "SPONDYLITIS, ANKYLOSING"/ | 14560 |
| 9. | Medline | exp "LUPUS ERYTHEMATOSUS, SYSTEMIC"/ OR exp "SCLERODERMA, SYSTEMIC"/ | 77223 |
| 10. | Medline | "ARTHRITIS, PSORIATIC"/ | 5988 |
| 11. | Medline | (rheumat\*).ti,ab | 171433 |
| 12. | Medline | ("rheumatoid arthritis" OR "psoriatic arthritis" OR "ankylosing spondylitis" OR "systemic lupus erythematosus" OR scleroderma OR polymyositis OR vasculitis OR "polymyalgia rheumatica").ti,ab | 208596 |
| 13. | Medline | (6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12) | 323771 |
| 14. | Medline | exp "ANTIRHEUMATIC AGENTS"/ | 438680 |
| 15. | Medline | exp STEROIDS/ | 852932 |
| 16. | Medline | "BIOSIMILAR PHARMACEUTICALS"/ | 1929 |
| 17. | Medline | "JANUS KINASE INHIBITORS"/ | 285 |
| 18. | Medline | ("disease-modifying anti-rheumatic" OR DMARD\*).ti,ab | 5201 |
| 19. | Medline | (steroid\*).ti,ab | 216972 |
| 20. | Medline | (biologics).ti,ab | 9342 |
| 21. | Medline | ("janus kinase inhibitor\*").ti,ab | 570 |
| 22. | Medline | ("JAK inhibitor\*").ti,ab | 1421 |
| 23. | Medline | (hydroxychloroquine).ti,ab | 4172 |
| 24. | Medline | (anakinra).ti,ab | 1617 |
| 25. | Medline | (tocilizumab).ti,ab | 2770 |
| 26. | Medline | (anti-TNF).ti,ab | 10044 |
| 27. | Medline | (rituximab).ti,ab | 20003 |
| 28. | Medline | (14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27) | 1373311 |
| 29. | Medline | (5 AND 13 AND 28) | 45 |
| 30. | Medline | 29 [Languages English] | 42 |
| 31. | EMBASE | exp "CORONAVIRUS INFECTION"/ | 13363 |
| 32. | EMBASE | (coronavirus).ti,ab | 15244 |
| 33. | EMBASE | ("Severe Acute Respiratory Syndrome Coronavirus 2").ti,ab | 822 |
| 34. | EMBASE | (ncov OR 2019-nCoV OR 2019nCoV OR COVID-19 OR COVID19 OR SARS-CoV-2).ti,ab | 11346 |
| 35. | EMBASE | (31 OR 32 OR 33 OR 34) | 30450 |
| 36. | EMBASE | "RHEUMATIC DISEASE"/ OR "RHEUMATIC POLYMYALGIA"/ OR exp "RHEUMATOID ARTHRITIS"/ | 229445 |
| 37. | EMBASE | POLYMYOSITIS/ | 8409 |
| 38. | EMBASE | "ANKYLOSING SPONDYLITIS"/ | 26392 |
| 39. | EMBASE | exp "SYSTEMIC LUPUS ERYTHEMATOSUS"/ | 88765 |
| 40. | EMBASE | exp SCLERODERMA/ | 43779 |
| 41. | EMBASE | "PSORIATIC ARTHRITIS"/ | 22151 |
| 42. | EMBASE | (rheumat\*).ti,ab | 261271 |
| 43. | EMBASE | ("rheumatoid arthritis" OR "psoriatic arthritis" OR "ankylosing spondylitis" OR "systemic lupus erythematosus" OR scleroderma OR polymyositis OR vasculitis OR "polymyalgia rheumatica").ti,ab | 304858 |
| 44. | EMBASE | (36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43) | 490428 |
| 45. | EMBASE | exp \*"ANTIRHEUMATIC AGENT"/ | 200279 |
| 46. | EMBASE | exp \*STEROID/ | 546811 |
| 47. | EMBASE | exp \*"BIOSIMILAR AGENT"/ | 2613 |
| 48. | EMBASE | exp \*"JANUS KINASE INHIBITOR"/ | 5077 |
| 49. | EMBASE | ("disease-modifying anti-rheumatic" OR DMARD\*).ti,ab | 15825 |
| 50. | EMBASE | (steroid\*).ti,ab | 316518 |
| 51. | EMBASE | (biologics).ti,ab | 20940 |
| 52. | EMBASE | ("janus kinase inhibitor\*").ti,ab | 1158 |
| 53. | EMBASE | ("JAK inhibitor\*").ti,ab | 2965 |
| 54. | EMBASE | (hydroxychloroquine).ti,ab | 7986 |
| 55. | EMBASE | (anakinra).ti,ab | 3386 |
| 56. | EMBASE | (tocilizumab).ti,ab | 7168 |
| 57. | EMBASE | (anti-TNF).ti,ab | 21993 |
| 58. | EMBASE | (rituximab).ti,ab | 44642 |
| 59. | EMBASE | (45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58) | 1009948 |
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