بنام خداوند مهربان

vaccine COVID-19 and autoimmune diseases

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Subjects?

- Challenges in COVID-19 ?
- Relationship between COVID-19 and autoimmune diseases?
- Autoimmune diseases after COVID-19 infection ?
- Association between DMARDs and hospitalisation for COVID-19?
- Factors associated with higher hospitalisation?
- Factors associated with COVID-19-related death?
- Practical approach treatment?
- Recommendations for Use of the COVID-19 Vaccine in Patients?

Rheumatic Disease

- Systemic lupus erythematosus (SLE)
- Rheumatoid arthritis (RA)
- Sjőgren syndrome.
- Dermatomyositis/polymyositis.
- Scleroderma/systemic sclerosis.
- Mixed connective disease/overlap syndrome.
- Ankylosing spondylitis.
- Psoriatic arthritis
- …….

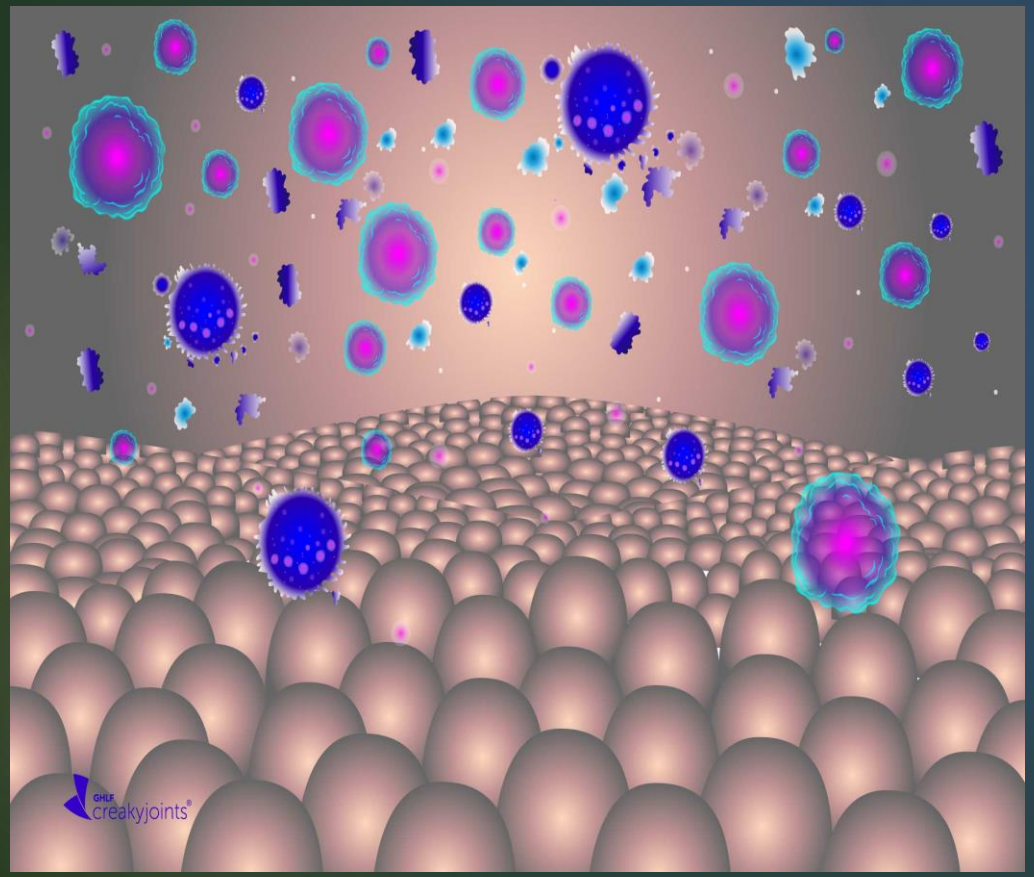
- COVID-19 ,challenges for healthcare providers and patients
- Direct burden it has placed on societies and health systems
- significant impact in the care of patients with chronic diseases
- In the field of rheumatology, required notable efforts
- patient care depending on local policy, hospital/clinic context, volume of clinical activity and available facilities/ staff
- Self-care is one of the crucial principles for overcoming chronic disease such as rheumatic diseases
- An effective vaccine is still pending

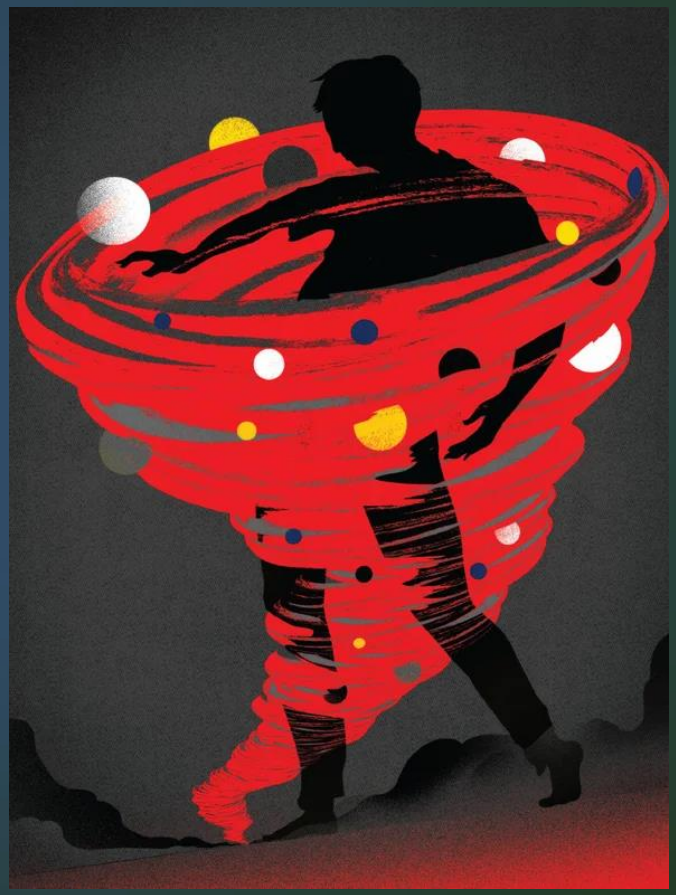
Antirheumatic drugs

- **Nonbiologic DMARDs** (traditional or conventional) MTX, HCQ,SSZ,LEF
- **Biologic DMARDs**, recombinant DNA technology and generally target
- cytokines or their receptors or are directed against other cell surface molecules. include
- **TNF-alpha inhibitors**(etanercept, infliximab, adalimumab, golimumab,
- certolizumab pegol)
- **IL-6 receptor antagonists**: tocilizumab and sarilumab.
- **other biologic response modifiers** ,T-cell costimulation blocker abatacept (CTLA4-Ig)
- **anti-CD20 B-cell depleting monoclonal antibody** : rituximab
- **Targeted synthetic DMARDs**, JAK inhibitors (tofacitinib, aricitinib, upadacitinib),
- orally.
- **Glucocorticoids**
- **NSAIDs** ,

What Is a ‘Cytokine Storm?

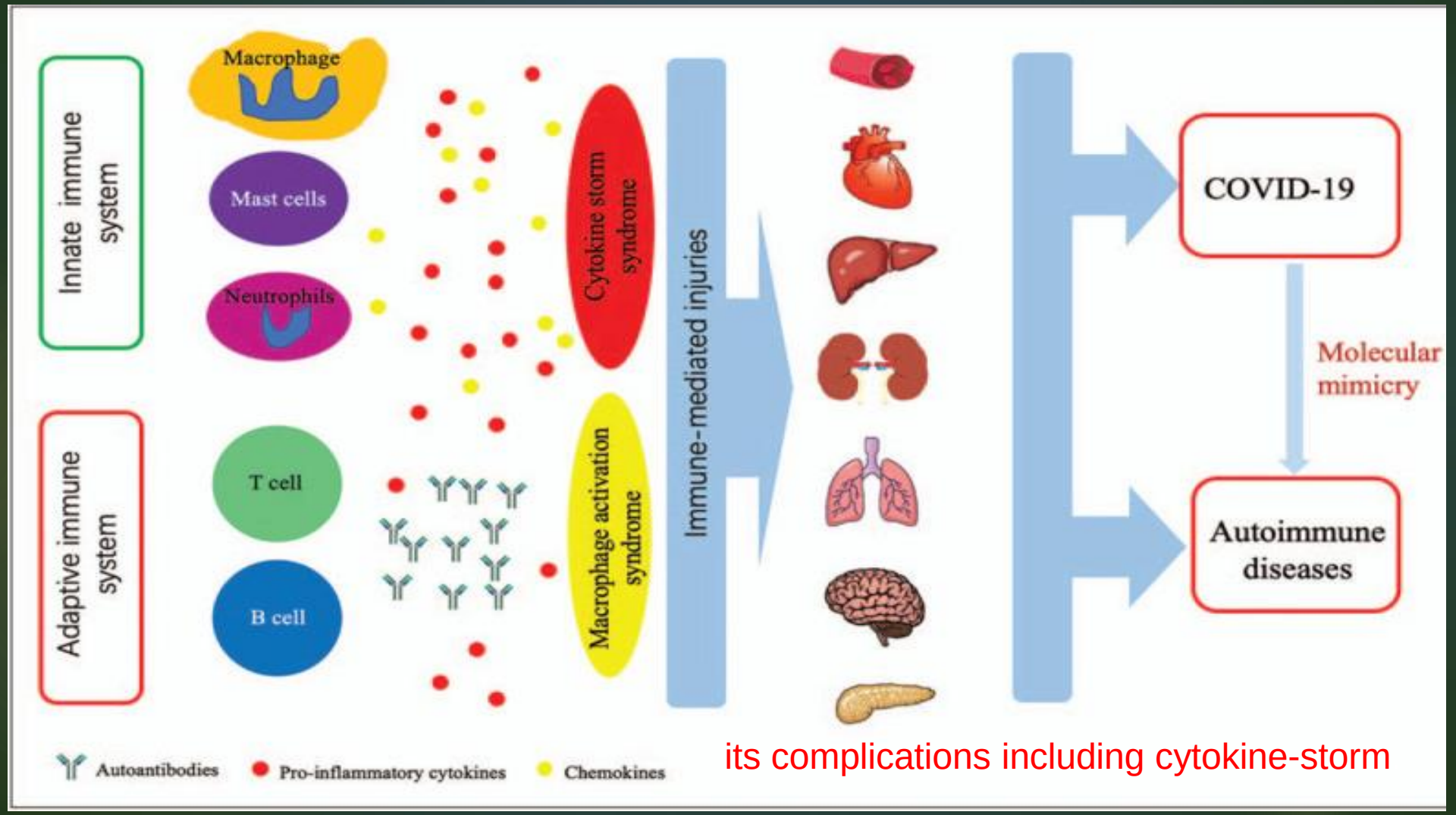
A cytokine storm is often described as a hyperactive immune response





Similar immune reactions in SARS-CoV-2 infection and autoimmune diseases. Both COVID-19 and autoimmune diseases present with various clinical symptoms involving different organs

SARS-CoV-2 can trigger cross-reactivity through molecular mimicry, leading to autoimmunity in patients with COVID-19.



its complications including cytokine-storm

Relationship between COVID-19 and autoimmune diseases

- COVID-19 shares similarities with autoimmune diseases in clinical manifestations, immune responses
- Robust immune reactions participate in the pathogenesis of both disease conditions.
- Medications autoimmune rheumatologic diseases might have therapeutic effect in severe COVID-19 infections

- After COVID-19 :Guillain–Barré syndrome or systemic lupus , vasculitis , polymyositis
- SARS-CoV-2 can disturb self-tolerance and trigger autoimmune responses
- The infection risk and prognosis of COVID-19 in patients with autoimmune diseases remains controversial
- patient adherence to medication regimens to prevent autoimmune disease flares is strongly recommended.

Management of targeted DMARDs

- Most patients treated with subcutaneous and oral DMARDs can be safely monitored over telemedicine
- Reducing routine blood tests to the indispensable.
- Hospitals and national health systems might provide delivery of these drugs at home or at a local pharmacy, avoiding unnecessary travel to the hospital pharmacy

- In the case of intravenous therapies, prioritisation might be necessary
- Delaying treatment of patients with active CTDs and vasculitis with cyclophosphamide, rituximab, tocilizumab and belimumab may negatively impact the short-term outcome of these patients
- Patient admissions should be reserved for acute, severe rheumatic manifestations and kept as short as possible.

- Rheumatic disease may be at higher risk with COVID- 19:
- hospitalisation,
- complications
- death

- as hydroxychloroquine and interleukin-6 (IL-6) inhibitors, are being studied for the prevention and/or treatment of COVID-19

COVID-19 Global Rheumatology Alliance (C19-GRA) physician registry Odds of hospitalisation

- factors associated with higher odds of COVID-19 hospitalisation:
- older age,
- presence of comorbidities and
- higher doses of prednisone (≥10 mg/day).

- Comorbidities such as hypertension, cardiovascular and diabetes had **higher** odds of hospitalisation

- Glucocorticoid use at a prednisone-equivalent dose ≥10 mg/day was associated with an increased odds of hospitalisation
- BMJ 2020;368:m1168.

Odds of hospitalisation

- Not see an association between prior NSAID use ,b/tsDMARD monotherapy to be associated with a lower odds of hospitalisation
- Not find a significant association between antimalarial use and hospitalisation
- NO significant benefit with either **hydroxychloroquine** alone or combined with **azithromycin** on clinical outcomes including mortality
- medRxiv 2020. &Gianfrancesco M, et al. Ann Rheum Dis 2020

factors associated with COVID-19-related death in patients with rheumatic diseases

- older age
- male sex
- Comorbidities
- moderate/high disease activity

importance of disease control in rheumatic diseases in the COVID-19

- Continuing rheumatic medications in the absence of COVID-19 infection or SARS-CoV- 2 exposure
- Most individuals with rheumatological diseases or on mmunosuppressive therapies recover from COVID-19
-
- Arthritis Rheumatol 2020.

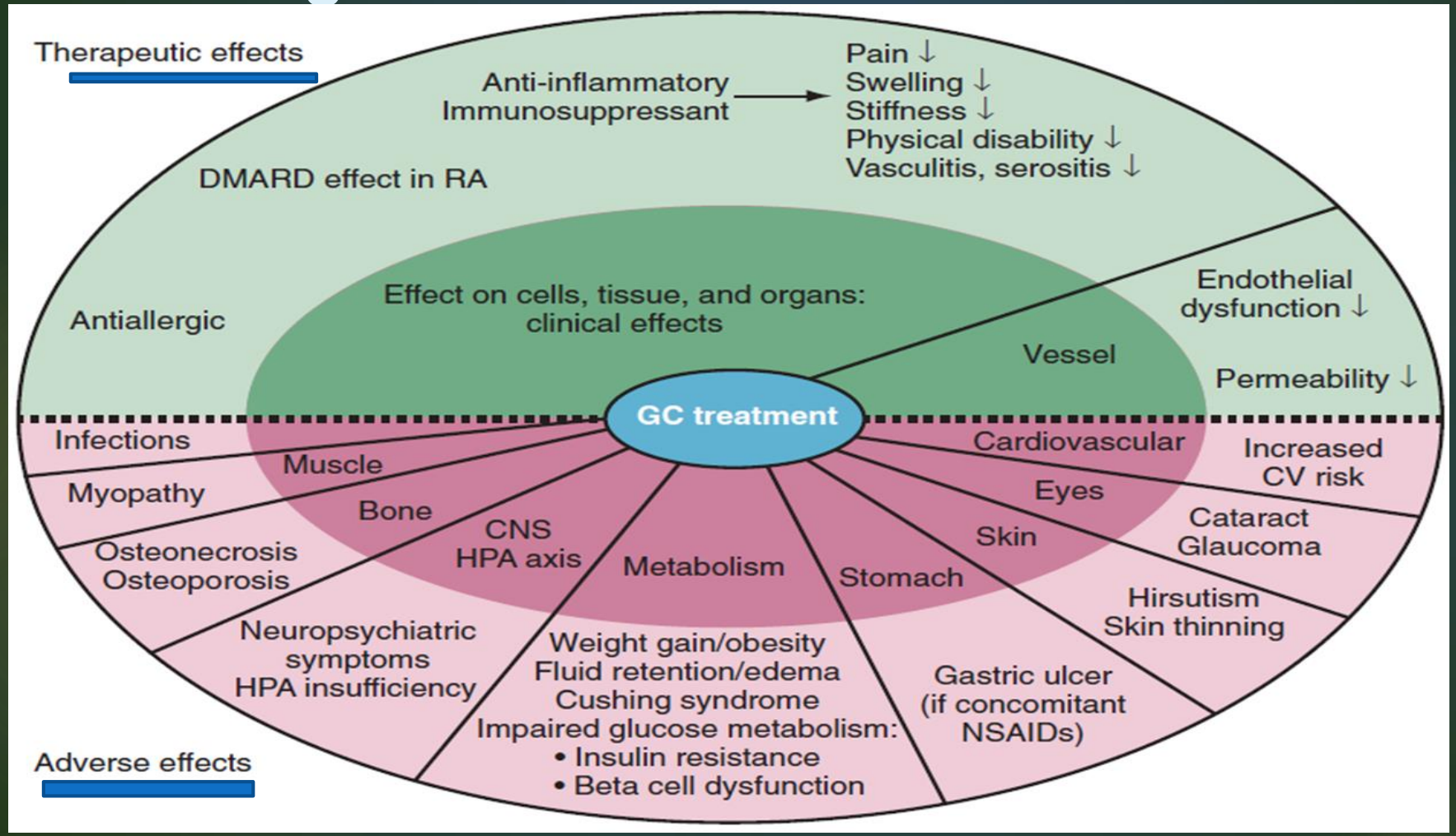
Conventional synthetic DMARDs

- ACR guidelines ; in the absence of COVID infection or exposure, DMARDs can be continued.
- In case of **exposure** to COVID-19,hydroxychloroquine and sulfasalazine may be continued,
- but stopping **methotrexate** or **leflunomide** in this situation.
- Risk of infection with bDMARDs is generally considered slightly higher (from **1.5- up to 2-fold**) compared with csDMARDs
- Beneficial effect of anti-TNF and IL-6 therapy in preventing severe disease

Corticosteroids

Cornerstone of for flares and initial treatment

disadvantage increased risk of infections



2019 update of EULAR recommendations for vaccination in adult patients with autoimmune inflammatory rheumatic diseases (AIIRD)

- Vaccination is particularly important in AIIRD patients, potentially translating into a lower rate of hospital admissions due to infections, emergency room visits and the rate of invasive infectious diseases.
- Non-live vaccines can be safely provided to AIIRD patients regardless of underlying therapy
- Influenza and pneumococcal vaccination should be strongly considered for the majority of patients with AIIRD.

Recommendations for Use of the COVID-19 Vaccine in RMD Patients

- Beyond known allergies to vaccine components, there are no known additional contraindications to COVID-19 vaccination
- All RD patients should receive COVID-19 vaccination,(age ≥16)
- No preference for one COVID-19 vaccine over another(mRNA COVID-19 vaccines)
- patients should receive either vaccine available to them.
- patients should receive the second dose of the same vaccine,

ACR Board of Directors on February 8, 2021

Recommendations for Use of the COVID-19 Vaccine in RMD Patients

- Nor to assess the need for vaccination in a yet-unvaccinated person
- Should not routinely lab testing to assess immunity to COVID-19 post-vaccination,
- should continue to follow all public health guidelines (distancing and other preventive)

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American college of rheumatology **Guidance Summary**

Timing of Vaccination in Relation to COVID-19 Vaccination Administration

Medication	Timing Considerations for Immunomodulatory Therapy and Vaccination*	Level of Task Force Consensus
Hydroxychloroquine; apremilast; IVIG; glucocorticoids, prednisone-equivalent dose <20mg/day	No modifications to either immunomodulatory therapy or vaccination timing	Strong-Moderate
Sulfasalazine; Leflunomide; Mycophenolate; Azathioprine; Cyclophosphamide (oral); TNFi; IL-6R; IL-1; IL-17; IL-12/23; IL-23; Belimumab; oral calcineurin inhibitors; Glucocorticoids, prednisone-equivalent dose ≥ 20mg/day**	No modifications to either immunomodulatory therapy or vaccination timing	Moderate
Methotrexate	Hold MTX 1 week after each vaccine dose, for those with well-controlled disease; no modifications to vaccination timing	Moderate

JAKi	Hold JAKi for 1 week after each vaccine dose; no modification to vaccination timing	Moderate
Cyclophosphamide IV	Time CYC administration so that it will occur approximately 1 week after each vaccine dose, when feasible	Moderate
Rituximab	Assuming that patient's COVID-19 risk is low or is able to be mitigated by preventive health measures (e.g., self-isolation), schedule vaccination so that the vaccine series is initiated approximately 4 weeks prior to next scheduled rituximab cycle; after vaccination, delay RTX 2-4 weeks after 2nd vaccine dose, if disease activity allows	Moderate

RMD = rheumatic and musculoskeletal disease; IVIG = intravenous immunoglobulin; TNFi = tumor necrosis factor inhibitor; IL = interleukin; JAKi = janus kinase inhibitor; CYC = cyclophosphamide; RTX = rituximab; IV = intravenous; SQ = subcutaneous

Key messages

- use of DMARDs did not increase the odds of hospitalisation.
- people with rheumatic diseases who are older and/or have comorbidities have a higher odds of COVID-19-related hospitalisation.
- Anti-TNF treatment was associated with reduced odds of hospitalisation
- prednisone ≥10 mg/day higher odds of hospitalisation and infection
- There was no difference hydroxychloroquine, or NSAID use between those who were or were not hospitalised.
- most individuals with rheumatological diseases or on immunosuppressive therapies recover from COVID-19
- Methotrexate, Hold MTX 1 week after each vaccine dose
- JAKi , Cyclophosphamide IV, 1 week after each vaccine dose,
- Rituximab, 4 weeks prior to after vaccination,4 weeks after 2nd vaccine d

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