

# COVID-19 Summary Sheet



Some content may become inaccurate as more data emerge. This should be taken as a general summary and not an exhaustive appraisal of existing medical literature.

## General Notes

- Coronavirus 2019 (aka SARS-CoV-2) can cause a disease called COVID-19
- Corticosteroids are generally not recommended for COVID-19, unless indicated for other reasons
- Use of nebulized bronchodilators can potentially aerosolize the virus, so use of metered dose inhalers is generally preferred to help reduce possible spread of the virus
- Empiric antibiotics are generally NOT recommended for patients with COVID-19 and should be stopped if started empirically and super-infection is ruled out
  - Co-infections are possible (e.g., influenza, community acquired pneumonia), but should not be the norm
- Lymphopenia is commonly seen upon presentation with COVID-19
- COVID-19 is not expected to increase procalcitonin, but it can increase CRP and inflammatory markers
- Use of neuraminidase inhibitors to target COVID-19 (e.g., oseltamivir [Tamiflu]) is not currently indicated
- As COVID-19 progresses patients may experience acute respiratory distress syndrome (ARDS)
  - Since fluids can exacerbate ARDS, consider avoiding fluids unless indicated for dehydration, sepsis, or other
  - Severe COVID-19 can require intubation and many patients are placed in a prone position due to ARDS
- Patients with severe disease may experience cytokine storm, which is associated with fever, increased levels of IL-6, CRP, D-Dimer, LDH, and ferritin, with decreased levels of fibrinogen
- Some patients are at increased risk for mortality or negative outcomes
  - Age is a strong risk factor for death from COVID-19, with highest death rates in people over 80 years
  - Underlying medical conditions (e.g., diabetes, cardiovascular disease, chronic respiratory disease, hypertension, cancer) are associated with higher death rates
  - Heart disease, hypertension, prior stroke, diabetes, chronic lung disease, and chronic kidney disease are associated with more severe disease and worse outcomes
- Lopinavir/ritonavir (Kaletra<sup>®</sup>) monotherapy should not be used for COVID-19 treatment
- There are a long list of other drugs and modalities being studied
  - Remdesivir is not discussed here, but is an experimental IV anti-viral that may treat COVID-19

## Hydroxychloroquine (Plaquenil<sup>®</sup>) and Chloroquine

- Same proposed mechanism of action: alters pH of the cell membrane inhibiting viral fusion; interferes with glycosylation of cellular receptors of the SARS-CoV-2 virus; impairs acidification of endosomes resulting in less viral trafficking
- Have proven *in vitro* effects versus SARS-CoV-2, but clinical data supporting *in vivo* effects are limited thus far
- EKG monitoring at baseline is recommended for either product, beware QTc prolongation
  - Consider discontinuing any concomitant QT prolonging drugs
  - A QTc > 500 should be a clear red flag to perform further review prior to starting therapy
- Both hydroxychloroquine and chloroquine have relatively long half-lives (days), so a short course can provide coverage for a prolonged period of time
- Hydroxychloroquine is generally better tolerated as compared to chloroquine
- Beware toxicities: ocular, hypoglycemia, cardiac, neuromuscular weakness, etc
- Clear dosing standards for either hydroxychloroquine or chloroquine in COVID-19 are not established
  - 400 mg PO BID day 1, followed by 200 mg PO BID days 2-5 is one proposed option for hydroxychloroquine
  - 500 mg PO BID x 10 days is one proposed option for chloroquine
  - Both hydroxychloroquine and chloroquine can potentially be crushed for oral administration

## Tocilizumab (Actemra<sup>®</sup>)

- Lacks antiviral effects, but may be beneficial towards cytokine release syndrome (CRS, cytokine storm) as an IL-6 antagonist which may reduce cytokines and acute phase reactants
- Has FDA-approvals for CRS due to chimeric antigen receptor T-cell therapy, Giant cell arteritis, and rheumatoid arthritis
- Limited clinical data exist supporting a clinical benefit of tocilizumab for COVID-19 disease
- Can be considered for patients with severe COVID-19 who are intubated and exhibit evidence of cytokine storm
- Evaluate at baseline: HBV status, MTb status, liver function, platelet count, inflammatory markers, presence of invasive fungal or bacterial infection, and shingles status
- Can predispose patients to invasive infections long-term
- No standard dosing for tocilizumab and COVID-19 is established
- Tocilizumab is a very expensive medication (many hundreds of dollars for an adult dose)

Abbreviations: CRP = C-reactive protein; EKG = electrocardiogram; FDA = Food and Drug Administration; HBV = hepatitis B virus, IL-6 = interleukin 6; MTb = Mycobacterium tuberculosis; SARS = severe acute respiratory syndrome