

# Henry Ford Hospital COVID – 19 Treatment Drug Information Quick Sheet

Medication	Dose	Mechanism of Action	Side Effects	Monitoring
<b>Hydroxychloroquine</b>  Indication: Supplemental oxygen	400 mg PO BID x 2 doses, then 200 mg PO BID x 4 days	1) Blocks viral infection by increasing endosomal pH required for virus/cell fusion 2) Interferes with the glycosylation of cellular receptors of SARS-CoV 3) *in vitro data only* Zinc ionophore – allowing an increase in intracellular Zn <sup>2+</sup>	Aplastic anemia, Cardiotoxicity, Torsade de Pointes (QTc prolongation), depression, psychosis, Hemolytic anemia (G6PD deficiency)	Daily CBC, BMP w/ Mag and Phos Baseline and daily ECG monitoring for QTc prolongation (can use telemetry QTc if correlates with 12 lead)
<b>Azithromycin</b>  Use only in select patients Not recommended in patients with cardiac comorbidities or elevated baseline QTc	500 mg x 1 on Day 1 then 250 mg daily days 2-5	Hypotheses on the MOA of macrolides on viruses are scarce. 1) Reduced expression of fusion protein receptor (RSV) 2) Reduced proliferation in glial cells (ZIKV) 3) Unknown MOA against (SARS-CoV; COVID-19)	QTc prolongation	Perform daily ECG (telemetry QTc if correlates) if used in combination with hydroxychloroquine. Discontinue if QTc increases by 60 msec or is > 500. Maintain potassium at least 4 mEq/L, and magnesium at least 2 mEq/L
<b>Methylprednisolone</b>  <u>New or Worse supplemental oxygen with early ARDS (PaO<sub>2</sub>/FiO<sub>2</sub> &lt; 200)</u> - If positive influenza, steroids are not recommended - If negative influenza, recommend	0.5 mg/kg every 12 hours for 3 to 7 days	Decreased inflammatory cytokine release, which when un-regulated causes increased alveolar injury leading to diffuse alveolar damage	Hyperglycemia, increased infection risk, leukocytosis	Increased glucose monitoring, daily CBC w/ diff
<b>Zinc</b>  Give in conjunction with hydroxychloroquine	Sulfate 220 mg (50 mg elemental Zinc) PO BID (if zinc level returns > 60 mcg/dL, consider dose reducing to once daily dosing or discontinuing additional dosing) x 5 days from admission	Interfering with correct proteolytic processing of viral polyproteins.	<u>Symptoms of deficiency:</u> Diarrhea, dermatitis, alopecia	Zinc level (prior to starting Zinc supplementation)

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<p><b>Tocilizumab (requires Infectious Disease approval)</b>  <b>Indications</b>          (all of below):</p> <ul style="list-style-type: none"> <li>• If suspicious for tuberculosis, bacterial, or fungal infection; the infection must be ruled out</li> <li>• Fever &gt; 6 hr</li> <li>• P/F &lt;150</li> <li>• Labs:              Ferritin &gt; 1000              D-Dimer &gt;5              LDH &gt; 500</li> </ul> <p>OR          IL-6 &gt; 5 times upper nl</p> <p><b><u>Exclusion criteria : Document in Chart (EHR) Patient has satisfied these criteria below</u></b></p> <ul style="list-style-type: none"> <li>• Pregnant or lactating women</li> <li>• ALT / AST &gt; 5 ULN</li> <li>• Neutrophils &lt;0.5</li> <li>• Platelets &lt; 50</li> <li>• Definite diagnosis of rheumatic immune-related diseases</li> <li>• Long-term oral anti-rejection or immunomodulatory drugs</li> <li>• Hypersensitivity to tocilizumab or any excipients</li> </ul>	<ul style="list-style-type: none"> <li>• 400 mg IV once</li> </ul> <p>Can repeat dose in 12 hours for maximum of 2 doses total if continued clinical decompensation at the discretion of ID consult</p>	<p>Recombinant humanized monoclonal antibody against IL-6</p>	<p>LFT abnormalities, injection site reaction, increased risk of serious infections, including re-activation of tuberculosis, invasive fungal infections, and other opportunistic pathogens</p>	<p>IL-6 (on admit to ICU and/or prior to Tocilizumab dose), CRP, Ferritin, LDH, fibrinogen, D-dimer, triglycerides (pre- and post- dose)</p> <p>Alternate infectious diagnosis should be ruled out before giving tocilizumab.</p>
<p><b>Remdesivir</b>          Indication: Covid-19 positive and mechanical ventilation          Manufacturer - expanded use Infectious disease will enroll in clinical trial</p>	<p>Trial protocol currently being written, but trial data for Ebola in non-human primates showed effective concentrations at 10 mg/kg</p>	<p>An adenosine analogue, which incorporates into newly formed viral RNA chains and results in premature protein termination</p>	<p>Phlebitis, Constipation, Nausea, Headache, Bruising, Liver Function abnormalities</p>	<p>Obtain daily BMP and LFTs.</p>

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## References:

HFHS guideline. Management and Treatment of Confirmed COVID-19 Cases. 2020.

HFH ICU Pharmacy COVID-19 Management Pearls\_V2. 2020.

Gautret P et al. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. Pre Print published online 19 Mar 2020. Available at: <https://www.mediterranee-infection.com/wp->

Bosseboeuf E, Aubry M, Nhan T, et al. Azithromycin Inhibits the Replication of Zika Virus. *Journal of Antivirals & Antiretrovirals*. 2018;10(1). doi:10.4172/1948-5964.1000173

Retallack H, Lullo ED, Arias C, et al. Zika virus cell tropism in the developing human brain and inhibition by azithromycin. *Proceedings of the National Academy of Sciences*. 2016;113(50):14408-14413. doi:10.1073/pnas.1618029113

Velthuis AJWT, Sjoerd H. E. Van Den Worm, Sims AC, Baric RS, Snijder EJ, Hemert MJV. Zn<sup>2</sup> Inhibits Coronavirus and Arterivirus RNA Polymerase Activity In Vitro and Zinc Ionophores Block the Replication of These Viruses in Cell Culture. *PLoS Pathogens*. 2010;6(11). doi:10.1371/journal.ppat.1001176

Vincent MJ, Bergeron E, Benjannet S, et al. Chloroquine is a potent inhibitor of SARS coronavirus infection and spread. *Virology Journal*. 2005;2(1):69. doi:10.1186/1743-422x-2-69

Wang M, Cao R, Zhang L, et al. Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro. *Cell Research*. 2020;30(3):269-271. doi:10.1038/s41422-020-0282-0

Warren, T. K. et al. Therapeutic efficacy of the small molecule GS-5734 against Ebola virus in rhesus monkeys. *Nature* 531, 381–385 (2016).

Xue J, Moyer A, Peng B, Wu J, Hannafon BN, Ding W-Q. Chloroquine Is a Zinc Ionophore. *PLoS ONE*. 2014;9(10). doi:10.1371/journal.pone.0109180