Potential Therapy: SARS-CoV-2 (COVID-19)

There are currently no FDA approved medications indicated for COVID-19 – Below is a table of medications that are under investigation.

Investigational Agents	Mechanism of Action	Dose	Route	Duration	ADRs	Geriatric Considerations
Azithromycin	Prevents protein synthesis by inhibiting translation of mRNA	500mg day 1, 250mg day 2-5 ***(adjunct w/ Hydroxychloroquine)***	PO	5 days	N/V, diarrhea, constipation	May cause delirium, unclear if it is from medication or ongoing infection.
Lopinavir/Ritonavir	Inhibiting HIV-1 protease for protein cleavage, resulting in non-infectious, immature viral particles	200 mg/50 mg, 2 tablets q12h (oral solution avail.) ***(in combo w/ chloroquine or Hydroxychloroquine)***	PO	14 days	N/V, diarrhea, HA, rash, joint pain, elevated LFT, neutropenia, respiratory infections	Administer with Food. Hepatic disease may increase AUC by 30%
Chloroquine Phosphate	Increasing endosomal pH, immunomodulator, Autophagy inhibitors	250mg q12h	PO	10 days	HA, Diarrhea, Abdominal discomfort, weight loss, blurred vision, corneal opacity, deafness, CNS insomnia, agitation, hallucinations, hypoglycemia, DRESS, arrhythmias, Aplastic anemia, Agranulocytosis	Note: Administer w/ meals to decrease GI upset; chloroquine phosphate tablets have been mixed w/ chocolate syrup to mask bitter taste
Hydroxychloroquine Sulfate	Interferes w/ digestive vacuole function in sensitive organisms by increasing pH and interfering w/ lysosomal degradation of hemoglobin	400mg x q12h (1oading dose) Then 200mg q12h	PO	10 days	Rash (including SJS), nausea, Diarrhea, tinnitus, retinopathy, Hepatic failure, emotional instability, irritability, nightmares, psychosis, Angioedema, Agranulocytosis	None, use with caution in reduced renal and hepatic function
Oseltamivir	Inhibits activity of viral neuraminidase enzyme, preventing budding from host cell, viral replication, and infectivity	Flu dose: 75mg PO BID x 5 days	PO	? Unknown	HA, N/V, Diarrhea, dizziness, pain	Renal dose adjusted: • CrCl >30-60 mL/min: 30mg BID • CrCl >10- 30 mL/min: 30mg daily
Experimental (Current Clinical Trials)						
Favipiravir (T-705)	Viral RNA chain terminator - Acting on viral genetic copying to prevent its reproduction, without affecting host cellular RNA or DNA synthesis	In Japan 1600 mg BID day 1 then 600 mg BID x 4 days; Ebola virus: 6000 mg-day 1 and 2400 mg/day on days 1–9	PO	? 5-9 days	N/V, teratogenicity, ? QT prolongation	No specifics available
Remdesivir	Nucleotide analogue Prodrug -Interferes with virus post-entry	Currently in Phase 3. **Coronavirus disease 2019:** IV: Limited data; dose -clinical trials: 200 mg single dose on day 1, followed by 100 mg daily for a total duration of 5 to 10 days (Gilead 2020; NIH 2020a; NIH 2020b; NIH 2020c).	IV	10 days	Limited issues noted, tested for Ebola, ineffective, no clear data. In Phase 3 trials (Japan)	No specifics available

Created by: Flora Bessey, PharmD, BCGP and Janice Hoffman, PharmD, EdD, APh, BCGP

For informational purposes only, not to be construed as medical advice. No drug is currently FDA approved for the treatment of COVID-19. Consult with appropriate specialists as indicated if considering the use of these medications.

References

1. Gautret et al. (2020) Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. International Journal of Antimicrobial Agents – In Press 17 March 2020 – DOI : 10.1016/j.ijantimicag.2020.105949
2. Drug Discoveries & Therapeutics. 2020; 14(1):58-60.
3. Guo et al. Military Medical Research (2020) 7:11 https://doi.org/10.1186/s40779-020-00240-0
4. Infectious Disease Reports 2020; Volume 12:8543. View of National Institute for the Infectious Diseases "L. Spallanzani" IRCCS. Recommendations for COVID-19 Clinical Management. Pdf
5. K. Shiraki and T. Daikoku, Favipiravir, an anti-influenza drug against life-threatening RNA virus infections, Pharmacology & Therapeutics, https://doi.org/10.1016/j.pharmthera.2020.107512
6. Favipiravir works! Preliminary Clinical Studies Suggest Positive Effects on COVID-19 Patients. https://www.realwire.com/releases/Preliminary-Clinical-Studies-Suggest-Positive-Effects-on-COVID-19-Patients (accessed on: 3/19/20)
7. https://www.drugbank.ca/drugs/DB12466 (accessed on: 3/19/20)
8. https://online-lexicom.proxy.westernu.edu/lco/action/doc/retrieve/docid/patch_f/7193?cesid=1OcFvYjKSmK&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dlopinavir%2520and%2520ritonavir%26t%3Dname%26va%3DLopin (accessed on: 3/19/20)
9. https://online-lexi-com.proxy.westernu.edu/lco/action/doc/retrieve/docid/patch_f/6587?cesid=8dSHYESpLe6&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dchloroquine%26t%3Dname%26va%3Dchloroquine (accessed on: 3/19/20)
10. https://online-lexi-com.proxy.westernu.edu/lco/action/doc/retrieve/docid/patch_f/7057?cesid=aeBilVmd8E9&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dhydroxychloroquine%26t%3Dname%26va%3Dhydroxycholoro (accessed on: 3/19/20)
11. https://online-lexi-com.proxy.westernu.edu/lco/action/doc/retrieve/docid/patch_f/7405?cesid=4HGuonZwFUo&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dtamiflu%26t%3Dname%26va%3Dtamif#doe(accessed on: 3/19/20)
12. https://online-lexi-com.proxy.westernu.edu/lco/action/doc/retrieve/docid/patch_f/6925182?cesid=7IWLFwqcREU&searchUrl=%2Flco%2Faction%2Fsearch%3Fq%3Dremdesivir%26t%3Dname%26va%3DRemdas(accessed on: 3/19/20)
13. https://www.ncbi.nlm.nih.gov/pubmed/12826358 (accessed on: 3/20/20)
14. https://www.rxlist.com/zithromax-drug.htm(accessed on: 3/20/20)

Created by: Flora Bessey, PharmD, BCGP and Janice Hoffman, PharmD, EdD, APh, BCGP

For informational purposes only, not to be construed as medical advice. No drug is currently FDA approved for the treatment of COVID-19. Consult with appropriate specialists as indicated if considering the use of these medications.