


# A novel plan to deal with SARS-CoV-2 and COVID-19 disease

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We run a medical practice that specializes in treating patients with Lyme and associated tick-borne diseases. Our practice has treated more than 5000 patients over the years from all over the world, and we currently have about 700 active patients with Lyme disease, relapsing fever *Borrelia*, *Babesia*, *Anaplasma*, *Ehrlichia*, *Bartonella*, *Rickettsia*, and/or *Tularemia* infection in our practice. Most of our patients are taking prolonged combination antibiotic therapy for their tick-borne infections. A recurring theme is that the earlier one can treat the tick-borne diseases, the better the outcome for patients. Conversely, many of our patients require prolonged antibiotic therapy because they were not diagnosed and treated promptly due to insensitive tick-borne disease testing.<sup>1,2</sup> Although prolonged combination antibiotic therapy modeled on treatment for HIV/AIDS, hepatitis C virus, and tuberculosis is controversial when it comes to tick-borne diseases, we and others have published our positive results and we continue to see benefit for our patients.<sup>1,2</sup>

One unexpected benefit is that none of our active patients on antibacterial treatments has come down with severe COVID-19 disease. None. The closest we have seen is a patient with severe asthma on steroid treatment who was hospitalized with cough and respiratory distress. Her severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) test was negative, and she turned out to be infected with human metapneumovirus. Her steroid dose was reduced, and she improved while continuing her antibacterial regimen. Other patients who had Herxheimer reactions (treatment-induced “die-off” of bacteria) or side effects from their medications all tested negative for SARS-CoV-2.

What does this tell us? A strong possibility is that being on antibacterial treatment somehow protects against SARS-CoV-2 and severe COVID-19 disease. This rather heretical concept flies in the face of medical dogma: you cannot use antibacterial medications to treat a viral infection. There is good reason to adhere to this dogma during normal times to avoid overuse of antibiotics, but these are not normal times. In fact, the arrival of SARS-CoV-2 has forced us to review the extensive medical literature that demonstrates antiviral effects of numerous antibacterial agents.<sup>3-9</sup> While this literature has

been suppressed and ignored until now, we can no longer afford to do so. We must act now.

So we present this proposal based on our experience with early treatment of tick-borne diseases. If a person goes back to work, he or she must have a finger pulse oximeter to measure PO<sub>2</sub>. If the person develops respiratory symptoms or other symptoms associated with SARS-CoV-2 (fever, dyspnea, chest pain, severe headache, diarrhea, nausea, anosmia, ageusia, conjunctivitis, “chilblains”-type rash, or other flu-like symptoms) and/or the PO<sub>2</sub> drops below 92 mm Hg (normal, >95 mm Hg), he or she will immediately start treatment with doxycycline or minocycline at 100 mg twice daily and continue for 1 week with monitoring of PO<sub>2</sub>. The keyword here is “immediately.” If the individual delays treatment, he or she may succumb to COVID-19 disease. For patients who cannot tolerate the tetracycline derivatives, a generic macrolide (clarithromycin or azithromycin) can be substituted. If symptoms worsen and the PO<sub>2</sub> drops despite early treatment, the individual should seek further medical care.

We do not see this as a “cure” for SARS-CoV-2. We are simply trying to avoid serious complications from viral infection in people who will undoubtedly be exposed when social interaction resumes. There are certainly other treatments that may be feasible, but the tetracycline derivatives are cheap, have a proven track record especially for short-term use, and are known to have antiviral properties.<sup>10-14</sup> So, while we are waiting for the randomized controlled trials of new intravenous “wonder drugs” and the theoretical coronavirus vaccine that will save us all, let us do something simple when social isolation is lifted and get everyone back to work with a treatment plan. The time to alleviate fear of death and institute this policy is now.

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## REFERENCES

1. Donta ST. Tetracycline therapy for chronic Lyme disease. *Clin Infect Dis.* 1997;25:S52-S56. <https://doi.org/10.1086/516171>

2. Stricker RB, Fesler MC. Chronic Lyme disease: a working case definition. *Am J Infect Dis*. 2018;14:1-44.
3. Menzel M, Akbarshahi H, Bjerner L, Uller L. Azithromycin induces anti-viral effects in cultured bronchial epithelial cells from COPD patients. *Sci Rep*. 2016;6:28698. <https://doi.10.1038/srep28698>
4. Zeng S, Meng X, Huang Q, et al. Spiramycin and azithromycin, safe for administration to children, exert antiviral activity against enterovirus A71 in vitro and in vivo. *Internat J Antimicrob Agents*. 2019;53:362-369.
5. Arikata, et al. Efficacy of clarithromycin against H5N1 and H7N9 avian influenza A virus infection in cynomolgus monkeys. *Antiviral Res*. 2019;171:104591.
6. Rossignol. Nitazoxanide: a first-in-class broad-spectrum antiviral agent. *Antiviral Res*. 2014;110:94-103.
7. Gharebaghi R, Heidary F, Moradi M, Parvizi M. Metronidazole: a potential novel addition to the COVID-19 treatment regimen. *Arch Acad Emerg Med*. 2020;8(1):e40.
8. Poschet JF, Perkett EA, Timmins GS, Deretic V. Azithromycin and ciprofloxacin have a chloroquine-like effect on respiratory epithelial cells. *BioRxiv*. 2020. <https://doi.10.1101/2020.03.29.008631>
9. Gautret P, Lagier JC, Parolaet P, et al. Clinical and microbiological effect of a combination of hydroxychloroquine and azithromycin in 80 COVID-19 patients with at least a six-day follow up: an observational study. *Int J Antimicrob Agents*. 2020:105949.
10. Sodhi M, Etminan M. Therapeutic potential for tetracyclines in the treatment of COVID-19. *Pharmacotherapy*. 2020. <https://doi.10.1002/phar.2395>
11. Nagarakanti S, Bishburg E. Is minocycline an antiviral agent? A review of current literature. *Basic Clin Pharmacol Toxicol*. 2016; 118:4-8.
12. Fredeking, et al. Dengue patients treated with doxycycline showed lower mortality associated to a reduction in IL-6 and TNF levels. *Rec Pat Anti-Infect Drug Disc*. 2015;10:51-58.
13. Rothan HA, Mohamed Z, Paydar M, Rahman NA, Yusof R. Inhibitory effect of doxycycline against dengue virus replication in vitro. *Arch Virol*. 2014;159:711-718. <https://doi.10.1007/s00705-013-1880-7>
14. Wu ZC, Wang X, Wei JC, et al. Antiviral activity of doxycycline against vesicular stomatitis virus in vitro. *FEMS Microbiol Lett*. 2015:362.

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