

# azithromycin

LiSA-report generated 30 May 2023 by  
Alexander Horst.

Keyword  
**azithromycin**

## TOTAL HITS (POSSIBLE AE)

**833**

pneumonia

 159

covid- 19

 69

qt interval prolongation

 63

qt prolongation

 42

mortality

 37

arrhythmias

 33

concern

 18

ae

 17

acute respiratory distress syndrome

 16

hepatitis

 9

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## Results [Open in LiSA](#)

### Remdesivir and its antiviral activity against COVID-19: A systematic review. [Open in LiSA](#)

**H1:** Potential use of hydroxychloroquine, ivermectin and azithromycin drugs in fighting COVID-19: trends, scope and relevance New Microbes New Infect 23 2020 100684 21 Wang J. Fast identification of possible drug treatment of coronavirus disease-19 (COVID-19) through computational drug repurposing study J Chem Inf Model 60 6 2020 3277 3286 10.1021/acs.jcim.0c00179 32315171 22 Liu X. Wang X.-J.

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### COVID-19 pandemic: A review based on current evidence. [Open in LiSA](#)

**H1:** FOOD & DRUG ADMINISTRATION Fast Track, Breakthrough Therapy, Accelerated Approval, Priority Review Last accessed on 2020 Mar 25 Available from: <https://www.fda.gov/patients/learn-about-drug-and-device-approvals/fast-track-breakthrough-therapy-accelerated-approval-priority-review> 30 Aronson JK Biomarkers and surrogate endpoints Br J Clin Pharmacol 2005 59 491 4 15842546 31 Largent EA EBOLA and FDA: Reviewing the response to the 2014 outbreak, to find lessons for the future J Law Biosci 2016 3 489 537 28852537 32 Sadanandan R Arunkumar G Laserson KF Heretik KH Singh S Mourya DT Towards global health security: Response to the May 2018 Nipah virus outbreak linked to Pteropus bats in Kerala, India BMJ Glob Health 2018 3 e001086 33 Indian Council of Medical Research Media Report (ICMR IN NEWS); 1-7 June, 2019 Last accessed on 2020 Apr 08 Available from: [https://wwwicmrnicin/sites/default/files/ICMR\\_NEWS\\_JUNEpdf](https://wwwicmrnicin/sites/default/files/ICMR_NEWS_JUNEpdf) 34 Liu J Cao R Xu M Wang X Zhang H Hu H Hydroxychloroquine, a less toxic derivative of chloroquine, is effective in inhibiting SARS-CoV-2 infection in vitro Cell Discov 2020 6 16 32194981 35 Yao X Ye F Zhang M Cui C Huang B Niu P In vitro antiviral activity and projection of optimized dosing design of hydroxychloroquine for the treatment of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Clin Infect Dis 2020 pii: ciaa237 36 Gautret P Lagier JC Parola P Hoang VT Meddeb L Mailhe M Hydroxychloroquine and azithromycin as a treatment of COVID-19: Results of an open-label non-randomized clinical trial Int J Antimicrob Agents 2020 105949 doi:101016/jijantimicag2020105949 37 FDA Hydroxychloroquine Sulfate

Tablets, USP Last accessed on 2020 Mar 25 Available from:  
[https://www.accessdata.fda.gov/drugsat\\_fda\\_docs/label/2017/009768s037s045s047lbl.pdf](https://www.accessdata.fda.gov/drugsat_fda_docs/label/2017/009768s037s045s047lbl.pdf) 38 Maisch NM Kochupurackal JG Sin J Azithromycin and the risk of cardiovascular complications J Pharm Pract 2014 27 496 500 25374989 39 Indian Council of Medical Research Advisory on the use of Hydroxy-Chloroquine as Prophylaxis for SARS-COV2 Infection Indian Council of Medical Research 2020 Last accessed on 2020 Apr 05 Available from: <https://wwwmohfwgovin/pdf/AdvisoryontheuseofHydroxychloroquinasprophylaxisforSARSCoV2infectionpdf> 40 Sarma P Kaur H Kumar H Mahendru D Avti P Bhattacharyya A Virological and clinical cure in Covid-19 patients treated with hydroxychloroquine: A systematic review and meta-analysis J Med Virol 2020 101002/jmv25898 doi: 101002/jmv 25898 41 Chen C Huang J Yin P Zhang Y Cheng Z Wu J Favipiravir versus Arbidol for COVID 19: A randomized clinical trial MedRxiv 2020 Last accessed on 2020 Mar 25 Available from: <https://wwwmedrxivorg/content/101101/2020031720037432v3> 42 Morse JS Lalonde T Xu S Liu WR Learning from the past: Possible urgent prevention and treatment options for severe acute respiratory infections caused by 2019-nCoV Chembiochem 2020 21 730 8 32022370 43 Wang M Cao R Zhang L Yang X Liu J Xu M Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro Cell Res 2020 30 269 71 32020029 44 Grein J Ohmagari N Shin D Diaz G Asperges E Castagna A Compassionate Use of remdesivir for patients with severe Covid-19 N Engl J Med 2020 pii: NEJMoa2007016 45 Chen F Chan KH Jiang Y Kao RY Lu HT Fan KW In vitro susceptibility of 10 clinical isolates of SARS coronavirus to selected antiviral compounds J Clin Virol 2004 31 69 75 15288617 46 Gross AE Bryson ML Oral ribavirin for the treatment of noninfluenza respiratory viral infections: A systematic review Ann Pharmacother 2015 49 1125 35 26228937 47 Arabi YM Shalhoub S Mandourah Y Al-Hameed F Al-Omari A Al Qasim E Ribavirin and interferon therapy for critically ill patients with middle east respiratory syndrome: A multicenter observational study Clin Infect Dis 2020 70 1837 44 31925415 48 Chu CM Cheng VC Hung IF Wong MM Chan KH Chan KS Role of lopinavir/ritonavir in the treatment of SARS: Initial virological and clinical findings Thorax 2004 59 252 6 14985565 49 Cao B Wang Y Wen D Liu W Wang J Fan G A trial of lopinavir-ritonavir in adults hospitalized with severe Covid-19 N Engl J Med 2020 pii: NEJMoa2001282 50 Richardson P Griffin I Tucker C Smith D Oechsle O Phelan A Baricitinib as potential treatment for 2019-nCoV acute respiratory disease Lancet 2020 395 e30 1 32032529 51 Gralinski LE Sheahan TP Morrison TE Menachery VD Jensen K Leist SR Complement Activation contributes to severe acute respiratory syndrome coronavirus pathogenesis mBio 2018 9 e01753 18 30301856 52 Channappanavar R Perlman S Pathogenic human coronavirus infections: Causes and consequences of cytokine storm and immunopathology Semin Immunopathol 2017 39 529 39 28466096 53 Xu Z Shi L Wang Y Zhang J Huang L Zhang C Pathological findings of COVID-19 associated with acute respiratory distress syndrome Lancet Respir Med 2020 8 420 2 32085846 54 Rollinger G Maksimow M Howell DC Stutz M Reale D Roatny M The effect of

Bellamy R, Marini JJ, Flanner DC, Stoltz MJ, Beale K, Beatty M. The effect of intravenous interferon-beta-1a (FP-1201) on lung CD73 expression and on acute respiratory distress syndrome mortality: An open-label study. *Lancet Respir Med* 2014; 2: 98–107. 24503265 55 Hope Biosciences FDA Approval to Commence First Stem Cell Clinical Trial for Protection Against COVID-19 Last accessed on 2020 Apr 23 Available from: <https://wwwhopebio/post/fda-approval-to-commence-first-stem-cell-clinical-trial-for-protection-against-covid-19> 56 Athersys Inc FDA Authorizes Athersys to Initiate a Pivotal Clinical Trial Evaluating MultiStem® Cell Therapy in Patients With COVID-19 Induced Acute Respiratory Distress Syndrome Last accessed on 2020 Apr 23 Available from: <https://wwwathersyscom/investors/press-releases/press-release-details/2020/FDA-Authorizes-Athersys-to-Initiate-a-Pivotal-Clinical-Trial-Evaluating-MultiStem-Cell-Therapy-in-Patients-With-COVID-19-Induced-Acute-Respiratory-Distress-Syndrome/default.aspx> 57 Stockman LJ, Bellamy R, Garner P. SARS: Systematic review of treatment effects. *PLoS Med* 2006; 3: e343. 16968120 58 Arabi YM, Mandourah Y, Al-Hameed F, Sindi AA, Almekhlafi GA, Hussein MA. Corticosteroid therapy for critically ill patients with middle east respiratory syndrome. *Am J Respir Crit Care Med* 2018; 197: 757–67. 29161116 59 Russell CD, Millar JE, Baillie JK. Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury. *Lancet* 2020; 395: 473–5. 32043983 60 Arabi YM, Balkhy HH, Hayden FG, Bouchama A, Luke T, Baillie JK. Middle east respiratory syndrome. *N Engl J Med* 2017; 376: 584–94. 28177862 61 WHO. Clinical Management of Severe Acute Respiratory Infection when COVID-19 is Suspected. Last accessed on 2020 Apr 05 Available from: [https://wwwwhoint/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://wwwwhoint/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected) 62 Zhou N, Pan T, Zhang J, Li Q, Zhang X, Bai C. Glycopeptide antibiotics potently inhibit cathepsin L in the late endosome/lysosome and block the entry of ebola virus, middle east respiratory syndrome coronavirus (MERS-CoV), and severe acute respiratory syndrome coronavirus (SARS-CoV). *J Biol Chem* 2016; 291: 9218–32. 26953343 63 Zhang J, Ma X, Yu F, Liu J, Zou F, Pan T. Teicoplanin Potently Blocks the Cell Entry of 2019-nCoV. *BioRxiv* 2020; 64 Caly L, Druce JD, Catton MG, Jans DA, Wagstaff KM. The FDA-approved drug ivermectin inhibits the replication of SARS-CoV-2 in vitro. *Antiviral Res* 2020; 178: 104787. 32251768 65 Wagstaff KM, Sivakumaran H, Heaton SM, Harrich D, Jans DA. Ivermectin is a specific inhibitor of importin α/β-mediated nuclear import able to inhibit replication of HIV-1 and dengue virus. *Biochem J* 2012; 443: 851–6. 22417684 66 Prajapat M, Sarma P, Shekhar N, Avti P, Sinha S, Kaur H. Drug targets for corona virus: A systematic review. *Indian J Pharmacol* 2020; 52: 56–65. 32201449 67 Sarma P, Sekhar N, Prajapat M, Avti P, Kaur H, Kumar S. In silico homology assisted identification of inhibitor of RNA binding against 2019-nCoV N-protein (N terminal domain). *J Biomol Struct Dyn* 2020; 2020: 1–9. doi: 101080/0739110220201753580 68 Duan K, Liu B, Li C, Zhang H, Yu T, Qu J. Effectiveness of convalescent plasma therapy in severe COVID-19 patients. *PNAS* 2020; 202004168. doi: <https://doiorg/101073/pnas202004168117> 69 WHO. Use of Convalescent Whole Blood or Plasma Collected from

Patients Recovered from Ebola Virus Disease Last accessed on 2020 Apr 06 Available from: [https://wwwwhooint/csr/resources/pu blications/ebola/convalescent-treatment/en/](https://wwwwhooint/csr/resources/publications/ebola/convalescent-treatment/en/) 70 Hung IF To KK Lee CK Lee KL Chan K Yan WW Convalescent plasma treatment reduced mortality in patients with severe pandemic influenza A (H1N1) 2009 virus infection Clin Infect Dis 2011 52 447 56 21248066 71 Cheng Y Wong R Soo YO Wong WS Lee CK Ng MH Use of convalescent plasma therapy in SARS patients in Hong Kong Eur J Clin Microbiol Infect Dis 2005 24 44 6 15616839 72 Mair-Jenkins J Saavedra-Campos M Baillie JK Cleary P Khaw FM Lim WS The effectiveness of convalescent plasma and hyperimmune immunoglobulin for the treatment of severe acute respiratory infections of viral etiology: A systematic review and exploratory meta-analysis J Infect Dis 2015 211 80 90 25030060 73 Yang Y Islam MS Wang J Li Y Chen X Traditional Chinese medicine in the treatment of patients infected with 2019-new coronavirus (SARS-CoV-2): A review and perspective Int J Biol Sci 2020 16 1708 17 32226288 74 Chen Z Nakamura T Statistical evidence for the usefulness of Chinese medicine in the treatment of SARS Phytother Res 2004 18 592 4 15305324 75 Tong X Li A Zhang Z Duan J Chen X Hua C TCM treatment of infectious atypical pneumonia – A report of 16 cases J Tradit Chin Med 2004 24 266 9 15688692 76 Liu X Zhang M He L Li Y Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS) Cochrane Database Syst Rev 2012 10 CD004882 23076910 77 Zhang MM Liu XM He L Effect of integrated traditional Chinese and Western medicine on SARS: A review of clinical evidence World J Gastroenterol 2004 10 3500 5 15526373 78 Liu J Manheimer E Shi Y Gluud C Chinese herbal medicine for severe acute respiratory syndrome: A systematic review and meta-analysis J Altern Complement Med 2004 10 1041 51 15674000 79 AYUSH Advisory for Corona Virus Last accessed on 2020 Mar 28 Available from: <https://pibgovin/PressReleasePage.aspx?PRID=1600895> 80 WHO DRAFT Landscape of COVID-19 Candidate Vaccines – 20 April 2020 Last accessed on 2020 Apr 29 Available from: <https://wwwwhooint/blueprint/priority-diseases/key-action/novel-coronavirus-landscape-nkovpdf> 81 Chinese Clinical Trial Registry Randomized, Double-Blinded, Placebo-Controlled Phase II Clinical Trial for Recombinant Novel Coronavirus (2019-nCOV) Vaccine (Adenovirus Vector) Last accessed on 2020 Apr 29 Available from: <http://wwwchictrorgcn/showproject.aspx?proj=52006> 82 Jiang S Don't rush to deploy COVID-19 vaccines and drugs without sufficient safety guarantees Nature 2020 579 321 32179860 83 Miller A Reandelar MJ Fasciglione K Roumenova V Li Y Otazu GH Correlation between universal BCG vaccination policy and reduced morbidity and mortality for COVID-19: An epidemiological study J Chem Inf Model 2013 53 1689 99 23800267 84 Moortgat SJ Arts RJ van Crevel R Netea MG Non-specific effects of BCG vaccine on viral infections Clin Microbiol Infect 2019 25 1473 8 31055165 85 Wang D Hu B Hu C Zhu F Liu X Zhang J Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China JAMA 2020 323 1061 9 86 Wang Z Chen X Lu Y Chen F Zhang W Clinical characteristics and therapeutic procedure for

tour cases with 2019 novel coronavirus pneumonia receiving combined Chinese and Western medicine treatment Biosci Trends 2020 14 64 8 32037389 87 Chen N Zhou M Dong X Qu J Gong F Han Y Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study Lancet 2020 395 507 13 32007143 88 Jun C Danping L Li L Ping L Qingnian X Lu X A pilot study of hydroxychloroquine in treatment of patients with common coronavirus disease-19 (COVID-19) J Zhejiang Univ (Med Sci) 2020 49 215 9 89 WHO Laboratory Testing Strategy Recommendations for COVID-19 Interim Guidance 21 March 2020 Last accessed on 2020 Apr 09 Available from: [https://appswhooint/iris/bitstream/handle/10665/331509/WHO-COVID-19-la\\_b\\_testing-20201-engpdf](https://appswhooint/iris/bitstream/handle/10665/331509/WHO-COVID-19-la_b_testing-20201-engpdf) 90 Ministry of Health Singapore Being Prepared for a Pandemic Last accessed on 2020 Apr 09 Available from: <https://wwwmohgovsg/diseases-updates/being-prepared-for-a-pandemic> 91 Indian Council of Medical Research National Ethical Guidelines for Biomedical and Health Research Involving Human Participants 2017 Last accessed on 2020 Apr 09 New Delhi ICMR Available from: [https://wwwicmrnicin/sites/default/files/guidelines/ICMR\\_Ethical\\_Guidelines\\_2017pdf](https://wwwicmrnicin/sites/default/files/guidelines/ICMR_Ethical_Guidelines_2017pdf) 92 New Drugs and Clinical Trials Rules 2019 G.S.R.

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# Mining Electronic Health Records for Drugs Associated With 28-day Mortality in COVID-19: Pharmacopoeia-wide Association Study (PharmWAS). [Open in LiSA](#)

**H1:** : CD013769 10.1002/14651858.CD013769 3 RECOVERY Collaborative Group Dexamethasone in hospitalized patients with Covid-19 N Engl J Med 2021 02 25 384 8 693 704 10.1056/nejmoa2021436 32678530 4 Gérard A Romani S Fresse A Viard D Parassol N Granvillemain A Chouchana L Rocher F Drici M French Network of Pharmacovigilance Centers "Off-label" use of hydroxychloroquine, azithromycin, lopinavir-ritonavir and chloroquine in COVID-19: a survey of cardiac adverse drug reactions by the French Network of Pharmacovigilance Centers Therapie 2020 07 75 4 371 379 10.1016/j.therap.2020.05.002 32418730 S0040-5957(20)30091-3 32418730 5 Wong AY MacKenna B Morton CE Schultze A Walker AJ Bhaskaran K Brown JP Rentsch CT Williamson E Drysdale H Croker R Bacon S Hulme W Bates C Curtis HJ Mehrkar A Evans D Inglesby P Cockburn J McDonald HI Tomlinson L Mathur R Wing K Forbes H Eggo RM Parry J Hester F Harper S Evans SJ Smeeth L Douglas IJ Goldacre B OpenSAFELY Collaborative Use of non-steroidal anti-inflammatory drugs and risk of death from COVID-19: an OpenSAFELY cohort analysis based on two cohorts Ann Rheum Dis 2021 07 21 80 7 943 951 10.1136/annrheumdis-2020-219517 33478953 annrheumdis-2020-219517 33478953 6 Chouchana L Beeker N Garcelon N Rance B Paris N Salamanca E Polard E Burgun A Treluyer J Neuraz A AP-HP/Universities/Inserm COVID-19 research collaboration, AP-HP Covid CDR Initiative,"Entrepôt de Données de Santé" AP-HP Consortium" Association of antihypertensive agents with the risk of in-hospital death in patients with Covid-19 Cardiovasc Drugs Ther 2021 02 17 17 1 6 10.1007/s10557-021-07155-5 33595761 10.1007/s10557-021-07155-5 7 Hellwig MD Maia A A COVID-19 prophylaxis?

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## **Identification of a potential SARS-CoV2 inhibitor via molecular dynamics simulations and amino acid decomposition analysis. [Open in LiSA](#)**

**H1:** Another open-label non-randomized clinical trial survey indicated that viral load reduction/disappearance in hydroxychloroquine administered Covid-19 patients were reinforced by azithromycin (Gautret et al., 2020).

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## **Changes in antimicrobial utilization during the coronavirus disease 2019 (COVID-19) pandemic after implementation of a multispecialty clinical guidance team. [Open in LiSA](#)**

**H1:** Azithromycin use and cefepime use for MICU teams over the same period showed no statistically significant difference in DOT per 1,000 days for the first 3 weeks or the later 8 weeks of the defined COVID-19 period compared to the pre-COVID-19 period when adjusted for week and team (Supplementary Fig. 2 online).

**H2:** For acute-ward COVID-19 patients with procalcitonin >0.5 µg/L or high concern for cobacterial pneumonia awaiting further test results, ceftriaxone and azithromycin or levofloxacin were recommended.

**H3:** It is possible that targeting cessation of azithromycin use for COVID-19 treatment drove significant antimicrobial use reduction in COVID-19 internal medicine teams, but the magnitude of change in azithromycin is less than the overall antimicrobial use reduction for COVID-19 internal medicine teams (-58.2 vs -362.3 DOT per 1,000 days), suggesting that the reduction in the use of several antibiotics contributed.

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## **COVID-19 associated with pulmonary aspergillosis: A literature review.** [Open in LiSA](#)

**H1:** CYP3A4-mediated drug interactions would be of considerable clinical importance in COVID-19 patients using lopinavir/ritonavir, azithromycin, and voriconazole that are highly dependent on CYP3A for clearance and also are potent inhibitors of CYP3A4 metabolism.<sup>52 , 53</sup> However, in a randomized study for 30 healthy male volunteers in the UK, coadministration of azithromycin does not affect the steady-state pharmacokinetics of voriconazole.<sup>54</sup> Therefore, further study should investigate the safety of using voriconazole in COVID-19 patients receiving anti-SARS-CoV-2 agents.

**H2:** However, in a large cohort of 201 COVID-19 patients in New York, the maximum QTc during treatment was significantly longer in the chloroquine/hydroxychloroquine and azithromycin combination group vs the chloroquine/hydroxychloroquine monotherapy group ( $470.4 \pm 45.0$  ms vs.  $453.3 \pm 37.0$  ms,  $p = 0.004$ ).

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## **COVID-19-Associated Hyperactive Intensive Care Unit Delirium With Proposed Pathophysiology and Treatment: A Case Report.** [Open in LiSA](#)

**H1:** Specifically in this patient population, antipsychotic agents must be carefully monitored, given the potential use of COVID-19-specific medications that may prolong QTc (e.g., hydroxychloroquine, azithromycin), leading to a potentially increased risk of torsades de pointes,<sup>26</sup> as well as rare cardiac manifestations of COVID-19.

**H2:** She was treated with 5 days of ceftriaxone and azithromycin because of concern for bacterial coinfection and 10 days of remdesivir as a part of trial for treatment of COVID-19.

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## **Cardiovascular Considerations for the Internist and Hospitalist in the COVID-19 Era.** [Open in LiSA](#)

**H1:** 23 Haeusler IL Chan XHS Guerin PJ White NJ The arrhythmogenic cardiotoxicity of the quinoline and structurally related antimalarial drugs: a systematic review BMC Med 16 2018 200 10.1186/s12916-018-1188-2 30400791 24 Roden DM Harrington RA Poppas A Russo AM Considerations for drug interactions on QTc in exploratory COVID-19 (Coronavirus Disease 2019) treatment Circulation 141 24 2020 e906 e907 10.1161/CIRCULATIONAHA.120.047521 32267732 25 Schrezenmeier E Dorner T. Mechanisms of action of hydroxychloroquine and chloroquine: implications for rheumatology Nat Rev Rheumatol 16 2020 155 166 10.1038/s41584-020-0372-x 32034323 26 Chorin E, Dai M, Shulman E, et al. The QT interval in patients with SARS-CoV-2 infection treated with hydroxychloroquine/azithromycin [e-pub ahead of print].

**H2:** Patients with COVID-19 pneumonia in the ICU may be particularly prone to excessive QT prolongation, especially when hydroxychloroquine is combined with azithromycin.<sup>28 , 29</sup>

**H3:** Drug-Induced QT Interval Prolongation and Torsades de Pointes Chloroquine, hydroxychloroquine with or without azithromycin, and other antiviral medications are purported to benefit patients with COVID-19.

**H4:** Due to proarrhythmia and difficulty with QT-interval follow-up, the Food and Drug Administration (FDA) recommends chloroquine, hydroxychloroquine, or azithromycin use in patients with COVID-19 be limited to clinical trials or for certain patients who are hospitalized.<sup>32</sup> Even in the inpatient setting, patients with COVID-19 present unique challenges in obtaining serial ECGs because of isolation issues.

**H5:** <sup>29</sup> Mercuro NJ, Yen CF, Shim DJ, et al. Risk of QT interval prolongation associated with use of hydroxychloroquine with or without concomitant azithromycin among hospitalized patients testing positive for coronavirus disease 2019 (COVID-19) [e-pub ahead of print].

**H6:** Preliminary data indicate that most patients with COVID-19 showed minor increases in QTc duration on combination hydroxychloroquine and azithromycin, yet 12% had QTc prolongation >60 ms from baseline and 11% developed QTc intervals >500 ms.<sup>26</sup> Another study found QTc prolongation >500 ms in 19% of patients given higher doses of chloroquine.<sup>27</sup> Most of these patients were also receiving oseltamivir, which also may prolong the QTc.

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**Anti-corona Drugs: Current Scenario.** [Open in LiSA](#)

**H1:** === Refs 1 Worldometer COVID-19 coronavirus pandemic April 10, 2020 Last accessed on 2020 Apr 10 Available from: <https://www.worldometersinfo/coronavirus/>

2 Expert Group of the Nephrology Branch of the Chinese Medical Association Expert consensus on the diagnosis and treatment of new coronavirus infection with acute kidney injury [J / OL] Chinese Journal of Nephrology 2020 36 Available from: <http://rsyiiglecom/yufabiao/1183310htm> [Last accessed on 2020 Mar 02] DOI: 103760 / cmajcn441217-20200222-00035

3 Cao B Wang Y Wen D Liu W Wang J Fan G A trial of lopinavir-ritonavir in adults hospitalized with severe covid-19 N Engl J Med 2020 doi: 101056/NEJMoa2001282

4 Baden LR Rubin EJ Covid-19-the search for effective therapy N Engl J Med 2020 doi: 101056/NEJMe2005477

5 Alhazzani W Møller MH Arabi YM Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19) Intensive Care Med 2020 46 5 854 887 32222812

6 Sheahan TP Sims AC Leist SR Schäfer A Won J Brown AJ Comparative therapeutic efficacy of remdesivir and combination lopinavir, ritonavir, and interferon beta against MERS-CoV Nat Commun 2020 11 222 31924756

7 Gao J Tian Z Yang X Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies Biosci Trends 2020 14 72 3 32074550

8 Multicenter collaboration group of Department of Science and Technology of Guangdong Province and Health Commission of Guangdong Province for chloroquine in the treatment of novel coronavirus pneumonia Zhonghua Jie He He Hu Xi Za Zhi 2020 43 3 185 188

9 Wang M Cao R Zhang L Yang X Liu J Xu M Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro Cell Res 2020 30 269 71 32020029

10 Yao X Ye F Zhang M Cui C Huang B Niu P In vitro antiviral activity and projection of optimized dosing design of hydroxychloroquine for the treatment of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Clin Infect Dis 2020 doi: 101093/cid/ciaa237

11 Chen J Danping L Li L Ping L Qingnian XU Lu X Yun L A pilot study of hydroxychloroquine in treatment of patients with moderate COVID-19 J Zhejiang Univ (Med Sci) 2020 49 2 215 219

12 Zhaowei Chen Jijia Hu Zongwei Zhang Shan Jiang Shoumeng Han Dandan Yan Ruhong Zhuang Ben Hu Zhan Zhang medRxiv 2020.03.22.20040758; doi: <https://doi.org/10.1101/2020.03.22.20040758>

13 Arabi YM Mandourah Y Al-Hameed F Corticosteroid therapy for critically ill patients with middle east respiratory syndrome Am J Respir Crit Care Med 2018 197 757 67 29161116

14 Gautret P Lagier JC Parola P Hoang VT Meddeb L Mailhe M Hydroxychloroquine and azithromycin as a treatment of COVID-19: Results of an open-label non-randomized clinical trial Int J Antimicrobial Agents 2020 doi: 101016/j.ijantimicag 2020105949

15 Chen RC Tang XP Tan SY Liang BL Wan ZY Fang JQ Treatment of severe acute respiratory syndrome with glucocorticoids: The Guangzhou experience Chest 2006 129 1441 52 16778260

16 Wu C Chen X Cai Y Xia J Zhou X Xu S Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China JAMA Intern Med 2020 doi: 101001/jamainternmed 20200994

17 Stockman LJ Bellamy R Garner P SARS: Svstematic review of treatment effects PLoS Med 2006 3 e343

16968120 18 Russell CD Millar JE Baillie JK Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury Lancet 2020 395 473 5  
32043983 19 WHO Use of convalescent whole blood or plasma collected from patients recovered from Ebola virus disease for transfusion, as an empirical treatment during outbreaks 2014 Last accessed on 2020 Feb 20 Available from: <http://appswhoint/iris/rest/bitstreams/604045/retrieve> 20 Arabi Y Balkhy H Hajer AH Feasibility, safety, clinical, and laboratory effects of convalescent plasma therapy for patients with Middle East respiratory syndrome coronavirus infection: A study protocol Springerplus 2015 4 709 26618098 21 Huang C Wang Y Li X Ren L Zhao J Hu Y Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China Lancet 2020 395 497 506 31986264 22 Shen C Wang Z Zhao F Yang Y Li J Yuan J Treatment of 5 critically ill patients with COVID-19 with convalescent plasma JAMA 2020 doi: 101001/jama 20204783 23 Casadevall A Pirofski LA The convalescent sera option for containing COVID-19 J Clin Invest 2020 138003 doi: 101172/JCI138003 24 FDA Investigational covid-19 convalescent plasma—emergency INDs Last accessed date 2020 May 01 Available from: <https://wwwfda> 25 Last accessed date 2020 Mar 01 Available from: <gov/vaccines-blood-biologics/investigationalnew-drug-ind-or-device-exemption-ideprocess-cber/investigational-covid-19-convalescent-plasma-emergency-inds> 26 Park BK Maharjan S Lee SI Kim J Bae JY Park MS Generation and characterization of a monoclonal antibody against MERS-CoV targeting the spike protein using a synthetic peptide epitope-CpG-DNA-liposome complex BMB Rep 2019 52 397 402 30355437 27 Dong L Hu S Gao J Discovering drugs to treat coronavirus disease 2019 (COVID-19) Drug Discov Ther 2020 14 58 60 32147628 28 Alexander V Zachariah U Goel A Kandasamy S Chacko B Punitha JV Nair S David V Prabhu S Balasubramanian K A Mackie I Elias E Eapen C E Low-volume plasma exchange and low-dose steroid to treat secondary hemophagocytic lymphohistiocytosis: A potential treatment for severe COVID-19 Curr Med Issues 2020 18 77 82 29 Angus DC Optimizing the trade-off between learning and doing in a pandemic JAMA 2020 doi: 101001/jama20204984

**H2:** Despite its small sample size our survey shows that hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect is reinforced by azithromycin.

06 Oct 2020 • pubmed [Go to full article](#)

## **Positive Anti-SSA/Ro Antibody in a Woman with SARS-CoV-2 Infection Using Immunophenotyping: A Case Report.** [Open in LiSA](#)

**H1:** For the recovery group, there are two males, aged 22 and 66 years old; and two females, aged 60 and 28 years old, who had mild symptoms of COVID-19, and who have received hydroxychloroquine plus with azithromycin treatment, respectively.

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## **Neuroleptic malignant syndrome in patients with COVID-19.** [Open in LiSA](#)

**H1:** A 46-year-old-man with ARDS caused by COVID-19 infection was receiving mechanical ventilation and was being administered favipiravir (1800 mg \* 2 on the first day followed by 800 mg \* 2/day for the subsequent 9 days), mPSL (1 g/day for 3 days), and antibiotics ceftriaxone (CTRX) 2 g/day and azithromycin (AZM) 500 mg/day for 3 days.

**H2:** A 44-year-old-man with ARDS caused by COVID-19 infection was receiving mechanical ventilation and was being treated with favipiravir (1800 mg \* 2 on the first day, followed by 800 mg \* 2/day for 8 days), mPSL (100 mg/day for 3 days), and antibiotics [tazobactam/piperacillin (TAZ/PIPC) and azithromycin (AZM)].

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## **A single-centre experience of intravenous thrombolysis for stroke in COVID-19 patients.** [Open in LiSA](#)

**H1:** He had a 3-week history of fever and cough. His general practitioner had clinically diagnosed COVID-19, treated with hydroxychloroquine and azithromycin.

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## **Heart block in patients with coronavirus disease 2019: A case series of 3 patients infected with SARS-CoV-2. [Open in LiSA](#)**

**H1:** Chest radiography revealed bilateral ground-glass opacities. He completed a 5-day course of hydroxychloroquine and azithromycin for COVID-19.

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## **Cardiovascular involvement during COVID-19 and clinical implications in elderly patients. A review. [Open in LiSA](#)**

**H1:** Recent studies have questioned the benefit of hydroxychloroquine or chloroquine in the treatment of patients affected by COVID-19 owing to serious side effects disturbing the heart rhythm when prescribed at high doses or combined with azithromycin [82,83].

**H2:** Zucker H. Association of treatment with hydroxychloroquine or azithromycin with in-hospital mortality in patients with COVID-19 in New York State J. Am.

**H3:** 2020 10.1001/jama.2020.8630 84 Cipriani A. Zorzi A. Ceccato D. Capone F. Parolin M. Donato F. Fioretto P. Pesavento R. Previato L. Maffei P. Saller A. Avogaro A. Sarais C. Gregori D. Iliceto S. Vettor R. Arrhythmic profile and 24-hour QT interval variability in COVID-19 patients treated with hydroxychloroquine and azithromycin Int J Cardiol 2020 10.1016/j.ijcard.2020.05.036 S0167-5273(20)32223-3 85 Rotondi M. Nieto-Diaz M. Magri F. Oliviero A. Balancing the need for rapid and rigorous scientific data during early phase of the COVID-19 pandemic: a further role for the scientific community Eur.

**H4:** Abnormal QT prolongation, defined as a prolongation to a QTc >500 msec, has been documented for 10%–25% of COVID-19 patients treated with hydroxychloroquine/azithromycin.

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## **COVID-19 treatments, QT interval, and arrhythmic risk: The need for an international registry on arrhythmias.** [Open in LiSA](#)

**H1:** Even so, none of these patients developed torsades de pointes.<sup>9</sup> Saleh et al<sup>10</sup> evaluated 201 COVID-19 patients who during hospitalization received chloroquine/hydroxychloroquine either as monotherapy (61%) or in association with azithromycin (59%).

**H2:** 8 Jain S. Workman V. Ganeshan R. Enhanced ECG monitoring of COVID-19 patients Heart Rhythm 17 2020 1417 1422 9 Chorin E, Dai M, Shulman E, et al. The QT interval in patients with SARS-CoV-2 infection treated with hydroxychloroquine/azithromycin.

**H3:** Indeed, a few studies already have evaluated QTc and arrhythmic risk in hospitalized COVID-19 patients treated with different QT-prolonging drugs (ie, hydroxychloroquine/chloroquine, azithromycin, lopinavir/ritonavir).

**H4:** The first study by Chorin et al<sup>9</sup> showed that in a population of 85 COVID-19 patients treated with hydroxychloroquine/azithromycin, QT prolongation was present in most treated patients.

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## **Chloroquine-induced torsades de pointes in a patient with coronavirus disease 2019.** [Open in LiSA](#)

**H1:** American College of Cardiology Web site <https://www.acc.org/latest-in-cardiology/articles/2020/03/27/14/00/ventricular-arrhythmia-risk-due-to-hydroxychloroquine-azithromycin-treatment-for-covid-19> 14 Roden D.M.

**H2:** Malaria Policy Advisory Committee Meeting, 22–24 March 2017, Geneva, Switzerland, page 36 [www.who.int/malaria/mpac/mpac-mar2017-erg-cardiotoxicity-report-session2.pdf](http://www.who.int/malaria/mpac/mpac-mar2017-erg-cardiotoxicity-report-session2.pdf) 7 Chorin E. Dai M. Shulman E. The QT interval in patients with COVID-19 treated with hydroxychloroquine and azithromycin Nat Med 26 2020 808 809 32488217 8 Borba M.G.S.

**H3:** Arbelo E. SARS-CoV-2, COVID-19 and inherited arrhythmia syndromes Heart Rhythm 17 2020 1456 1462 13 Ventricular arrhythmia risk due to hydroxychloroquine-azithromycin treatment for COVID-19 Cardiology Magazine.

**H4:** Excessive QT prolongation, defined as prolongation to a QTc interval of >500 ms, has already been reported for 11%–25% of patients with COVID-19 treated with hydroxychloroquine/azithromycin.<sup>7</sup> Many of these patients are elderly and have comorbidities that increase the risk of drug-induced long QT syndrome.

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## **Early Nutritional Interventions with Zinc, Selenium and Vitamin D for Raising Anti-Viral Resistance Against Progressive COVID-19.** [Open in LiSA](#)

**H1:** In another case report, three COVID-19 patients 38–74 years of age with additional gut manifestations received zinc sulphate (220 mg Zn daily for 5 days), together with hydroxychloroquine and azithromycine [27].

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## **COVID-19 and Pulmonary Emboli: A Case Series and Literature Review.** [Open in LiSA](#)

**H1:** He had experienced a fever three weeks previously and tested positive for COVID-19 before self-isolating and completing a course of azithromycin.

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## **Deep venous thrombosis in a non-critically ill patient with novel COVID-19 infection.** [Open in LiSA](#)

**H1:** He was started on hydroxychloroquine for COVID-19, as well as azithromycin and ceftriaxone for community-acquired pneumonia.

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## **Rapid and Impressive Response to a Combined Treatment with Single-Dose Tocilizumab and NIV in a Patient with COVID-19 Pneumonia/ARDS.** [Open in LiSA](#)

**H1:** The diagnosis of COVID-19 was confirmed by real-time reverse transcriptase polymerase chain reaction, and he started therapy with lopinavir/ritonavir 400/100 mg (two 200/50 mg) tablets twice daily, hydroxychloroquine 400 mg (two 200 mg) tablets twice a day for the first day, then 200 mg twice a day, azithromycin (500 mg per day), and enoxaparin 1 mg/kg twice daily.

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## Evaluation of Current Therapies for COVID-19

**Treatment.** [Open in LiSA](#)

**H1:** No Evidence of Rapid Antiviral Clearance or Clinical Benefit with the Combination of Hydroxychloroquine and Azithromycin in Patients with Severe COVID-19 Infection

**H2:** Clinical and Microbiological Effects of a Combination of Hydroxychloroquine and Azithromycin in 80 COVID-19 Patients with at Least a Six-Day Follow-Up: An Observational Study

**H3:** Chorin E. Dai M. Shulman E. Wadhwani L. Bar-Cohen R. Barbhaiya C. Aizer A. Holmes D. Bernstein S. Spinelli M. The QT interval in patients with COVID-19 treated with hydroxychloroquine and azithromycin Nat.

**H4:** Hydroxychloroquine and Azithromycin as a Treatment of COVID-19 in a Non-Randomized Clinical Trial

**H5:** Meddeb L. Sevestre J. Mailhe M. Doudier B. Aubry C. Amrane S. Clinical and microbiological effect of a combination of hydroxychloroquine and azithromycin in 80 COVID-19 patients with at least a six-day follow up: A pilot observational study Travel Med.

**H6:** This retrospective study demonstrates the real risk of prolonged QT interval in patients (n = 84) treated with hydroxychloroquine and azithromycin for COVID-19 [9].

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## Use of antimalarial drugs in the treatment of COVID-19: A window of opportunity? [Open in LiSA](#)

**H1:** In 11% of patients, the maximum QTc value exceeded 500 ms, with this being an important and recognized risk factor for the development of potentially fatal malignant arrhythmias.<sup>21</sup> Furthermore, QTc prolongation was independent of baseline values, underscoring the importance of continuous or frequent monitoring in these patients<sup>21</sup> and consolidates the resounding demand for caution in the use of the combination of these drugs, as already supported by some authorities.<sup>22</sup> In any case, a multinational study on the safety profile of hydroxychloroquine alone and in combination with azithromycin is currently underway in more than 130,000 patients with COVID-19 pneumonia (ClinicalTrials.gov identifier: NCT04321278).<sup>23</sup>

**H2:** In this sense, we already have data on its safety at the doses it is intended to be used because chloroquine and/or hydroxychloroquine are used at high doses in the acute attack of malaria, Q fever and Whipple's disease<sup>12, 13, 19</sup> and, specifically on COVID-19 patients, the in vivo studies conducted so far have reported no serious adverse reactions.<sup>9, 14, 15, 17</sup> In this sense, previously published studies confirm that the cardiac complications reported in case of hydroxychloroquine overdose, a risk that we can face with short regimens at high doses, could be actively prevented if its administration is avoided in patients with contraindications, intermittent electrocardiogram monitoring is used during treatment, a maintenance dose lower than that of induction is applied to prevent its accumulation, and the dose is adjusted in those patients who may require it, as specified in the drug's SmPC of the Spanish Agency of Medicines.<sup>8, 12, 14</sup> The evidence for the concomitant use of azithromycin and chloroquine is more limited.

**H3:** Barhaiya C. The QT interval in patients with SARS-CoV-2 infection treated with hydroxychloroquine/azithromycin medRxiv 21 2020 2020  
10.1101/2020.04.02.20047050 22 Generalitat de Catalunya Nota Informativa Sobre l'Evidència Actual de l'Eficàcia i Seguretat de La Hidroxicloroquina i l'Azitromicina Com a Tractament o Prevenció de La COVID-19 2020 23 Observational Health Data Sciences and Informatics (OHDSI).

**H4:** Meddeb L. Sevestre J. 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 Travel Med Infect Dis 2020 Available from: <https://www.groupedeveillecovid.fr/blog/2020/03/28/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/> 15 Chen Z. Hu J. Zhang Z.Z.

**H5:** Although in a 2011 article evaluating the safety and tolerability of both drugs in combination, only minor adverse events such as the presence of nausea associated with azithromycin were reported,<sup>20</sup> a recent study of 84 patients with COVID-19 treated with hydroxychloroquine and azithromycin demonstrates QTc interval prolongation, from  $435 \pm 24$  ms to  $463 \pm 32$  ms.

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## **COVID-19: Learning from Lessons To Guide Treatment and Prevention Interventions.** [Open in LiSA](#)

**H1:** In another clinical trial, French researcher Didier Raoult in Marseille reported that a 6-day treatment with hydroxychloroquine plus azithromycin (with the antibiotic azithromycin included to reduce complications from secondary bacterial infections) performed initially with 25 patients and later with 80 patients with COVID-19 improved recovery and reduced viral load (38).

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## **Implications of SARS-CoV 2 infection in thalassemias: Do patients fall into the "high clinical risk" category?** [Open in LiSA](#)

**H1:** A first step in understanding SARS pathogenesis J Pathol 2004 203 631-637  
15141377 8 Chen N Zhou M Dong X Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study Lancet 2020 395 507 513 32007143 9 Tao C Di W Huilong C Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study BMJ 2020 368 m1091 BMJ 2020; 368 doi: <https://doi.org/10.1136/bmj.m1091> (Published 26 March 2020) 32217556 10 The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020 China CDC Weekly 2020 2 10 11 Yang J Zheng Y Gou X Prevalence of comorbidities in the novel Wuhan coronavirus (COVID-19) infection: a systematic review and meta-analysis Int J Infect Dis 2020 12 Huang C Wang Y Li X Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China Lancet 2020 doi:10.1016/S0140-6736(20)30183-5 13 Gautret P Lagier JC Parola P Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial [published online ahead of print, 2020 Mar 20] Int J Antimicrob Agents 2020 105949 doi:10.1016/j.ijantimicag.2020.105949 32205204 14 Galanello R Origa R Beta-thalassemia Orphanet J Rare Dis 2010 5 11 Published 2010 May 21.doi:10.1186/1750-1172-5-11 20492708 15 Krittayaphong R Viprakasit V Saiviroonporn P Prevalence and predictors of cardiac and liver iron overload in patients with thalassemia: A multicenter study based on real-world data Blood Cells Mol Dis 2017 66 24 30 28806577 16 De Sanctis V Soliman AT Daar S A Concise Review on the Frequency, Major Risk Factors and Surveillance of Hepatocellular Carcinoma (HCC) in β-Thalassemias: Past, Present and Future Perspectives and the ICET-A Experience Mediterr J Hematol Infect Dis 2020 12 1 e2020006 Published 2020 Jan 1. doi:10.4084/MJHID.2020.006 31934316 17 Hamed AA Elguindy W Elhenawy YI Ibrahim RH Early Cardiac Involvement and Risk Factors for the Development of Arrhythmia in Patients With β-Thalassemia Major J Pediatr Hematol Oncol 2016 38 5 11 26583617 18 De Sanctis V Soliman AT Canatan D Thyroid Disorders in Homozygous β-Thalassemia: Current Knowledge, Emerging Issues and Open Problems Mediterr J Hematol Infect Dis 2019 11 1 e2019029 Published 2019 May 1. doi:10.4084/MJHID.2019.029 31205633 19 De Sanctis V Soliman AT Canatan D An ICET-A survey on occult and emerging endocrine complications in patients with β-thalassemia major: Conclusions and recommendations Acta Biomed 2019 89 481 489 30657116 20 Motta I De Amicis MM Pinto VM SARS-CoV-2 infection in beta thalassemia: preliminary data from the Italian experience [published online ahead of print, 2020 Apr 20] Am J Hematol 2020 10.1002/ajh.25840.doi:10.1002/ajh.25840 21 Chang L Yan Y Wang L Coronavirus Disease 2019: Coronaviruses and Blood Safety, Transfusion Medicine Reviews, <https://doi.org/10.1016/j.tmr.2020.02.003> 22 Canatan D De Sanctis V The medical concerns of patients with thalassemias at the time of COVID-19 outbreak: The personal experience and the international recommendations Acta Biomed 2020 Vol.

**H2:** Hydroxychloroquine treatment was significantly associated with viral load

**H2:** Hydroxychloroquine treatment was significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect was reinforced by azithromycin (13).

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## COVID-19: a short message to rheumatologists. [Open in LiSA](#)

**H1:** Our own experience with the combined use of chloroquine and azithromycin or ceftriaxone (n = 34) and tocilizumab (n = 1) in the treatment of severe pneumonia in the course of COVID-19 disease is very good, although it should only be considered as a series of cases (Figs.

**H2:** Fig. 2 A 30-year-old woman with severe COVID-19 pneumonia after treatment with chloroquine, azithromycin, lopinavir + ritonavir, tocilizumab, methylprednisolone for consecutive days.

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## **COVID-19 research: pandemic versus "paperdemic", integrity, values and risks of the "speed science".** [Open in LiSA](#)

**H1:** Recently, a panel of experts of the National Institute of Allergy and Infectious Diseases recommends against doctors using a combination of hydroxychloroquine and azithromycin for the treatment of COVID-19 due to toxic effects of both drugs, such as QT interval prolongation.

**H2:** Available from: <https://www.sciencemag.org/news/2020/04/former-fda-leaders-decry-emergency-authorization-malaria-drugs-coronavirus> 80 Molina JM , Delaugerre C , Goff JL , et al. No evidence of rapid antiviral clearance or clinical benefit with the combination of hydroxychloroquine and azithromycin in patients with severe COVID-19 infection.

**H3:** Authors observed that hydroxychloroquine treatment was significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect was reinforced by azithromycin.

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## **FDA: fda warns about increased risk cancer relapse long term use azithromycin zithromax zmax antibiotic** [Open in LiSA](#)

**H1:** The researchers stopped the ALLOZITHRO 1 trial approximately 13 months after the study completed enrollment of 480 patients because an unexpected increase in the rate of both cancer relapses and death was observed in patients taking azithromycin.

**H2:** Researchers in France identified this increased risk of cancer relapse and death while conducting a clinical trial investigating the effectiveness of long-term azithromycin to prevent bronchiolitis obliterans syndrome in patients who undergo donor, or allogenic, stem cell transplants for cancers of the blood and lymph nodes.

**H3:** The trial could not determine why the rates of cancer relapse and death were higher with azithromycin.

**H4:** In the first few months of the trial, the death rate was about equal between those receiving azithromycin and placebo.

**H5:** Health care professionals should not prescribe long-term azithromycin for

**H5:** Health care professionals should not prescribe long-term azithromycin for prophylaxis of bronchiolitis obliterans syndrome to patients who undergo donor stem cell transplants because of the increased potential for cancer relapse and death.

**H6:** Food and Drug Administration (FDA) is warning that the antibiotic azithromycin (Zithromax, Zmax) should not be given long-term to prevent a certain inflammatory lung condition in patients with cancers of the blood or lymph nodes who undergo a donor stem cell transplant.

**H7:** Bergeron A, Chevret S, Granata A, et al. Effect of azithromycin on airflow decline-free survival after allogeneic hematopoietic stem cell transplant: the ALLOZITHRO randomized clinical trial.

**H8:** FDA warns about increased risk of cancer relapse with long-term use of azithromycin (Zithromax, Zmax) antibiotic after donor stem cell transplant Drug Safety and Availability

**H9:** FDA warns about increased risk of cancer relapse with long-term use of azithromycin (Zithromax, Zmax) antibiotic after donor stem cell transplant Share Tweet LinkedIn Email Print

**H10:** FDA warns about increased risk of cancer relapse with long-term use of azithromycin (Zithromax, Zmax) antibiotic after donor stem cell transplant | FDA

**H11:** Azithromycin is not approved for preventing bronchiolitis obliterans syndrome.

**H12:** To help FDA track safety issues with medicines, we urge health care professionals and patients to report side effects involving azithromycin and other drugs to the FDA MedWatch program, using the information in the "Contact FDA" box at the bottom of the page.

**H13:** The serious lung condition for which long-term azithromycin was being studied called bronchiolitis obliterans syndrome is caused by inflammation and scarring in the airways of the lungs, resulting in severe shortness of breath and dry cough.

**H14:** Cancer relapse was observed in 77 patients (32.9%) with azithromycin treatment compared to 48 patients (20.8%) with placebo, which is an inactive treatment.

03 Aug 2018 • fda [Go to full article](#)

