DAFTAR PUSTAKA

Abbas, M., Moussa, M., & Akel, H. (2022). Type I Hypersensitivity Reaction. In *StatPearls*. StatPearls Publishing. http://www.ncbi.nlm.nih.gov/books/NBK560561/

Abdul-Aziz, M. H., & Roberts, J. (2020). PK/PD in critical illness. *IDSAP Book*, *1*.

Abul, Y., Leeder, C., & Gravenstein, S. (2022). Epidemiology and clinical presentation of COVID-19 in older adults. *Infectious Disease Clinics of North America*, *37*(1), 1.

ACCT. (2022). *A Multicenter, Adaptive, Randomized Blinded Controlled Trial of the Safety and Efficacy of Investigational Therapeutics for the Treatment of COVID-19 in Hospitalized Adults* (Clinical Trial Registration NCT04280705). clinicaltrials.gov. https://clinicaltrials.gov/ct2/show/NCT04280705

Ackermann, M., Verleden, S. E., Kuehnel, M., Haverich, A., Welte, T., Laenger, F., Vanstapel, A., Werlein, C., Stark, H., & Tzankov, A. (2020). Pulmonary vascular endothelialitis, thrombosis, and angiogenesis in Covid-19. *New England Journal of Medicine*, *383*(2), 120–128.

Ackley, T. W., McManus, D., Topal, J. E., Cicali, B., & Shah, S. (2021). A valid warning or clinical lore: An evaluation of safety outcomes of remdesivir in patients with impaired renal function from a multicenter matched cohort. *Antimicrobial Agents and Chemotherapy*, *65*(2), 10–1128.

Ader. (2022). *Remdesivir plus standard of care versus standard of care alone for the treatment of patients admitted to hospital with COVID-19 (DisCoVeRy): A phase 3, randomised, controlled, open-label trial—PubMed*. https://pubmed.ncbi.nlm.nih.gov/34534511/

Aiswarya, D., Arumugam, V., Dineshkumar, T., Gopalakrishnan, N., Lamech, T. M., Nithya, G., Sastry, B. V., Vathsalyan, P., Dhanapriya, J., & Sakthirajan, R. (2021). Use of remdesivir in patients with COVID-19 on hemodialysis: A study of safety and tolerance. *Kidney International Reports*, *6*(3), 586–593.

Al-Abdouh, A., Bizanti, A., Barbarawi, M., Jabri, A., Kumar, A., Fashanu, O. E., Khan, S. U., Zhao, D., Antar, A. A. R., & Michos, E. D. (2021). Remdesivir for the treatment of COVID-19: A systematic review and meta-analysis of randomized controlled trials. *Contemporary Clinical Trials*, *101*, 106272. https://doi.org/10.1016/j.cct.2021.106272

Aliyu, B., Raji, Y. E., Chee, H.-Y., Wong, M.-Y., & Sekawi, Z. B. (2022). Systematic review and meta-analysis of the efficacy and safety of oseltamivir (Tamiflu) in the treatment of Coronavirus Disease 2019 (COVID-19). *Plos One*, *17*(12), e0277206.

Aljuhani, O., Korayem, G. B., Altebainawi, A. F., Alotaibi, M. S., Alrakban, N. A., Ghoneim, R. H., Vishwakarma, R., Al Shaya, A. I., Al Harbi, S., & Gramish, J. (2023). The effect of oseltamivir use in critically ill patients with COVID-19: A multicenter propensity score-matched study. *Saudi Pharmaceutical Journal*, *31*(7), 1210–1218.

Almaghlouth, N. K., Anyiam, F. E., Shah, S., Haq, S., Attia, M. J., Guevara, R., & Antony, S. (2021). The Use of Single Therapy With Tocilizumab Versus

Combination Therapy With Remdesivir and Tocilizumab in SARS-CoV-2 Patients in El Paso, Texas. *Cureus*, *13*(7), e16351. https://doi.org/10.7759/cureus.16351

Al-Samkari, H., Karp Leaf, R. S., Dzik, W. H., Carlson, J. C. T., Fogerty, A. E., Waheed, A., Goodarzi, K., Bendapudi, P. K., Bornikova, L., Gupta, S., Leaf, D. E., Kuter, D. J., & Rosovsky, R. P. (2020). COVID-19 and coagulation: Bleeding and thrombotic manifestations of SARS-CoV-2 infection. *Blood*, *136*(4), Article 4. https://doi.org/10.1182/blood.2020006520

Amir-Kabirian, B., Annie, F. H., Koontz, M., Ihle, R., & Ihle, R. (2024). Sinus Tachycardia Following COVID-19 and Its Implications. *Cureus*, *16*(3).

Amstutz, A., Speich, B., Mentré, F., Rueegg, C. S., Belhadi, D., Assoumou, L., Burdet, C., Murthy, S., Dodd, L. E., & Wang, Y. (2023). Effects of remdesivir in patients hospitalised with COVID-19: A systematic review and individual patient data meta-analysis of randomised controlled trials. *The Lancet Respiratory Medicine*, *11*(5), 453–464.

Anonim. (n.d.). *Remdesivir-overview, Livertox: Clinical and Research information on drug induced liver injury [internet]. Bethesda (MD). National Institute of Diabetes and Digestive and Kidney Diseases, Feb 3th. - Penelusuran Google*. Retrieved March 18, 2023, from https://www.google.com/search?q=Remdesivir-overview%2C+Livertox

Ashley, C. (2011). Drugs and renal insufficiency. *Medicine*, *39*(6), 353–355.

Ayodele, O., Ren, K., Zhao, J., Signorovitch, J., Jonsson Funk, M., Zhu, J., Bao, Y., Gondek, K., Keenan, H., & R&D COVID Alliance. (2021). Real-world treatment patterns and clinical outcomes for inpatients with COVID-19 in the US from September 2020 to February 2021. *PloS One*, *16*(12), e0261707. https://doi.org/10.1371/journal.pone.0261707

Ayubi, E., Asadi, F. T., Borzouei, S., Alafchi, B., Soleimani, M. F., Khosronejad, S., Khazaei, S., & Talebi, S. S. (2022). Effects of hypertension alone and in comorbidity with diabetes on death within 30 days among inpatients with COVID-19 infection. *Journal of Research in Health Sciences*, *22*(4), e00565.

Badan Pengawas Obat dan Makanan—Republik Indonesia. (n.d.). Retrieved March 8, 2023, from https://www.pom.go.id/new/view/more/pers/565/Tingkatkan-Angka-Kesembuhan-dan-Turunkan-Angka-Kematian-Pasien-COVID-19--Badan-POM-Terbitkan-Izin-Penggunaan-dalam-Kondisi-Darurat-Obat-Favipiravir-dan-Remdesivir.html

Bai, H. X., Hsieh, B., Xiong, Z., Halsey, K., Choi, J. W., Tran, T. M. L., Pan, I., Shi, L.-B., Wang, D.-C., Mei, J., Jiang, X.-L., Zeng, Q.-H., Egglin, T. K., Hu, P.-F., Agarwal, S., Xie, F.-F., Li, S., Healey, T., Atalay, M. K., & Liao, W.-H. (2020). Performance of Radiologists in Differentiating COVID-19 from Non-COVID-19 Viral Pneumonia at Chest CT. *Radiology*, *296*(2), E46–E54. https://doi.org/10.1148/radiol.2020200823

Bailly, L., Fabre, R., Courjon, J., Carles, M., Dellamonica, J., & Pradier, C. (2022). Obesity, diabetes, hypertension and severe outcomes among inpatients with

coronavirus disease 2019: A nationwide study. *Clinical Microbiology and Infection*, *28*(1), 114–123.

Barletta, J. F., & Erstad, B. L. (2022). Drug dosing in hospitalized obese patients with COVID-19. *Critical Care*, *26*(1), 60.

Basurto, L., Manuel-Apolinar, L., Robledo, A., O'Leary, S., Martínez-Murillo, C., Medina-Ortíz, L. I., Osorio, M. G. M., Zarazua, J., Balcázar-Hernández, L., & Anda-Garay, J. C. (2024). Thrombotic risk assessed by PAI-1 in patients with COVID-19: The influence of hyperglycemia and diabetes mellitus. *Clínica e Investigación En Arteriosclerosis*, *36*(4), 201–209.

Bechman, K., Yates, M., Mann, K., Nagra, D., Smith, L.-J., Rutherford, A. I., Patel, A., Periselneris, J., Walder, D., Dobson, R. J. B., Kraljevic, Z., Teo, J. H. T., Bernal, W., Barker, R., Galloway, J. B., & Norton, S. (2022). Inpatient COVID-19 mortality has reduced over time: Results from an observational cohort. *PloS One*, *17*(1), e0261142. https://doi.org/10.1371/journal.pone.0261142

Beckerman, R., Gori, A., Jeyakumar, S., Malin, J. J., Paredes, R., Póvoa, P., Smith, N. J., & Teixeira-Pinto, A. (2022). Remdesivir for the treatment of patients hospitalized with COVID-19 receiving supplemental oxygen: A targeted literature review and meta-analysis. *Scientific Reports*, *12*(1), 9622.

Beigel, J. H., Tomashek, K. M., Dodd, L. E., Mehta, A. K., Zingman, B. S., Kalil, A. C., Hohmann, E., Chu, H. Y., Luetkemeyer, A., & Kline, S. (2020). Remdesivir for the treatment of Covid-19. *New England Journal of Medicine*, *383*(19), 1813–1826.

Bemtgen, X., Kaier, K., Rilinger, J., Rottmann, F., Supady, A., von Zur Mühlen, C., Westermann, D., Wengenmayer, T., & Staudacher, D. L. (2024). Myocarditis mortality with and without COVID-19: Insights from a national registry. *Clinical Research in Cardiology*, *113*(2), 216–222.

Bestle, D., Heindl, M. R., Limburg, H., Van Lam van, T., Pilgram, O., Moulton, H., Stein, D. A., Hardes, K., Eickmann, M., Dolnik, O., Rohde, C., Klenk, H.-D., Garten, W., Steinmetzer, T., & Böttcher-Friebertshäuser, E. (2020). TMPRSS2 and furin are both essential for proteolytic activation of SARS-CoV-2 in human airway cells. *Life Science Alliance*, *3*(9), e202000786. https://doi.org/10.26508/lsa.202000786

Bhaskar, S., Sinha, A., Banach, M., Mittoo, S., Weissert, R., Kass, J. S., Rajagopal, S., Pai, A. R., & Kutty, S. (2020). Cytokine Storm in COVID-19-Immunopathological Mechanisms, Clinical Considerations, and Therapeutic Approaches: The REPROGRAM Consortium Position Paper. *Frontiers in Immunology*, *11*, 1648. https://doi.org/10.3389/fimmu.2020.01648

BPOM,. (n.d.). *Antiviral: Pharmaceutical form, Powder for oral suspension*. BPOM.

Bradley, J., Sbaih, N., Chandler, T. R., Furmanek, S., Ramirez, J. A., & Cavallazzi, R. (2022). Pneumonia severity index and CURB-65 score are good predictors of mortality in hospitalized patients with SARS-CoV-2 community-acquired pneumonia. *Chest*, *161*(4), 927–936.

Brookhart, M. A., Schneeweiss, S., Rothman, K. J., Glynn, R. J., Avorn, J., & Stürmer, T. (2006). Variable selection for propensity score models. *American Journal of Epidemiology*, *163*(12), 1149–1156.

Burhan, E., Susanto, A. D., Nasution, S. A., Ginanjar, E., Pitoyo, C. W., Susilo, A., & Firdaus, I. (2020). *pedoman tatalaksana covid 19 2020—Penelusuran Google*. https://www.google.com/search?q=pedoman+tatalaksana+covid+19+2020&biw=1536&bih=746&sxsrf=AJOqlzVb6KACNDz3-d8Uqgoi9epVUECUvw%3A1679023370765&ei=Ct0TZKm0LrWcseMPkKK9mAI&ved=0ahUKEwip4dW8geL9AhU1TmwGHRBRDyMQ4dUDCA4&uact=5&oq=pedoman+tatalaksana+covid+19+2020&gs_lcp=Cgxnd3Mtd2l6LXNlcnAQA0oECEEYAVChB1jfC2DJEmgBcAB4AIABUYgB_AKSAQE1mAEAoAEBwAEB&sclient=gws-wiz-serp

Burhan, E., Susanto, A. D., Nasution, S. A., Ginanjar, E., Pitoyo, W., Susilo, A., Firdaus, I., Santoso, A., Arifa, D., Arif, S. K., Syam, F., Rasmin, M., Rengganis, I., Sukrisman, L., Wiyono, W. H., Isbaniah, F., Elhidsi, M., Aniwidyaningsih, W., Handayani, D., … Dharmawan, I. (2022). *Perhimpunan Dokter Paru Indonesia (PDPI) Perhimpunan Dokter Spesialis Kardiovaskular Indonesia (PERKI) Perhimpunan Dokter Spesialis Penyakit Dalam Indonesia (PAPDI) Perhimpunan Dokter Anestesiologi dan Terapi Intensif Indonesia*. 1.

Burhan, E., Syahruddin, E., Isbaniah, F., Desianti, G. A., Fachrucha, F., Sari, C. Y. I., Ismail, E., Astuti, P., Maruli, M. F., & Mubarak, F. (2023). Evaluation of safety and effectiveness of remdesivir in treating COVID-19 patients after emergency use authorization study. *Frontiers in Pharmacology*, *14*, 1205238.

Butt, B., Hussain, T., Jarrar, M., Khalid, K., Albaker, W., Ambreen, A., & Waheed, Y. (2022). Efficacy and safety of remdesivir in COVID-19 positive dialysis patients. *Antibiotics*, *11*(2), 156.

Butta, R. A. (2020). *Type 1 Hypersensitivity reaction, Anaphylaxis, Atopy, and Treatment—Labpedia.net*. https://labpedia.net/elementary-immunology/chapter-11-type-1-hypersensitivity-reaction-anaphylaxis-atopy-and-treatment/

Caffrey, A. R., Liao, J. X., Lopes, V. V., LaPlante, K. L., & Appaneal, H. J. (2023). Real-world safety and effectiveness of remdesivir and corticosteroids in hospitalized patients with COVID-19. *Covid*, *3*(2), 198–217.

Cao, Y.-C., Deng, Q.-X., & Dai, S.-X. (2020). Remdesivir for severe acute respiratory syndrome coronavirus 2 causing COVID-19: An evaluation of the evidence. *Travel Medicine and Infectious Disease*, *35*, 101647. https://doi.org/10.1016/j.tmaid.2020.101647

Centers for Disease Control and Prevention. (2014). *Influenza antiviral medications: Summary for clinicians*.

Chang, M. C., Park, Y.-K., Kim, B.-O., & Park, D. (2020). Risk factors for disease progression in COVID-19 patients. *BMC Infectious Diseases*, *20*(1), 445.

Charlton, M., & Thompson, J. (2019). Pharmacokinetics in sepsis. *BJA Education*, *19*(1), 7–13.

Chen, C., Fang, J., Chen, S., Rajaofera, M. J. N., Li, X., Wang, B., & Xia, Q. (2023a). The efficacy and safety of remdesivir alone and in combination with other drugs for the treatment of COVID-19: A systematic review and meta-analysis. *BMC Infectious Diseases*, *23*(1), 672.

Chen, C., Fang, J., Chen, S., Rajaofera, M. J. N., Li, X., Wang, B., & Xia, Q. (2023b). The efficacy and safety of remdesivir alone and in combination with other drugs for the treatment of COVID-19: A systematic review and meta-analysis. *BMC Infectious Diseases*, *23*(1), 672.

Choe, P. G., Jeong, S. I., Kang, C. K., Yang, L., Lee, S., Cho, J., Han, S. S., Kim, D. K., Lee, S. M., & Park, W. B. (2022). Exploration for the effect of renal function and renal replacement therapy on pharmacokinetics of remdesivir and GS-441524 in patients with COVID-19: A limited case series. *Clinical and Translational Science*, *15*(3), 732–740.

Corcione, S., De Nicolò, A., Montrucchio, G., Scabini, S., Avataneo, V., Bonetto, C., Mornese Pinna, S., Cusato, J., Canta, F., & Urbino, R. (2021). Real-life study on the pharmacokinetic of remdesivir in ICU patients admitted for severe COVID-19 pneumonia. *British Journal of Clinical Pharmacology*, *87*(12), 4861–4867.

Cordero, A., García-Gallego, C. S., Bertomeu-González, V., Fácila, L., Rodríguez-Mañero, M., Escribano, D., Castellano, J. M., Zuazola, P., Núñez, J., & Badimón, J. J. (2021). Mortality associated with cardiovascular disease in patients with COVID-19. *REC: CardioClinics*, *56*(1), 30–38.

Cui, S., Chen, S., Li, X., Liu, S., & Wang, F. (2020). Prevalence of venous thromboembolism in patients with severe novel coronavirus pneumonia. *Journal of Thrombosis and Haemostasis: JTH*, *18*(6), 1421–1424. https://doi.org/10.1111/jth.14830

Cunha, J. P. (2023). *Veklury (Remdesivir for Injection): Uses, Dosage, Side Effects, Interactions, Warning*. https://www.rxlist.com/veklury-drug.htm

Daher, J. (2021). Endothelial dysfunction and COVID-19. *Biomedical Reports*, *15*(6), 102.

Davies, B. E. (2010). Pharmacokinetics of oseltamivir: An oral antiviral for the treatment and prophylaxis of influenza in diverse populations. *Journal of Antimicrobial Chemotherapy*, *65*(suppl_2), ii5–ii10.

de Wit, E., Feldmann, F., Cronin, J., Jordan, R., Okumura, A., Thomas, T., Scott, D., Cihlar, T., & Feldmann, H. (2020). Prophylactic and therapeutic remdesivir (GS-5734) treatment in the rhesus macaque model of MERS-CoV infection. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(12), 6771–6776. https://doi.org/10.1073/pnas.1922083117

Deb, S., Reeves, A. A., Hopefl, R., & Bejusca, R. (2021). ADME and pharmacokinetic properties of remdesivir: Its drug interaction potential. *Pharmaceuticals*, *14*(7), 655.

Deng, H., Tang, T.-X., Chen, D., Tang, L.-S., Yang, X.-P., & Tang, Z.-H. (2021). Endothelial dysfunction and SARS-CoV-2 infection: Association and therapeutic strategies. *Pathogens*, *10*(5), 582.

Desai, A. D., Lavelle, M., Boursiquot, B. C., & Wan, E. Y. (2022). Long-term complications of COVID-19. *American Journal of Physiology-Cell Physiology*, *322*(1), C1–C11.

Docherty, A. B., Harrison, E. M., Green, C. A., Hardwick, H. E., Pius, R., Norman, L., Holden, K. A., Read, J. M., Dondelinger, F., & Carson, G. (2020). Features of 20 133 UK patients in hospital with covid-19 using the ISARIC WHO Clinical Characterisation Protocol: Prospective observational cohort study. *Bmj*, *369*.

Dyer, O. (2021). Covid-19: Indonesia becomes Asia's new pandemic epicentre as delta variant spreads. *BMJ (Clinical Research Ed.)*, *374*, n1815. https://doi.org/10.1136/bmj.n1815

Ebrahim Valojerdi, A., & Janani, L. (2018). A brief guide to propensity score analysis. *Medical Journal of the Islamic Republic of Iran*, *32*, 122. https://doi.org/10.14196/mjiri.32.122

Eid, J., Abdelwahab, M., Colburn, N., Day, S., Cackovic, M., Rood, K. M., & Costantine, M. M. (2022). Early administration of remdesivir and intensive care unit admission in hospitalized pregnant individuals with coronavirus disease 2019 (COVID-19). *Obstetrics & Gynecology*, *139*(4), 619–621.

Elec, F., Magnusson, J., Elec, A., Muntean, A., Antal, O., Moisoiu, T., Cismaru, C., Lupse, M., & Oltean, M. (2022). COVID-19 and kidney transplantation: The impact of remdesivir on renal function and outcome - a retrospective cohort study. *International Journal of Infectious Diseases: IJID: Official Publication of the International Society for Infectious Diseases*, *118*, 247–253. https://doi.org/10.1016/j.ijid.2022.03.015

Estill, J., Venkova-Marchevska, P., Günthard, H. F., Botero-Mesa, S., Thiabaud, A., Roelens, M., Vancauwenberghe, L., Damonti, L., Heininger, U., & Iten, A. (2023). Treatment effect of remdesivir on the mortality of hospitalised COVID-19 patients in Switzerland across different patient groups: A tree-based model analysis. *Swiss Medical Weekly*, *153*(8), 1–11.

European Medianl Agency-Science Medicines Health. (2020). *European Summary on Copassionate Use-Remdesivir. International Non-Proprietary Name: Remdesivir.*

Falcão, F., Viegas, E., Carmo, I., Soares, J., Falcao, M., Solano, M., Cavaco, P., Mendes, D., Rijo, J., Povoa, P., Pais Martins, A., Carmo, E., Mansinho, K., Fonseca, C., Campos, L., Carvalho, A., Mirco, A., Farinha, H., Aldir, I., & Correia, J. (2021). A prospective, observational study to evaluate adverse drug reactions in patients with COVID-19 treated with remdesivir or hydroxychloroquine: A preliminary report. *European Journal of Hospital Pharmacy: Science and Practice*, *28*(5), 248–253. https://doi.org/10.1136/ejhpharm-2020-002613

Fehr, A. R., & Perlman, S. (2015). Coronaviruses: An overview of their replication and pathogenesis. *Methods in Molecular Biology (Clifton, N.J.)*, *1282*, 1–23. https://doi.org/10.1007/978-1-4939-2438-7_1

Gagne, Gatto, N. M., Mo, J.., Pan, G. J. D., & Raine, J. (2022). Views from Academia, Industry, Regulatory Agencies, and the Legal System. In

Textbook of Pharmacoepidemiology (3rd ed., pp. 73–110). Wiley Blackwell.

Gao, X., Zhang, S., Gou, J., Wen, Y., Fan, L., Zhou, J., Zhou, G., Xu, G., & Zhang, Z. (2022). Spike-mediated ACE2 down-regulation was involved in the pathogenesis of SARS-CoV-2 infection. *Journal of Infection*, *85*(4), 418–427.

Gavkare, A. M., Nanaware, N., Rayate, A. S., Mumbre, S., & Nagoba, B. S. (2022). COVID-19 associated diabetes mellitus: A review. *World Journal of Diabetes*, *13*(9), 729.

Gerayeli, F. V., Milne, S., Cheung, C., Li, X., Yang, C. W. T., Tam, A., Choi, L. H., Bae, A., & Sin, D. D. (2021). COPD and the risk of poor outcomes in COVID-19: A systematic review and meta-analysis. *EClinicalMedicine*, *33*.

Gilead Global Patient Safety. (2022). *Fact sheet for healthcare providers emergency use authorization (EUA) of veklury® (remdesivir) for the treatment of coronavirus disease 2019 (Covid-19) in pediatric patients weighing 3.5 kg to less than 40 kg or pediatric patients less than 12 years of age weighing at least 3.5 kg, with positive results of direct SARS-CoV-2 viral testing WHO are: Hospitalized, or not hospitalized and have mild-to-moderate COVID-19, and are at high risk for progression to severe COVID-19, including hospitalization or death*. Gilead Sicences, Inc. All Right Reserverd. https://www.fda.gov/media/137566/download

Gilead Pharmacovigilance and Epidemiology. (n.d.). *Gilead Pharmacovigilance and Epidemiology. (2020). Fact sheet for health care providers-emergency use authorization (EUA) of veklury (remdesivir). Gilead Science, Inc. - Penelusuran Google*. Retrieved March 9, 2023, from https://www.google.com/search?q=Gilead+Pharmacovigilance+and+Epidemiology.+%282020%29.+Fact+sheet+for+health+care+providers-emergency+use+authorization+%28EUA%29+of+veklury+%28remdesivir%29.+Gilead+Science%2C+Inc.&sxsrf=AJOqlzUFrcaVPhFfs9mao74Y5qxYfZp2xQ%3A1678369786154&ei=-uMJZL30CLrA4-EPmpGP4A8&ved=0ahUKEwi92Z7X_s79AhU64DgGHZrIA_wQ4dUDCA4&uact=5&oq=Gilead+Pharmacovigilance+and+Epidemiology.+%282020%29.+Fact+sheet+for+health+care+providers-emergency+use+authorization+%28EUA%29+of+veklury+%28remdesivir%29.+Gilead+Science%2C+Inc.&gs_lcp=Cgxnd3Mtd2l6LXNlcnAQA0oECEEYAFAAWABgggpoAHAAeACAAQCIAQCSAQCYAQCgAQKgAQHAAQE&sclient=gws-wiz-serp

Gilead, R. (2022). *Summary on compassionate use*.

Gilead Sciences. (2023). *VEKLURY® (remdesivir) Study 5773 Efficacy and Safety Data | HCP*. https://www.vekluryhcp.com/inpatient/study-5773.php

Global RPh. (n.d.). Oseltamivir. *GlobalRPH*. Retrieved March 15, 2023, from https://globalrph.com/renal/oseltamivir/

Goldberg, E. M., Southerland, L. T., Meltzer, A. C., Pagenhardt, J., Hoopes, R., Camargo Jr, C. A., & Kline, J. A. (2022). Age-related differences in symptoms in older emergency department patients with COVID-19:

Prevalence and outcomes in a multicenter cohort. *Journal of the American Geriatrics Society*, *70*(7), 1918–1930.

Goldman, J. D., Lye, D. C., Hui, D. S., Marks, K. M., Bruno, R., Montejano, R., Spinner, C. D., Galli, M., Ahn, M.-Y., & Nahass, R. G. (2020). Remdesivir for 5 or 10 days in patients with severe Covid-19. *New England Journal of Medicine*, *383*(19), 1827–1837.

Gordon, C. J., Tchesnokov, E. P., Woolner, E., Perry, J. K., Feng, J. Y., Porter, D. P., & Götte, M. (2020). Remdesivir is a direct-acting antiviral that inhibits RNA-dependent RNA polymerase from severe acute respiratory syndrome coronavirus 2 with high potency. *The Journal of Biological Chemistry*, *295*(20), 6785–6797. https://doi.org/10.1074/jbc.RA120.013679

Grein, J., Ohmagari, N., Shin, D., Diaz, G., Asperges, E., Castagna, A., Feldt, T., Green, G., Green, M. L., Lescure, F.-X., Nicastri, E., Oda, R., Yo, K., Quiros-Roldan, E., Studemeister, A., Redinski, J., Ahmed, S., Bernett, J., Chelliah, D., … Flanigan, T. (2020). Compassionate Use of Remdesivir for Patients with Severe Covid-19. *The New England Journal of Medicine*, *382*(24), 2327–2336. https://doi.org/10.1056/NEJMoa2007016

Gu, J., Han, B., & Wang, J. (2020). COVID-19: Gastrointestinal Manifestations and Potential Fecal-Oral Transmission. *Gastroenterology*, *158*(6), 1518–1519. https://doi.org/10.1053/j.gastro.2020.02.054

Gupta, V., Ingawale, S., Bhondve, A., Khot, W., Salagre, S., Sonawale, A., Joshi, K., Vaidya, M., Tiwari, S., Salagre, K., Pawade, Y., Kawale, J., & Sabnis, N. (2021). Clinical Study of Use of Remdesivir and Tocilizumab in Severely Ill COVID-19 Patients. *The Journal of the Association of Physicians of India*, *69*(7), 14–19. https://doi.org/10.0102/japi.2021.07

Gupte, V., Hegde, R., Sawant, S., Kalathingal, K., Jadhav, S., Malabade, R., & Gogtay, J. (2022). Safety and clinical outcomes of remdesivir in hospitalised COVID-19 patients: A retrospective analysis of active surveillance database. *BMC Infectious Diseases*, *22*(1), 1.

Harris, D. E., & Massie, M. (2019). Role of Alveolar-Arterial Gradient in Partial Pressure of Oxygen and PaO2/Fraction of Inspired Oxygen Ratio Measurements in Assessment of Pulmonary Dysfunction. *AANA Journal*, *87*(3), 214–221.

Haryono, E., & Harsari., A., Y. (2022). Taming Two Waves of the Covid-19 Pandemic: The Case of Indonesia. *KnE Social Sciences*. https://doi.org/10.18502/kss.v7i4.10514

Heald, A. H., Jenkins, D. A., Williams, R., Sperrin, M., Mudaliar, R. N., Syed, A., Naseem, A., Bowden Davies, K. A., Peng, Y., & Peek, N. (2022). Mortality in people with type 2 diabetes following SARS-CoV-2 infection: A population level analysis of potential risk factors. *Diabetes Therapy*, *13*(5), 1037–1051.

Hedskog, C., Rodriguez, L., Roychoudhury, P., Huang, M.-L., Jerome, K. R., Hao, L., Ireton, R. C., Li, J., Perry, J. K., & Han, D. (2023). Viral resistance analyses from the remdesivir phase 3 adaptive COVID-19 treatment trial-1 (ACTT-1). *The Journal of Infectious Diseases*, *228*(9), 1263–1273.

Huang, Y., Li, S., Ye, W., Wang, H., Su, J., Gao, L., Shi, R., Mou, X., Leng, S. X., & Xiao, C. (2025). Viral Infections in Elderly Individuals: A Comprehensive Overview of SARS-CoV-2 and Influenza Susceptibility, Pathogenesis, and Clinical Treatment Strategies. *Vaccines*, *13*(4), 431.

Humeniuk, R., Mathias, A., Kirby, B. J., Lutz, J. D., Cao, H., Osinusi, A., Babusis, D., Porter, D., Wei, X., Ling, J., Reddy, Y. S., & German, P. (2021a). Pharmacokinetic, Pharmacodynamic, and Drug-Interaction Profile of Remdesivir, a SARS-CoV-2 Replication Inhibitor. *Clinical Pharmacokinetics*, *60*(5), 569–583. https://doi.org/10.1007/s40262-021-00984-5

Humeniuk, R., Mathias, A., Kirby, B. J., Lutz, J. D., Cao, H., Osinusi, A., Babusis, D., Porter, D., Wei, X., Ling, J., Reddy, Y. S., & German, P. (2021b). Pharmacokinetic, Pharmacodynamic, and Drug-Interaction Profile of Remdesivir, a SARS-CoV-2 Replication Inhibitor. *Clinical Pharmacokinetics*, *60*(5), 569–583. https://doi.org/10.1007/s40262-021-00984-5

Imburgia, C. E., Rower, J. E., Green, D. J., Mcknite, A. M., Kelley, W. E., Reilly, C. A., & Watt, K. M. (2022). Remdesivir and GS-441524 extraction by ex vivo extracorporeal life support circuits. *ASAIO Journal*, *68*(9), 1204–1210.

Jeck, J., Jakobs, F., Kron, A., Cornely, O. A., & Kron, F. (2022). Retrospective modelling of hospital bed capacities associated with the administration of remdesivir during the first wave of COVID-19 in a German metropolitan city. *The Journal of Antimicrobial Chemotherapy*, *77*(3), 753–757. https://doi.org/10.1093/jac/dkab432

Jiang, Y., Chen, D., Cai, D., Yi, Y., & Jiang, S. (2021). Effectiveness of remdesivir for the treatment of hospitalized COVID-19 persons: A network meta-analysis. *Journal of Medical Virology*, *93*(2), 1171–1174.

Joo, E.-J., Ko, J.-H., Kim, S. E., Kang, S.-J., Baek, J. H., Heo, E. Y., Shi, H. J., Eom, J. S., Choe, P. G., & Bae, S. (2021). Clinical and virologic effectiveness of remdesivir treatment for severe coronavirus disease 2019 (COVID-19) in Korea: A nationwide multicenter retrospective cohort study. *Journal of Korean Medical Science*, *36*(11).

Jung, S. Y., Kim, M. S., Li, H., Lee, K. H., Koyanagi, A., Solmi, M., Kronbichler, A., Dragioti, E., Tizaoui, K., & Cargnin, S. (2022). Cardiovascular events and safety outcomes associated with remdesivir using a World Health Organization international pharmacovigilance database. *Clinical and Translational Science*, *15*(2), 501–513.

Justiz Vaillant, A. A., Vashisht, R., & Zito, P. M. (2022). Immediate Hypersensitivity Reactions. In *StatPearls*. StatPearls Publishing. http://www.ncbi.nlm.nih.gov/books/NBK513315/

Kalaiselvan, V. (n.d.-a). *Hypersensitivity*. Retrieved March 12, 2023, from https://www.academia.edu/16182881/Hypersensitivity

Kalaiselvan, V. (n.d.-b). *Hypersensitivity*. Retrieved March 17, 2023, from https://www.academia.edu/16182881/Hypersensitivity

Kalil, A. C., Patterson, T. F., Mehta, A. K., Tomashek, K. M., Wolfe, C. R., Ghazaryan, V., Marconi, V. C., Ruiz-Palacios, G. M., Hsieh, L., & Kline,

S. (2021). Baricitinib plus remdesivir for hospitalized adults with Covid-19. *New England Journal of Medicine*, *384*(9), 795–807.

Karakike, E., Giamarellos-Bourboulis, E. J., Kyprianou, M., Fleischmann-Struzek, C., Pletz, M. W., Netea, M. G., Reinhart, K., & Kyriazopoulou, E. (2021). Coronavirus disease 2019 as cause of viral sepsis: A systematic review and meta-analysis. *Critical Care Medicine*, *49*(12), 2042–2057.

Kemenkes. (2022). *Infeksi Emerging Kementerian Kesehatan RI*. https://infeksiemerging.kemkes.go.id/info-corona-virus

Khidir, R. J. Y., Ibrahim, B. A. Y., Adam, M. H. M., Hassan, R. M. E., Fedail, A. S. S., Abdulhamid, R. O., & Mohamed, S. O. O. (2022). Prevalence and outcomes of hyponatremia among COVID-19 patients: A systematic review and meta-analysis. *International Journal of Health Sciences*, *16*(5), 69.

Kim, H.-S., Lee, S., & Kim, J. H. (2018). Real-world evidence versus randomized controlled trial: Clinical research based on electronic medical records. *Journal of Korean Medical Science*, *33*(34), e213.

Klok, F. A., Kruip, M. J. H. A., van der Meer, N. J. M., Arbous, M. S., Gommers, D. a. M. P. J., Kant, K. M., Kaptein, F. H. J., van Paassen, J., Stals, M. a. M., Huisman, M. V., & Endeman, H. (2020). Incidence of thrombotic complications in critically ill ICU patients with COVID-19. *Thrombosis Research*, *191*, 145–147. https://doi.org/10.1016/j.thromres.2020.04.013

Krishna, B. A., Metaxaki, M., Sithole, N., Landín, P., Martín, P., & Salinas-Botrán, A. (2024a). Cardiovascular disease and covid-19: A systematic review. *IJC Heart & Vasculature*, *54*, 101482. https://doi.org/10.1016/j.ijcha.2024.101482

Krishna, B. A., Metaxaki, M., Sithole, N., Landín, P., Martín, P., & Salinas-Botrán, A. (2024b). Cardiovascular disease and covid-19: A systematic review. *IJC Heart & Vasculature*, *54*, 101482. https://doi.org/10.1016/j.ijcha.2024.101482

Kruglikov, I. L., Shah, M., & Scherer, P. E. (2020). Obesity and diabetes as comorbidities for COVID-19: Underlying mechanisms and the role of viral–bacterial interactions. *ELife*, *9*, e61330. https://doi.org/10.7554/eLife.61330

Kumar, A., Arora, A., Sharma, P., Anikhindi, S. A., Bansal, N., Singla, V., Khare, S., & Srivastava, A. (2020). Clinical Features of COVID-19 and Factors Associated with Severe Clinical Course: A Systematic Review and Meta-analysis. *Social Science Research Network*, 3566166. https://doi.org/10.2139/ssrn.3566166

Kuritzkes, D. R. (2024). Remdesivir for Patients Hospitalized With COVID-19: Evidence of Effectiveness From Cohort Studies in the Omicron Era. *Clinical Infectious Diseases*, *79*(Supplement_4), Article Supplement_4. https://doi.org/10.1093/cid/ciae515

La, Y. J., Oh, W. S., Kim, C., Lim, M., & Jeon, Y. D. (2025). Clinical outcomes of early remdesivir administration in hospitalized patients at high risk for severe COVID-19 during the Omicron wave. *BMC Infectious Diseases*, *25*(1), 167.

Lai, C.-C., Chen, C.-H., Wang, C.-Y., Chen, K.-H., Wang, Y.-H., & Hsueh, P.-R. (2021). Clinical efficacy and safety of remdesivir in patients with COVID-

19: A systematic review and network meta-analysis of randomized controlled trials. *The Journal of Antimicrobial Chemotherapy*, *76*(8), 1962–1968. https://doi.org/10.1093/jac/dkab093

Lainscak, M., Vitale, C., Seferovic, P., Spoletini, I., Trobec, K. C., & Rosano, G. M. (2016). Pharmacokinetics and pharmacodynamics of cardiovascular drugs in chronic heart failure. *International Journal of Cardiology*, *224*, 191–198.

Landmesser, U., Spiekermann, S., Dikalov, S., Tatge, H., Wilke, R., Kohler, C., Harrison, D. G., Hornig, B., & Drexler, H. (2002). Vascular oxidative stress and endothelial dysfunction in patients with chronic heart failure: Role of xanthine-oxidase and extracellular superoxide dismutase. *Circulation*, *106*(24), 3073–3078.

Lariccia, V., Magi, S., Serfilippi, T., Toujani, M., Gratteri, S., & Amoroso, S. (2020). Challenges and Opportunities from Targeting Inflammatory Responses to SARS-CoV-2 Infection: A Narrative Review. *Journal of Clinical Medicine*, *9*(12), 4021. https://doi.org/10.3390/jcm9124021

Lê, M. P., Le Hingrat, Q., Jaquet, P., Wicky, P.-H., Bunel, V., Massias, L., Visseaux, B., Messika, J., Descamps, D., Mal, H., Timsit, J.-F., & Peytavin, G. (2020). Removal of Remdesivir's Metabolite GS-441524 by Hemodialysis in a Double Lung Transplant Recipient with COVID-19. *Antimicrobial Agents and Chemotherapy*, *64*(11), e01521-20. https://doi.org/10.1128/AAC.01521-20

Leegwater, E., Moes, D., Bosma, L., Ottens, T., van der Meer, I., van Nieuwkoop, C., & Wilms, E. (2022). Population pharmacokinetics of remdesivir and GS-441524 in hospitalized COVID-19 patients. *Antimicrobial Agents and Chemotherapy*, *66*(6), e00254-22.

Lewis, E. D., Wu, D., & Meydani, S. N. (2022). Age-associated alterations in immune function and inflammation. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *118*, 110576.

Li, C., He, Q., Qian, H., & Liu, J. (2021). *Overview of the pathogenesis of COVID-19 (review). Exp Ther Med. 2021; 22 (3): 1011.*

Lian, N., Xie, H., Lin, S., Huang, J., Zhao, J., & Lin, Q. (2020). Umifenovir treatment is not associated with improved outcomes in patients with coronavirus disease 2019: A retrospective study. *Clinical Microbiology and Infection*, *26*(7), Article 7. https://doi.org/10.1016/j.cmi.2020.04.026

MacNee, W. (2006). Pathology, pathogenesis, and pathophysiology. *Bmj*, *332*(7551), 1202–1204.

Magadum, A., & Kishore, R. (2020). Cardiovascular Manifestations of COVID-19 Infection. *Cells*, *9*(11), Article 11. https://doi.org/10.3390/cells9112508

Magleby, R., Westblade, L. F., Trzebucki, A., Simon, M. S., Rajan, M., Park, J., Goyal, P., Safford, M. M., & Satlin, M. J. (2021). Impact of Severe Acute Respiratory Syndrome Coronavirus 2 Viral Load on Risk of Intubation and Mortality Among Hospitalized Patients With Coronavirus Disease 2019. *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America*, *73*(11), e4197–e4205. https://doi.org/10.1093/cid/ciaa851

Mahendra, M., Nuchin, A., Kumar, R., Shreedhar, S., & Mahesh, P. A. (2021). Predictors of mortality in patients with severe COVID-19 pneumonia—A retrospective study. *Advances in Respiratory Medicine*, *89*(2), 135–144. https://doi.org/10.5603/ARM.a2021.0036

Mandadi, S., Pulluru, H., & Annie, F. (2022). Comparative outcomes of combined corticosteroid and remdesivir therapy with corticosteroid monotherapy in ventilated COVID-19 patients. *PLoS ONE*, *17*(2), e0264301. https://doi.org/10.1371/journal.pone.0264301

Manuti, J. K., & Al-Rawi, I. G. (2025). The Role of Remdesivir in the Treatment of Severe COVID-19. *Arab Board Medical Journal*, *26*(1), 38–45.

Mao, L., Jin, H., Wang, M., Hu, Y., Chen, S., He, Q., Chang, J., Hong, C., Zhou, Y., Wang, D., Miao, X., Li, Y., & Hu, B. (2020). Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. *JAMA Neurology*, *77*(6), 683–690. https://doi.org/10.1001/jamaneurol.2020.1127

Martinez, M. A. (2020). Compounds with Therapeutic Potential against Novel Respiratory 2019 Coronavirus. *Antimicrobial Agents and Chemotherapy*, *64*(5), Article 5. https://doi.org/10.1128/AAC.00399-20

McIntosh, K. (2022). COVID-19: Clinical features. In *Up to Date*. https://www.uptodate.com/contents/covid-19-clinical-features

Menkes, R. (2020). Peraturan Menteri Kesehatan Republik Indonesia Nomor 3 Tahun 2020. *Menteri Kesehatan Republik Indonesia*.

Menteri Kesehatan Republik Indonesia. (2011). *PERATURAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR 1691/MENKES/PER/VIII/2011*.

Metchurtchlishvili, R., Chkhartishvili, N., Abutidze, A., Endeladze, M., Ezugbaia, M., Bakradze, A., & Tsertsvadze, T. (2023). Effect of remdesivir on mortality and the need for mechanical ventilation among hospitalized patients with COVID-19: Real-world data from a resource-limited country. *International Journal of Infectious Diseases*, *129*, 63–69.

Mirza, H., & Hashmi, M. F. (2020). *Lung ventilation perfusion scan (VQ Scan)*.

Molina, K. C., Webb, B. J., Kennerley, V., Beaty, L. E., Bennett, T. D., Carlson, N. E., Mayer, D. A., Peers, J. L., Russell, S., & Wynia, M. K. (2024). Real-world evaluation of early remdesivir in high-risk COVID-19 outpatients during Omicron including BQ. 1/BQ. 1.1/XBB. 1.5. *BMC Infectious Diseases*, *24*(1), 802.

Montastruc, F., Thuriot, S., & Durrieu, G. (2020). Hepatic disorders with the use of remdesivir for coronavirus 2019. *Clinical Gastroenterology and Hepatology*, *18*(12), 2835–2836.

Mozaffari, E., Chandak, A., Gottlieb, R. L., Chima-Melton, C., Berry, M., Oppelt, T., Okulicz, J. F., Amin, A. N., Welte, T., & Sax, P. E. (2025). Lower mortality risk associated with remdesivir+ dexamethasone versus dexamethasone alone for the treatment of patients hospitalized for COVID-19. *Clinical Infectious Diseases*, *80*(1), 63–71.

Mozaffari, E., Chandak, A., Gottlieb, R. L., Chima-Melton, C., Kalil, A. C., Sarda, V., Der-Torossian, C., Oppelt, T., Berry, M., & Amin, A. N. (2024).

Treatment of patients hospitalized for COVID-19 with remdesivir is associated with lower likelihood of 30-day readmission: A retrospective observational study. *Journal of Comparative Effectiveness Research*, *13*(4), e230131.

Mozaffari, E., Chandak, A., Gottlieb, R. L., Chima-Melton, C., Read, S. H., Lee, E., Der-Torossian, C., Gupta, R., Berry, M., Hollemeersch, S., & Kalil, A. C. (2023). Remdesivir Is Associated With Reduced Mortality in COVID-19 Patients Requiring Supplemental Oxygen Including Invasive Mechanical Ventilation Across SARS-CoV-2 Variants. *Open Forum Infectious Diseases*, *10*(10), Article 10. https://doi.org/10.1093/ofid/ofad482

Mozaffari, E., Chandak, A., Gottlieb, R. L., Kalil, A. C., Jiang, H., Oppelt, T., Berry, M., Chima-Melton, C., & Amin, A. N. (2024). Remdesivir effectiveness in reducing the risk of 30-day readmission in vulnerable patients hospitalized for COVID-19: A retrospective US cohort study using propensity scores. *Clinical Infectious Diseases*, *79*(Supplement_4), S167–S177.

Mozaffari, E., Chandak, A., Zhang, Z., Liang, S., Thrun, M., Gottlieb, R. L., Kuritzkes, D. R., Sax, P. E., Wohl, D. A., & Casciano, R. (2022a). Remdesivir treatment in hospitalized patients with coronavirus disease 2019 (COVID-19): A comparative analysis of in-hospital all-cause mortality in a large multicenter observational cohort. *Clinical Infectious Diseases*, *75*(1), e450–e458.

Mozaffari, E., Chandak, A., Zhang, Z., Liang, S., Thrun, M., Gottlieb, R. L., Kuritzkes, D. R., Sax, P. E., Wohl, D. A., & Casciano, R. (2022b). Remdesivir treatment in hospitalized patients with coronavirus disease 2019 (COVID-19): A comparative analysis of in-hospital all-cause mortality in a large multicenter observational cohort. *Clinical Infectious Diseases*, *75*(1), e450–e458.

Mozaffari, E., Chandak, A., Zhang, Z., Liang, S., Thrun, M., Gottlieb, R. L., Kuritzkes, D. R., Sax, P. E., Wohl, D. A., Casciano, R., Hodgkins, P., & Haubrich, R. (2022). Remdesivir Treatment in Hospitalized Patients With Coronavirus Disease 2019 (COVID-19): A Comparative Analysis of In-hospital All-cause Mortality in a Large Multicenter Observational Cohort. *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America*, *75*(1), e450–e458. https://doi.org/10.1093/cid/ciab875

Mudatsir, M., Fajar, J. K., Wulandari, L., Soegiarto, G., Ilmawan, M., Purnamasari, Y., Mahdi, B. A., Jayanto, G. D., Suhendra, S., Setianingsih, Y. A., Hamdani, R., Suseno, D. A., Agustina, K., Naim, H. Y., Muchlas, M., Alluza, H. H. D., Rosida, N. A., Mayasari, M., Mustofa, M., … Harapan, H. (2021). Predictors of COVID-19 severity: A systematic review and meta-analysis. *F1000Research*, *9*, 1107. https://doi.org/10.12688/f1000research.26186.2

Mueller, A. A., Tamura, T., Crowley, C. P., DeGrado, J. R., Haider, H., Jezmir, J. L., Keras, G., Penn, E. H., Massaro, A. F., & Kim, E. Y. (2020). Inflammatory Biomarker Trends Predict Respiratory Decline in COVID-19

Patients. *Cell Reports Medicine*, *1*(8), Article 8. https://doi.org/10.1016/j.xcrm.2020.100144

Mulangu, S., Dodd, L. E., Davey, R. T., Tshiani Mbaya, O., Proschan, M., Mukadi, D., Lusakibanza Manzo, M., Nzolo, D., Tshomba Oloma, A., Ibanda, A., Ali, R., Coulibaly, S., Levine, A. C., Grais, R., Diaz, J., Lane, H. C., Muyembe-Tamfum, J.-J., PALM Writing Group, Sivahera, B., … PALM Consortium Study Team. (2019). A Randomized, Controlled Trial of Ebola Virus Disease Therapeutics. *The New England Journal of Medicine*, *381*(24), 2293–2303. https://doi.org/10.1056/NEJMoa1910993

Naaman, R., Jo Rachwan, R., Lopez, D., Khan Hayat, S., & Khan, B. (2021). USE OF SPO2 RECOVERY INDEX FOLLOWING 1-MINUTE SIT-TO-STAND TEST AND READMISSION OUTCOMES IN PATIENTS WITH COVID-19. *Chest*, *160*(4), Article 4. https://doi.org/10.1016/j.chest.2021.07.1909

Nabati, M., & Parsaee, H. (2022). Potential Cardiotoxic Effects of Remdesivir on Cardiovascular System: A Literature Review. *Cardiovascular Toxicology*, *22*(3), Article 3. https://doi.org/10.1007/s12012-021-09703-9

Nadai, M., & Katoh, M. (2013). Changes in pharmacokinetics in elderly patients. *Nihon Rinsho. Japanese Journal of Clinical Medicine*, *71*(6), 999–1003.

Nagai, K. (2021). Dysfunction of natural killer cells in end-stage kidney disease on hemodialysis. *Renal Replacement Therapy*, *7*(1), 8.

Naggie, S., Boulware, D. R., Lindsell, C. J., Stewart, T. G., Slandzicki, A. J., Lim, S. C., Cohen, J., Kavtaradze, D., Amon, A. P., Gabriel, A., Gentile, N., Felker, G. M., Jayaweera, D., McCarthy, M. W., Sulkowski, M., Rothman, R. L., Wilson, S., DeLong, A., Remaly, A., … Passamani, G. (2023). Effect of Higher-Dose Ivermectin for 6 Days vs Placebo on Time to Sustained Recovery in Outpatients With COVID-19: A Randomized Clinical Trial. *JAMA*, *329*(11), Article 11. https://doi.org/10.1001/jama.2023.1650

Nassar, M., Daoud, A., Nso, N., Medina, L., Ghernautan, V., Bhangoo, H., Nyein, A., Mohamed, M., Alqassieh, A., Soliman, K., Alfishawy, M., Sachmechi, I., & Misra, A. (2021). Diabetes Mellitus and COVID-19: Review Article. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, *15*(6), Article 6. https://doi.org/10.1016/j.dsx.2021.102268

National Institute of Allergy and Infectious Diseases (NIAID). (2022). *A Multicenter, Adaptive, Randomized Blinded Controlled Trial of the Safety and Efficacy of Investigational Therapeutics for the Treatment of COVID-19 in Hospitalized Adults* (Clinical Trial Registration NCT04280705). clinicaltrials.gov. https://clinicaltrials.gov/ct2/show/NCT04280705

Olender, S. A., Perez, K. K., Go, A. S., Balani, B., Price-Haywood, E. G., Shah, N. S., Wang, S., Walunas, T. L., Swaminathan, S., Slim, J., Chin, B., De Wit, S., Ali, S. M., Soriano Viladomiu, A., Robinson, P., Gottlieb, R. L., Tsang, T. Y. O., Lee, I.-H., Hu, H., … GS-US-540–5773 and GS-US-540–5807 Investigators. (2021). Remdesivir for Severe Coronavirus Disease 2019 (COVID-19) Versus a Cohort Receiving Standard of Care. *Clinical Infectious Diseases*, *73*(11), Article 11. https://doi.org/10.1093/cid/ciaa1041

Olender, S. A., Walunas, T. L., Martinez, E., Perez, K. K., Castagna, A., Wang, S., Kurbegov, D., Goyal, P., Ripamonti, D., Balani, B., De Rosa, F. G., De Wit, S., Kim, S.-W., Diaz, G., Bruno, R., Mullane, K. M., Lye, D. C., Gottlieb, R. L., Haubrich, R. H., … Boffito, M. (2021). Remdesivir Versus Standard-of-Care for Severe Coronavirus Disease 2019 Infection: An Analysis of 28-Day Mortality. *Open Forum Infectious Diseases*, *8*(7), Article 7. https://doi.org/10.1093/ofid/ofab278

Our World in Data. (n.d.). Our World in Data. Retrieved March 27, 2023, from https://ourworldindata.org

Pan, F., Ye, T., Sun, P., Gui, S., Liang, B., Li, L., Zheng, D., Wang, J., Hesketh, R. L., Yang, L., & Zheng, C. (2020). Time Course of Lung Changes at Chest CT during Recovery from Coronavirus Disease 2019 (COVID-19). *Radiology*, *295*(3), 715–721. https://doi.org/10.1148/radiol.2020200370

Paranga, T. G., Mitu, I., Pavel-Tanasa, M., Rosu, M. F., Miftode, I.-L., Constantinescu, D., Obreja, M., Plesca, C. E., & Miftode, E. (2024). Cytokine Storm in COVID-19: Exploring IL-6 Signaling and Cytokine-Microbiome Interactions as Emerging Therapeutic Approaches. *International Journal of Molecular Sciences*, *25*(21), Article 21. https://doi.org/10.3390/ijms252111411

Park, A., & Iwasaki, A. (2020). Type I and Type III Interferons – Induction, Signaling, Evasion, and Application to Combat COVID-19. *Cell Host & Microbe*, *27*(6), Article 6. https://doi.org/10.1016/j.chom.2020.05.008

Patel, R. H., & Mohiuddin, S. S. (2022). Biochemistry, Histamine. In *StatPearls*. StatPearls Publishing. http://www.ncbi.nlm.nih.gov/books/NBK557790/

Paules, C. I., Gallagher, S. K., Rapaka, R. R., Davey, R. T., Doernberg, S. B., Grossberg, R., Hynes, N. A., Ponce, P. O., Short, W. R., & Voell, J. (2022). Remdesivir for the prevention of invasive mechanical ventilation or death in coronavirus disease 2019 (COVID-19): A post hoc analysis of the Adaptive COVID-19 Treatment Trial-1 cohort data. *Clinical Infectious Diseases*, *74*(7), 1260–1264.

Pecly, I. M. D., Azevedo, R. B., Muxfeldt, E. S., Botelho, B. G., Albuquerque, G. G., Diniz, P. H. P., Silva, R., & Rodrigues, C. I. (2021). COVID-19 and chronic kidney disease: A comprehensive review. *Brazilian Journal of Nephrology*, *43*(3), 383–399.

Petrilli, C. M., Jones, S. A., Yang, J., Rajagopalan, H., O'Donnell, L., Chernyak, Y., Tobin, K. A., Cerfolio, R. J., Francois, F., & Horwitz, L. I. (2020). Factors associated with hospital admission and critical illness among 5279 people with coronavirus disease 2019 in New York City: Prospective cohort study. *BMJ (Clinical Research Ed.)*, *369*, m1966. https://doi.org/10.1136/bmj.m1966

Polivka, L., Gajdacsi, J., Fazekas, L., Sebok, S., Barczi, E., Hidvegi, E., Sutto, Z., Dinya, E., Maurovich-Horvat, P., & Szabo, A. J. (2022). Long-term survival benefit of male and multimorbid COVID-19 patients with 5-day remdesivir treatment. *Journal of Global Health*, *12*, 05031.

Poston, J. T., Patel, B. K., & Davis, A. M. (2020). Management of Critically Ill Adults With COVID-19. *JAMA*, *323*(18), 1839–1841. https://doi.org/10.1001/jama.2020.4914

Ramos-Rincon, J.-M., López-Carmona, M.-D., Cobos-Palacios, L., López-Sampalo, A., Rubio-Rivas, M., Martín-Escalante, M.-D., de-Cossio-Tejido, S., Taboada-Martínez, M.-L., Muiño-Miguez, A., & Areses-Manrique, M. (2022). Remdesivir in very old patients (≥ 80 years) hospitalized with COVID-19: Real world data from the SEMI-COVID-19 registry. *Journal of Clinical Medicine*, *11*(13), 3769.

Raoof, S., Nava, S., Carpati, C., & Hill, N. S. (2020). High-flow, noninvasive ventilation and awake (nonintubation) proning in patients with coronavirus disease 2019 with respiratory failure. *Chest*, *158*(5), 1992–2002.

Razzack, A. A., Hassan, S. A., Pasya, S. K. R., Erasani, G., Kumar, S., Rocha-Castellanos, D. M., Lopez-Mendez, A., & Razzack, S. A. (2021). A Meta-Analysis of Association between Remdesivir and Mortality among Critically-Ill COVID-19 Patients. *Infection & Chemotherapy*, *53*(3), 512–518. https://doi.org/10.3947/ic.2021.0060

RECOVERY Collaborative Group, Horby, P., Lim, W. S., Emberson, J. R., Mafham, M., Bell, J. L., Linsell, L., Staplin, N., Brightling, C., Ustianowski, A., Elmahi, E., Prudon, B., Green, C., Felton, T., Chadwick, D., Rege, K., Fegan, C., Chappell, L. C., Faust, S. N., … Landray, M. J. (2021). Dexamethasone in Hospitalized Patients with Covid-19. *The New England Journal of Medicine*, *384*(8), 693–704. https://doi.org/10.1056/NEJMoa2021436

Rothan, H. A., & Byrareddy, S. N. (2020). The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *Journal of Autoimmunity*, *109*, 102433. https://doi.org/10.1016/j.jaut.2020.102433

Russell, C. D., Lone, N. I., & Baillie, J. K. (2023). Comorbidities, multimorbidity and COVID-19. *Nature Medicine*, *29*(2), Article 2. https://doi.org/10.1038/s41591-022-02156-9

Ryoo, S., Choi, M., Yu, S.-Y., Yoon, Y. K., Huh, K., & Joo, E.-J. (2024). The effects of remdesivir on mortality and the requirement for mechanical ventilation in patients with COVID-19: A systematic review stratified by disease severity. *The Korean Journal of Internal Medicine*, *39*(1), Article 1. https://doi.org/10.3904/kjim.2023.357

Saag, M. S. (2020). Misguided Use of Hydroxychloroquine for COVID-19: The Infusion of Politics Into Science. *JAMA*, *324*(21), Article 21. https://doi.org/10.1001/jama.2020.22389

Saffar, H., Nabati, M., Saffar, N., & Yazdani, J. (2024). Investigating the effects of remdesivir on corrected QT interval in patients with severe COVID-19 disease: A historical cohort study. *BMC Cardiovascular Disorders*, *24*(1), 1–10.

Salvadori, N., Fridman, M., Chiang, M., Chen, L., Wang, C., Lee, E., Fonseca, V., Fusco, D. N., Jourdain, G., & Drouin, A. C. (2024). Real-world evidence of survival benefit of remdesivir: Study of 419 propensity score-matched

patients hospitalized over the alpha and delta waves of COVID-19 in New Orleans, LA. *Frontiers in Medicine*, *11*, 1390164.

Samudrala, P. K., Kumar, P., Choudhary, K., Thakur, N., Wadekar, G. S., Dayaramani, R., Agrawal, M., & Alexander, A. (2020). Virology, pathogenesis, diagnosis and in-line treatment of COVID-19. *European Journal of Pharmacology*, *883*, 173375. https://doi.org/10.1016/j.ejphar.2020.173375

Schaubroeck, H., Vandenberghe, W., Boer, W., Boonen, E., Dewulf, B., Bourgeois, C., Dubois, J., Dumoulin, A., Fivez, T., & Gunst, J. (2022). Acute kidney injury in critical COVID-19: A multicenter cohort analysis in seven large hospitals in Belgium. *Critical Care*, *26*(1), 225.

Secco, G., Salinaro, F., Bellazzi, C., La Salvia, M., Delorenzo, M., Zattera, C., Barcella, B., Resta, F., Vezzoni, G., Bonzano, M., Cappa, G., Bruno, R., Casagranda, I., & Perlini, S. (2021). Can Alveolar-Arterial Difference and Lung Ultrasound Help the Clinical Decision Making in Patients with COVID-19? *Diagnostics*, *11*(5), Article 5. https://doi.org/10.3390/diagnostics11050761

Seiglie, J., Platt, J., Cromer, S. J., Bunda, B., Foulkes, A. S., Bassett, I. V., Hsu, J., Meigs, J. B., Leong, A., Putman, M. S., Triant, V. A., Wexler, D. J., & Manne-Goehler, J. (2020). Diabetes as a Risk Factor for Poor Early Outcomes in Patients Hospitalized With COVID-19. *Diabetes Care*, *43*(12), Article 12. https://doi.org/10.2337/dc20-1506

Sejópoles, M. D., Souza-Silva, J. P., Silva-Santos, C., Paula-Duarte, M. M., Fontes, C. Jf., & Gomes, L. T. (2023). Prognostic value of neutrophil and lymphocyte counts and neutrophil/lymphocyte ratio for predicting death in patients hospitalized for COVID-19. *Heliyon*, *9*(6), Article 6. https://doi.org/10.1016/j.heliyon.2023.e16964

Sharma, A., Jaiswal, P., Kerakhan, Y., Saravanan, L., Murtaza, Z., Zergham, A., Honganur, N.-S., Akbar, A., Deol, A., & Francis, B. (2021). Liver disease and outcomes among COVID-19 hospitalized patients–a systematic review and meta-analysis. *Annals of Hepatology*, *21*, 100273.

Siddiqi, H. K., & Mehra, M. R. (2020). COVID-19 illness in native and immunosuppressed states: A clinical-therapeutic staging proposal. *The Journal of Heart and Lung Transplantation: The Official Publication of the International Society for Heart Transplantation*, *39*(5), 405–407. https://doi.org/10.1016/j.healun.2020.03.012

Simatupang, N. A., Widyaningsih, V., & Sumardiyono, S. (2021). A Meta-Analysis: Correlation between Hypertension of Comorbidity on Mortality in Patients with COVID-19. *Journal of Epidemiology and Public Health*, *6*(1), 60–69.

Slobod, D., Damia, A., Leali, M., Spinelli, E., & Mauri, T. (2022). Pathophysiology and clinical meaning of ventilation-perfusion mismatch in the acute respiratory distress syndrome. *Biology*, *12*(1), 67.

Soetedjo, N. N. M., Iryaningrum, M. R., Damara, F. A., Permadhi, I., Sutanto, L. B., Hartono, H., & Rasyid, H. (2021). Prognostic properties of hypoalbuminemia in COVID-19 patients: A systematic review and

diagnostic meta-analysis. *Clinical Nutrition ESPEN*, *45*, 120–126. https://doi.org/10.1016/j.clnesp.2021.07.003

Spinner, C. D., Gottlieb, R. L., Criner, G. J., Arribas López, J. R., Cattelan, A. M., Soriano Viladomiu, A., Ogbuagu, O., Malhotra, P., Mullane, K. M., Castagna, A., Chai, L. Y. A., Roestenberg, M., Tsang, O. T. Y., Bernasconi, E., Le Turnier, P., Chang, S.-C., SenGupta, D., Hyland, R. H., Osinusi, A. O., … GS-US-540-5774 Investigators. (2020). Effect of Remdesivir vs Standard Care on Clinical Status at 11 Days in Patients With Moderate COVID-19: A Randomized Clinical Trial. *JAMA*, *324*(11), 1048–1057. https://doi.org/10.1001/jama.2020.16349

Stefan, N., Birkenfeld, A. L., & Schulze, M. B. (2021). Global pandemics interconnected—Obesity, impaired metabolic health and COVID-19. *Nature Reviews Endocrinology*, *17*(3), Article 3. https://doi.org/10.1038/s41574-020-00462-1

Tan, Q., Duan, L., Ma, Y., Wu, F., Huang, Q., Mao, K., Xiao, W., Xia, H., Zhang, S., Zhou, E., Ma, P., Song, S., Li, Y., Zhao, Z., Sun, Y., Li, Z., Geng, W., Yin, Z., & Jin, Y. (2020). Is oseltamivir suitable for fighting against COVID-19: In silico assessment, in vitro and retrospective study. *Bioorganic Chemistry*, *104*, 104257. https://doi.org/10.1016/j.bioorg.2020.104257

Tan-Lim, C. S. C., & Esteban-Ipac, N. A. R. (2024). Among Patients with COVID-19, should Remdesivir be Used for Treatment? A Systematic Review and Meta-analysis. *Acta Medica Philippina*, *58*(14), 50.

Tasavon Gholamhoseini, M., Yazdi-Feyzabadi, V., Goudarzi, R., & Mehrolhassani, M. H. (2021). Safety and Efficacy of Remdesivir for the Treatment of COVID-19: A Systematic Review and Meta-Analysis. *Journal of Pharmacy & Pharmaceutical Sciences: A Publication of the Canadian Society for Pharmaceutical Sciences, Societe Canadienne Des Sciences Pharmaceutiques*, *24*, 237–245. https://doi.org/10.18433/jpps31870

Tavazzi, G., Civardi, L., Caneva, L., Mongodi, S., & Mojoli, F. (2020). Thrombotic events in SARS-CoV-2 patients: An urgent call for ultrasound screening. *Intensive Care Medicine*, *46*(6), 1121–1123. https://doi.org/10.1007/s00134-020-06040-3

Tempestilli, M., Caputi, P., Avataneo, V., Notari, S., Forini, O., Scorzolini, L., Marchioni, L., Ascoli Bartoli, T., Castilletti, C., & Lalle, E. (2020). Pharmacokinetics of remdesivir and GS-441524 in two critically ill patients who recovered from COVID-19. *Journal of Antimicrobial Chemotherapy*, *75*(10), 2977–2980.

Thampy, A., Singh, B., Alexander, H., Zacchaeus, N. G. P., Mathew, J. L., Tharyan, P., & Rupali, P. (2025). Efficacy and Safety of Remdesivir for the Treatment of Patients with COVID-19: A Systematic Review. *Current Medical Issues*, *23*(2), 119–128.

The Indonesian Food and Drug Authority. (n.d.). Retrieved March 9, 2023, from https://www.pom.go.id/new/admin/dat/20201203/Informatorium_COVID-19_Indonesian_FDA_(english_version)_edit.pdf

Tong, S., Su, Y., Yu, Y., Wu, C., Chen, J., Wang, S., & Jiang, J. (2020). Ribavirin therapy for severe COVID-19: A retrospective cohort study. *International Journal of Antimicrobial Agents*, *56*(3), Article 3. https://doi.org/10.1016/j.ijantimicag.2020.106114

Tran, M., & Elbarbry, F. (2016). Influence of diabetes mellitus on pharmacokinetics of drugs. *MOJ Bioequiv Availab*, *2*(1), 00016.

Usman, E., & Katar, Y. (2023). The role of age and comorbidities on the outcome of confirmed clinically critical COVID-19 patients treated with remdesivir at Indonesia's national referral hospital. *African Journal of Infectious Diseases*, *17*(1), 55–59.

Vaduganathan, M., Vardeny, O., Michel, T., McMurray, J. J., Pfeffer, M. A., & Solomon, S. D. (2020). Renin–angiotensin–aldosterone system inhibitors in patients with Covid-19. *New England Journal of Medicine*, *382*(17), 1653–1659.

Varga, Z., Flammer, A. J., Steiger, P., Haberecker, M., Andermatt, R., Zinkernagel, A. S., Mehra, M. R., Schuepbach, R. A., Ruschitzka, F., & Moch, H. (2020). Endothelial cell infection and endotheliitis in COVID-19. *The Lancet*, *395*(10234), 1417–1418.

Veronese, N., Di Gennaro, F., Frallonardo, L., Ciriminna, S., Papagni, R., Carruba, L., Agnello, D., De Iaco, G., De Gennaro, N., & Di Franco, G. (2024). Real life experience on the use of Remdesivir in patients admitted to COVID-19 in two referral Italian hospital: A propensity score matched analysis. *Scientific Reports*, *14*(1), 9303.

Wang, Y., Zhang, D., Du, G., Du, R., Zhao, J., Jin, Y., Fu, S., Gao, L., Cheng, Z., Lu, Q., Hu, Y., Luo, G., Wang, K., Lu, Y., Li, H., Wang, S., Ruan, S., Yang, C., Mei, C., … Wang, C. (2020). Remdesivir in adults with severe COVID-19: A randomised, double-blind, placebo-controlled, multicentre trial. *The Lancet*, *395*(10236), 1569–1578. https://doi.org/10.1016/S0140-6736(20)31022-9

Ward, P., Small, I., Smith, J., Suter, P., & Dutkowski, R. (2005). Oseltamivir (Tamiflu) and its potential for use in the event of an influenza pandemic. *The Journal of Antimicrobial Chemotherapy*, *55 Suppl 1*, i5–i21. https://doi.org/10.1093/jac/dki018

Wargny, M., Potier, L., Gourdy, P., Pichelin, M., Amadou, C., Benhamou, P.-Y., Bonnet, J.-B., Bordier, L., Bourron, O., & Chaumeil, C. (2021). Predictors of hospital discharge and mortality in patients with diabetes and COVID-19: Updated results from the nationwide CORONADO study. *Diabetologia*, *64*(4), 778–794.

WHO Solidarity Trial Consortium. (2021). Repurposed antiviral drugs for Covid-19—Interim WHO solidarity trial results. *New England Journal of Medicine*, *384*(6), 497–511.

WHO Working Group on the Clinical Characterisation and Management of COVID-19 infection. (2020). A minimal common outcome measure set for COVID-19 clinical research. *The Lancet. Infectious Diseases*, *20*(8), e192–e197. https://doi.org/10.1016/S1473-3099(20)30483-7

WHOa. (2021). *Coronavirus disease (COVID-19).* https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19

WHOb. (n.d.). *WHO Coronavirus (COVID-19) Dashboard*. Retrieved March 23, 2023, from https://covid19.who.int

WHOb. (2021). *Coronavirus disease (COVID-19): Variants of SARS-COV-2*. https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-variants-of-sars-cov-2

WHOc. (2022). *Safety and monitoring in patients receiving remdesivir for COVID-19*. https://www.who.int/publications-detail-redirect/WHO-2019-nCoV-Therapeutics-Remdesivir-Poster_C-2022.1

Wishart, D. S., Feunang, Y. D., Guo, A. C., Lo, E. J., Marcu, A., Grant, J. R., Sajed, T., Johnson, D., Li, C., Sayeeda, Z., Assempour, N., Iynkkaran, I., Liu, Y., Maciejewski, A., Gale, N., Wilson, A., Chin, L., Cummings, R., Le, D., … Wilson, M. (2018). DrugBank 5.0: A major update to the DrugBank database for 2018. *Nucleic Acids Research*, *46*(D1), D1074–D1082. https://doi.org/10.1093/nar/gkx1037

World Health Organization. (2023). Clinical management of COVID-19: Living guideline, 18 August 2023. In *Clinical management of COVID-19: Living guideline, 18 August 2023*.

Wrapp, D., Wang, N., Corbett, K. S., Goldsmith, J. A., Hsieh, C.-L., Abiona, O., Graham, B. S., & McLellan, J. S. (2020). Cryo-EM structure of the 2019-nCoV spike in the prefusion conformation. *Science (New York, N.Y.)*, *367*(6483), 1260–1263. https://doi.org/10.1126/science.abb2507

Wu, C., Chen, X., Cai, Y., Xia, J., Zhou, X., Xu, S., Huang, H., Zhang, L., Zhou, X., Du, C., Zhang, Y., Song, J., Wang, S., Chao, Y., Yang, Z., Xu, J., Zhou, X., Chen, D., Xiong, W., … Song, Y. (2020). Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China. *JAMA Internal Medicine*, *180*(7), Article 7. https://doi.org/10.1001/jamainternmed.2020.0994

Xie, J., Covassin, N., Fan, Z., Singh, P., Gao, W., Li, G., Kara, T., & Somers, V. K. (2020). *Association between hypoxemia and mortality in patients with COVID-19*. *95*(6), 1138–1147.

Zhang, C., Shi, L., & Wang, F.-S. (2020). Liver injury in COVID-19: Management and challenges. *The Lancet. Gastroenterology & Hepatology*, *5*(5), 428–430. https://doi.org/10.1016/S2468-1253(20)30057-1

Zhang, L., Jiang, F., Xie, Y., Mo, Y., Zhang, X., & Liu, C. (n.d.). *Diabetic endothelial microangiopathy and pulmonary dysfunction. Front Endocrinol (Lausanne). 2023; 14: 1073878.*

Zheng, Y.-Y., Ma, Y.-T., Zhang, J.-Y., & Xie, X. (2020). COVID-19 and the cardiovascular system. *Nature Reviews. Cardiology*, *17*(5), 259–260. https://doi.org/10.1038/s41569-020-0360-5

Zhou, L., Wang, J., Liu, G., Lu, Q., Dong, R., Tian, G., Yang, J., & Peng, L. (2020). Probing antiviral drugs against SARS-CoV-2 through virus-drug association prediction based on the KATZ method. *Genomics*, *112*(6), 4427. https://doi.org/10.1016/j.ygeno.2020.07.044

Zucker, I. H., Xiao, L., & Haack, K. K. (2014). The central renin–angiotensin system and sympathetic nerve activity in chronic heart failure. *Clinical Science*, *126*(10), 695–706.