DAFTAR PUSTAKA

Abdeen, Y., Kaako, A., Ahmad Amin, Z., Muhanna, A., Josefine Froessl, L., Alnabulsi, M., … Miller, R. A. (2021). The Prognostic Effect of Serum Albumin Level on Outcomes of Hospitalized COVID-19 Patients. *Crit Care Res Pract*, *2021*, 1–6.

Açıksarı, G., Koçak, M., Çağ, Y., Altunal, L. N., Atıcı, A., Çelik, F. B., … Çalışkan, M. (2021). Prognostic Value of Inflammatory Biomarkers in Patients with Severe COVID-19: A Single-Center Retrospective Study. *Biomark Insights*, *16*, 1–8.

Afifah, A. R., Liana, P., Fertilita, S., Salim, N. A., Verdiansah, Hilda, F., … Umar, T. P. (2023). C-Reactive Protein as The Predictor of Mortality for COVID-19 Patients in Indonesia. *IJCPML*, *29*(2), 180–184.

Aghamirza Moghim Aliabadi, H., Eivazzadeh- Keihan, R., Beig Parikhani, A., Fattahi Mehraban, S., Maleki, A., Fereshteh, S., … Mozafari, M. (2022). COVID- 19: A systematic review and update on prevention, diagnosis, and treatment. *MedComm*, *3*(1), 1–42.

Akbari, P., Vuckovic, D., Stefanucci, L., Jiang, T., Kundu, K., Kreuzhuber, R., … Astle, W. J. (2023). A genome-wide association study of blood cell morphology identifies cellular proteins implicated in disease aetiology. *Nat Commun*, *14*(1), 1–19.

Al Aamri, Z., Zadjali, F., Al-Riyami, N., Al Lawati, F., Al Dowaiki, S., & Al Kindi, M. (2022). Biochemical, Hematological, and Immunological Biomarkers as Predictors for Intensive Care Unit Admission in Patients with COVID-19. *Oman Med J*, *37*(6), 1–8.

Ali Afzal, Sara Shahzaman, Arwa Azam, Usman Ghani, Muhammad Babar Khawar, Nimra Afzal, … Rimsha Naseem. (2023). Hypoalbuminemia in COVID-19: Molecular and Mechanistic Approach. *Albus Scientia*, *2023*(1), 1–11.

Amini, M. A., Karimi, J., Talebi, S. S., & Piri, H. (2022). The Association of COVID-19 and Reactive Oxygen Species Modulator 1 (ROMO1) with Oxidative Stress. *Chonnam Med J*, *58*(1), 1.

Arish, M., Qian, W., Narasimhan, H., & Sun, J. (2023). COVID- 19 immunopathology: From acute diseases to chronic sequelae. *J Med Virol*, *95*(1).

Atef, M., Eid, H., Amin, M., Shehata, M., Shaarawy, A., Nabawy, O., … Kabil, A. (2023). Assessment of C-reactive protein levels as an indicator for lung infiltrates in patients with COVID-19 pneumonia. *J Med Life*, *16*(7), 1028–

1031.

Aziz, M., Fatima, R., Lee-Smith, W., & Assaly, R. (2020). The association of low serum albumin level with severe COVID-19: a systematic review and meta-analysis. *Crit Care, 24*(1), 255.

Bhattacharya, M., Chatterjee, S., Sharma, A. R., Lee, S.-S., & Chakraborty, C. (2023). Delta variant (B.1.617.2) of SARS-CoV-2: current understanding of infection, transmission, immune escape, and mutational landscape. *Folia Microbiol, 68*(1), 17–28.

Bivona, G., Agnello, L., & Ciaccio, M. (2021). Biomarkers for Prognosis and Treatment Response in COVID-19 Patients. *Ann Lab Med, 41*(6), 540–548.

Campos Munoz A, Jain NK, G. M. (2024). Albumin Colloid. Diambil 30 Juli 2024, dari https://www.ncbi.nlm.nih.gov/books/NBK534241/

Cardone, M., Yano, M., Rosenberg, A. S., & Puig, M. (2020). Lessons Learned to Date on COVID-19 Hyperinflammatory Syndrome: Considerations for Interventions to Mitigate SARS-CoV-2 Viral Infection and Detrimental Hyperinflammation. *Front Immunol*, *11*(5), 1-9.

Carvajal, J. J., García-Castillo, V., Cuellar, S. V., Campillay-Véliz, C. P., Salazar-Ardiles, C., Avellaneda, A. M., … Lay, M. K. (2024). New insights into the pathogenesis of SARS-CoV-2 during and after the COVID-19 pandemic. *Front Immunol, 15*.

Chen, C., Zhang, Y., Zhao, X., Tao, M., Yan, W., & Fu, Y. (2021). Hypoalbuminemia – An Indicator of the Severity and Prognosis of COVID-19 Patients: A Multicentre Retrospective Analysis. *Infect Drug Resist*, *14*, 3699–3710.

Chen, J., Chen, L., Quan, H., Lee, S., Khan, K. F., Xie, Y., … Xie, Y. (2024). A Comparative Analysis of SARS-CoV-2 Variants of Concern (VOC) Spike Proteins Interacting with hACE2 Enzyme. *Int J Mol Sci*, *25*(15), 8032.

Chume, F. C., Correa Freitas, P. A., Schiavenin, L. G., Sgarioni, E., Leitao, C. B., & Camargo, J. L. (2024). Glycated albumin in the detection of diabetes during COVID-19 hospitalization. *PLoS ONE*, *19*(3), 1-12.

Cocherie, T., Zafilaza, K., Leducq, V., Marot, S., Calvez, V., Marcelin, A.-G., & Todesco, E. (2022). Epidemiology and Characteristics of SARS-CoV-2 Variants of Concern: The Impacts of the Spike Mutations. *Microorganisms*, *30*(11), 1-13.

Dahlan, M. S. (2019). *Besar sampel dalam penelitian kedokteran dan kesehatan (5th ed.)*, Jakarta: Salemba Medika.

Damar Çakırca, T., Çakırca, G., Torun, A., Bindal, A., Üstünel, M., & Kaya, A.

(2023). Comparing the predictive values of procalcitonin/albumin ratio and other inflammatory markers in determining COVID-19 severity. *Pak J Med Sci*, *39*(2), 450-455.

De Rop, L., Bos, D. A., Stegeman, I., Holtman, G., Ochodo, E. A., Spijker, R., … Verbakel, J. Y. (2024). Accuracy of routine laboratory tests to predict mortality and deterioration to severe or critical COVID-19 in people with SARS-CoV-2. *Cochrane Database Syst Rev*, *2024*(8).

Fazal, M. (2021). C-Reactive Protein a Promising Biomarker of COVID-19 Severity. *Korean J Clin Lab Sci*, *53*(3), 201–207.

Feng, J., Wang, L., Yang, X., & Chen, Q. (2024). Clinical significance of preoperative CALLY index for prognostication in patients with esophageal squamous cell carcinoma undergoing surgery. *Sci Rep*, *14*(1), 713.

Filípek, J., & Illek, J. (2020). Serum albumin assay – Easy or problematic analysis? *Acta Vet Brno*, *89*(4), 301–305.

Garbo, R., Valent, F., Gigli, G. L., & Valente, M. (2022). Pre-Existing Lymphopenia Increases the Risk of Hospitalization and Death after SARS-CoV-2 Infection. *Infect Dis Rep*, *14*(1), 20–25.

Gremese, E., Bruno, D., Varriano, V., Perniola, S., Petricca, L., & Ferraccioli, G. (2023). Albumin: A Biomarker to Be Repurposed. *J Clin Med*, *12*(18), 1-12.

Hedayati-ch, M., & Ebrahim-saraie, H. S. (2024). Clinical and immunological comparison of COVID-19 disease between critical and non-critical courses : a systematic review and meta-analysis. *Front Immunol*, (4), 1–10.

Hopkins, F. R., Nordgren, J., Fernandez-botran, R., Enocsson, H., Govender, M., Svanberg, C., … Nilsdotter-augustinsson, Å. (2023). Pentameric C-reactive protein is a better prognostic biomarker and remains elevated for longer than monomeric CRP in hospitalized patients with COVID-19. *Front Immunol*, (9), 1–7.

Iida, H., Tani, M., Komeda, K., Nomi, T., Matsushima, H., Tanaka, S., … Kubo, S. (2022). Superiority of CRP-albumin-lymphocyte index (CALLY index) as a non-invasive prognostic biomarker after hepatectomy for hepatocellular carcinoma. *Hpb*, *24*(1), 101–115.

Jin, Y., Ji, W., Yang, H., Chen, S., Zhang, W., & Duan, G. (2020). Endothelial activation and dysfunction in COVID-19: from basic mechanisms to potential therapeutic approaches. *Signal Transduct Target Ther*, *5*(1), 293.

Kementerian Kesehatan RI. 2020. *Pedoman Pencegahan dan Pengendalian Coronavirus Disease (COVID- 19)*. Jakarta: Kemenkes RI (Vol. 1).

Kementerian Kesehatan RI. 2020. *Keputusan Menteri Kesehatan Republik*

Indonesia No. HK.01.07/MENKES/446/2020 Tentang Petunjuk Teknis Klaim Penggantian Biaya Pelayanan Pasien Penyakit Infeksi Emerging Tertentu bagi Rumah Sakit yang Menyelenggarakan Pelayanan Corona Virus Disease 2019 (COVID-19). Jakarta: Menteri Kesehatan RI.

Kementerian Kesehatan RI. 2021. *Keputusan Menteri Kesehatan Republik Indonesia No. HK.01.07/MENKES/5671/2021 Tentang Manajemen Klinis Tata Laksana Corona Virus Disease 2019 (COVID-19) di Fasilitas Pelayanan Kesehatan*. Jakarta: Menteri Kesehatan RI.

Kheir, M., Saleem, F., Wang, C., Mann, A., & Chua, J. (2021). Higher albumin levels on admission predict better prognosis in patients with confirmed COVID-19. *PLOS ONE*, *16*(3), 1-10.

Kumar, R., Yeni, C. M., Utami, N. A., Masand, R., Asrani, R. K., Patel, S. K., … Dhama, K. (2021). SARS-CoV-2 infection during pregnancy and pregnancy-related conditions: Concerns, challenges, management and mitigation strategies–a narrative review. *J Infect Public Health*, *14*(7), 863–875.

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

Li, X., Mi, Z., Liu, Z., & Rong, P. (2024). SARS-CoV-2: pathogenesis, therapeutics, variants, and vaccines. *Front Microbiol*, *15*, 1-16.

Luan, Y., Yin, C., & Yao, Y. (2021). Update Advances on C-Reactive Protein in COVID-19 and Other Viral Infections. *Front Immunol*, *12*(8), 1–10.

Ma, R., Okugawa, Y., Shimura, T., Yamashita, S., Sato, Y., Yin, C., … Toiyama, Y. (2024). Clinical implications of C-reactive protein–albumin–lymphocyte (CALLY) index in patients with esophageal cancer. *Surg Oncol*, *53*(2), 102044.

Monika, A. (2021). *Uji biuret*. Banda Aceh: Universitas Syiah Kuala.

Mouliou, D. S. (2023). C-Reactive Protein: Pathophysiology, Diagnosis, False Test Results and a Novel Diagnostic Algorithm for Clinicians. *Diseases, 11*(4), 132.

Mutlucan, U., Selvi, F., Bedel, C., Zortuk, Ö., Türk, C. cağrı, & Korkut, M. (2024). Use of CALLY index to predict aneurysmal subarachnoid hemorrhage patient outcome. *Neurol Asia*, *29*(1), 53–59.

Nar, R., & Emekli, D. I. (2017). The Evaluation of Analytical Performance of Immunoassay Tests by Using Six-Sigma Method. *J Med Biochem*, *36*(4), 301–308.

Ning, Q., Wu, D., Wang, X., Xi, D., Chen, T., Chen, G., … Luo, X. (2022). The mechanism underlying extrapulmonary complications of the coronavirus

disease 2019 and its therapeutic implication. *Signal Transduct Target Ther*, *7*(1), 57.

Olson, M. E., Hornick, M. G., Stefanski, A., Albanna, H. R., Gjoni, A., Hall, D., … Potempa, L. A. (2023). A biofunctional review of C-reactive protein (CRP) as a mediator of in fl ammatory and immune responses : differentiating pentameric and modi fi ed CRP isoform effects. *Front Immunol*, (9), 1–11.

Özdemir, S., & Özkan, A. (2023). The Importance of the CALLY Index as a Non-Invasive Prognostic Biomarker in SARS-CoV-2 Infected Patients: An Analytical Study. *Med Sci Discover*, *10*(7), 443–448.

Pan, Y., Wu, T. T., Deng, C. J., Jiang, Z. H., Yang, Y., Hou, X. G., … Xie, X. (2024). Association between the C-Reactive Protein-Albumin-Lymphocyte (CALLY) Index and Adverse Clinical Outcomes in CAD Patients after PCI: Findings of a Real-World Study. *Rev Cardiovasc Med*, *25*(4), 111.

Paranga, T. G., Pavel-Tanasa, M., Constantinescu, D., Plesca, C. E., Petrovici, C., Miftode, I. L., … Miftode, E. G. (2023). Comparison of C-reactive protein with distinct hyperinflammatory biomarkers in association with COVID-19 severity, mortality and SARS-CoV-2 variants. *Front Immunol*, *14*(6), 1–22.

Patel, S. V, Pathak, J. M., Parikh, R. J., Pandya, K. J., Kothari, P. B., & Patel, A. (2024). Association of Inflammatory Markers With Disease Progression and the Severity of COVID-19. *Cureus*, 16(2), 1-8.

Perrine Cria; Hall Aron. (2024). COVID 19. Diambil 16 Juni 2024, dari https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/covid-19.

Plebani, M. (2023). Why C-reactive protein is one of the most requested tests in clinical laboratories ? *Clin Chem Lab Med (CCLM)*, *61*(9), 1540–1545.

Pohanka, M. (2022). Diagnoses Based on C-Reactive Protein Point-of-Care Tests. *Biosensors*, *12*(5), 344.

Polatoğlu, I., Oncu- Oner, T., Dalman, I., & Ozdogan, S. (2023). COVID- 19 in early 2023: Structure, replication mechanism, variants of SARS- CoV- 2, diagnostic tests, and vaccine & drug development studies. *MedComm*, *4*(2), 1-28.

Profil Kesehatan Kota Yogyakarta. (2022). Profil Kesehatan Kota Yogyakarta Tahun 2022. *Jurnal Kajian Ilmu Administrasi Negara*, *107*(38), 107–126.

Punzalan, F. E. R., Aherrera, J. A. M., de Paz-Silava, S. L. M., Mondragon, A. V., Malundo, A. F. G., Tan, J. J. E., … Alejandria, M. M. (2023). Utility of laboratory and immune biomarkers in predicting disease progression and mortality among patients with moderate to severe COVID-19 disease at a Philippine tertiary hospital. *Front Immunol*, *14*(2), 1–13.

Qian, F.-H., Liu, Y.-X., Cao, Y., Huang, J., & Zhu, R.-H. (2024). Biomarker of severity in hospitalised patients with COVID-19: a retrospective study. *BMJ Open*, *14*(7), 1-7.

Qin, R., He, L., Yang, Z., Jia, N., Chen, R., Xie, J., … Li, J. (2023). Identification of Parameters Representative of Immune Dysfunction in Patients with Severe and Fatal COVID-19 Infection: a Systematic Review and Meta-analysis. *Clin Rev Allergy Immunol 64*(1), 33-65.

Rahali, F. Z., Mimouni, N., Boukhira, A., & Chellak, S. (2024). The Clinical Utility of Standard and High-Sensitivity C-Reactive Protein: A Narrative Review. *SN Compr Clin Med*, *6*(65).

Sadeghi-Haddad-Zavareh, M., Bayani, M., Shokri, M., Ebrahimpour, S., Babazadeh, A., Mehraeen, R., … Javanian, M. (2021). C-Reactive Protein as a Prognostic Indicator in COVID-19 Patients. *Interdiscip Perspect Infect Dis*, *2021*, 1–5.

Sheriff, A., Kayser, S., Brunner, P., & Vogt, B. (2021). C-Reactive Protein Triggers Cell Death in Ischemic Cells. *Front Immunol*, *12*(2), 1–8.

Shouman, S., El-Kholy, N., Hussien, A. E., El-Derby, A. M., Magdy, S., Abou-Shanab, A. M., … El-Badri, N. (2024). SARS-CoV-2-associated lymphopenia: possible mechanisms and the role of CD147. *Cell Comm Signal*, *22*(1), 349.

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. *Clin Nutr ESPEN*, *45*(2021), 120–126.

Steiner, S., Kratzel, A., Barut, G. T., Lang, R. M., Aguiar Moreira, E., Thomann, L., … Thiel, V. (2024). SARS-CoV-2 biology and host interactions. *Nat Rev Microbiol*, *22*(4), 206–225.

Tarzimanova, A., Bragina, A., Pokrovskaya, A., Ivannikov, A., Sokolova, E., Cherkesov, I., … Podzolkov, V. (2024). Significance of Hypoalbuminemia in the Development of Thromboembolic Complications in Severe Cases of SARS-CoV-2 Coronavirus Infection. *J Clin Med Res*, *16*(4), 164–169.

Tsai, Y.-T., Ko, C.-A., Chen, H.-C., Hsu, C.-M., Lai, C.-H., Lee, Y.-C., … Fang, K.-H. (2022). Prognostic Value of CRP-Albumin-Lymphocyte (CALLY) Index in Patients Undergoing Surgery for Oral Cavity Cancer. *J Cancer*, *13*(10), 3000–3012.

Utariani, A., Hamzah, H., Semedi, B. P., & Wijaya, M. G. S. (2023). The impact of hypoalbuminemia and its correlation with D-dimer and IL-6 on severity and 14-day mortality in COVID-19 patients. *Anaesth, Pain Intensive Care*, *27*(5),

440–450.

Varghese, P. M., Tsolaki, A. G., Yasmin, H., Shastri, A., Ferluga, J., Vatish, M., … Kishore, U. (2020). Host-pathogen interaction in COVID-19: Pathogenesis, potential therapeutics and vaccination strategies. *Immunobiol*, *225*(6), 152008.

Varricchio, R., De Simone, G., Vita, G. M., Nocera Cariola, W., Viscardi, M., Brandi, S., … di Masi, A. (2024). Human serum albumin binds spike protein and protects cells from SARS-CoV-2 infection by modulating the RAS pathway. *Aspect Mol Med*, *3*(10), 100033.

Viana-Llamas, M. C., Arroyo-Espliguero, R., Silva-Obregón, J. A., Uribe-Heredia, G., Núñez-Gil, I., García-Magallón, B., … Domínguez-López, J. (2021). Hypoalbuminemia on admission in COVID-19 infection: An early predictor of mortality and adverse events. A retrospective observational study. *Med Clin*, *156*(9), 428–436.

Walls, A. C., Park, Y.-J., Tortorici, M. A., Wall, A., McGuire, A. T., & Veesler, D. (2020). Structure, Function, and Antigenicity of the SARS-CoV-2 Spike Glycoprotein. *Cell*, *181*(2), 281-292.

Wang, D., Gao, Y., Lai, Q., Wu, D., Liu, H., Meng, H., … Fei, D. (2024). Dynamic lymphocyte-CRP ratio as a predictor : a single-centre retrospective study on disease severity and progression in adult COVID-19 patients. *J Int Med Res*. *52*(3), 1-11.

WHO. (2020). Transmission of SARS-CoV-2: implications for infection prevention precautions. Diambil 30 Juli 2024, dari https://www.who.int/news-room/commentaries/detail/transmission-of-sars-cov-2-implications-for-infection-prevention-precautions.

Wolff, D., Nee, S., Hickey, N. S., & Marschollek, M. (2021). Risk factors for Covid-19 severity and fatality: a structured literature review. *Infection*, *49*(1), 15–28.

World Health Organization (WHO). 2020. Transmisi SARS-CoV-2 : implikasi terhadap kewaspadaan pencegahan infeksi. Jakarta: *World Health Organization (WHO)*, 1–10.

Xiao, B., Yang, Z., Liang, H., Han, Y., Wu, Y., Xiao, J., & Bi, Y. (2024). Predictive value of D-dimer to albumin ratio for severe illness and mortality in patients with COVID-19. *Front Med*, *11*(7), 1–10.

Xu, J. F., Yang, Y. S., Jiang, A. Q., & Zhu, H. L. (2022). Detection Methods and Research Progress of Human Serum Albumin. *Crit Rev Anal Chem*, *52*(1), 72–92.

Xu, Z., Tang, J., Xin chen, Jin, Y., Zhang, H., & Liang, R. (2024). Associations of

C-reactive protein-albumin-lymphocyte (CALLY) index with cardiorenal syndrome: Insights from a population-based study. *Heliyon*, *10*(17), 1-9.

Yang, L., Jin, J., Luo, W., Gan, Y., Chen, B., & Li, W. (2020). Risk factors for predicting mortality of COVID-19 patients: A systematic review and meta-analysis. *PLOS ONE*, *15*(11), 1-11.

Zaher, K., Basingab, F., Alrahimi, J., Basahel, K., & Aldahlawi, A. (2023). Gender Differences in Response to COVID-19 Infection and Vaccination. *Biomedicines*, *11*(6), 1677.

Zhang, C., Tan, Z., & Tian, F. (2020). Impaired consciousness and decreased glucose concentration of CSF as prognostic factors in immunocompetent patients with cryptococcal meningitis. *BMC Infectious Diseases*, *20*(1), 1–6.

Zhang, H., Sun, Y., Wang, Y., Yazici, D., Azkur, D., Ogulur, I., … Gao, Y. (2023). Recent developments in the immunopathology of COVID - 19. *Allergy*, *78*(2), 369–388.

Zhang, J., Zhao, Q., Liu, S., Yuan, N., & Hu, Z. (2024). Clinical predictive value of the CRP-albumin-lymphocyte index for prognosis of critically ill patients with sepsis in intensive care unit: a retrospective single-center observational study. *Front Public Health*, *12*(5), 1-18.

Zhu, D., Lin, Y. D., Yao, Y. Z., Qi, X. J., Qian, K., & Lin, L. Z. (2024). Negative association of C-reactive protein-albumin-lymphocyte index (CALLY index) with all-cause and cause-specific mortality in patients with cancer: results from NHANES 1999–2018. *BMC Cancer*, *24*(1), 1499.

Zhu, Y., Sharma, L., & Chang, D. (2023). Pathophysiology and clinical management of coronavirus disease (COVID-19): a mini-review. *Front Immunol*, *14*(14), 1-13.

Zinatizadeh, M. R., Zarandi, P. K., Ghiasi, M., Kooshki, H., Mohammadi, M., Amani, J., & Rezaei, N. (2023). Immunosenescence and inflamm-ageing in COVID-19. *Ageing Res Rev*, *84*(2023), 101818.

Zsichla, L., & Müller, V. (2023). Risk Factors of Severe COVID-19: A Review of Host, Viral and Environmental Factors. *Viruses*, *15*(1), 175.