

DAFTAR PUSTAKA

- Abubakar A, Malik M, Pebody R, Elkholy A, Khan W, Bellos A, *et al.* 2016. Burden of acute respiratory disease of epidemic and pandemic potential in the WHO Eastern Mediterranean Region: A literature review. *East Mediterr Health J.* 2;22(7):513-26.
- Acar E, Gokcen H, Demir A, *et al.* 2021. Comparison of inflammation markers with prediction scores in patients with community-acquired pneumonia. *Bratisl Lek Listy.* 122(6): 418–423, doi: 10.4149/BLL_2021_069, indexed in *Pubmed*: 34002616.
- Ahkee S, Srinath L, Ramirez J. 1997. Community-acquired pneumonia in the elderly: Association of mortality with lack of fever and leukocytosis. *South Med J*;90:296– 298.
- AlBarrak Ali, Alotaibib Badriah, Yassi Yara, Mushib Abdulaziz, Maashib Fuad, *et al.* 2018. Proportion of adult community-acquired pneumonia cases attributable to *Streptococcus pneumoniae* among Hajj pilgrims in 2016. International Society for Infectious Diseases. *Elsevier Ltd.* <http://creativecommons.org/licenses/by-nc-nd/4.0>.
- Aldossari Mae, Aljoudi Abdullah, Celentano David. 2019. Health issues in the Hajj pilgrimage: a literature review. *ast Mediterr Health J* ;25(10):744–753.
- Al-Ghamdi SM, Akbar HO, Qari YA, Fathaldin OA, Al-Rashed RS. 2003. Pattern of admission to hospitals during muslim pilgrimage (Hajj). *Saudi Med J*; **24**: 1073–76.
- Almirall, J., Rofes, L., Serra-Prat, M., Icart, R., Palomera, E., *et al.* 2013. Oropharyngeal dysphagia is a risk factor for community-acquired pneumonia in the elderly. *Eur Respir J* 41: 923-928.
- Alshahwan SI, Alsowailmi G, Alsahli A, Alotaibi A, *et al.* 2019. The prevalence of complications of pneumonia among adults admitted to a tertiary care center in Riyadh from 2010-2017. *Ann Saudi Med*;39(1):29-36. doi: 10.5144/0256-4947.2019.29. PMID: 30712048; PMCID: PMC6464674.
- Alvarado Lagunas, Huesca Mijangos, González Terán, Alvarado Lagunas, *et al.* 2017. Systemic immune inflammatory index in sepsis. *Medicina Interna de México*: 33(3):303-309.

- Alzeer A, Mashlah A, Fakim N, *et al.* 1998. Tuberculosis is the commonest cause of pneumonia requiring hospitalization during hajj (pilgrimage to Mekah). *J Infect*; **36**: 303–06.
- Antonella F. Simonetti, Diego Viasus, Carolina Garcia-Vidal, Jordi Carratala. 2014. Management of community-acquired pneumonia in older adults. *Therapeutic Advances in Infectious Disease*. <http://tai.sagepub.com>.
- Ardiana M, Paramitha A.D, Shabrina F.A. Harsoyo P.M. 2023. Risk Factors of Hospitalization and Mortality among Hajj Pilgrims in Indonesia. *Research Square*. DOI: <https://doi.org/10.21203/rs.3.rs-2926477/v1>
- Asghar AH, Ashshi AM, Azhar EI, Bukhari SZ, Zafar TA, Momenah AM. 2011. Profile of bacterial pneumonia during Hajj - *PubMed*. *Indian J Med Res*;133(5):510-513.
- Aswardi. 2023. Berhaji dan Lansia. Kementerian Kesehatan Republik Indonesia. <https://ayosehat.kemkes.go.id/berhaji-dan-lansia>.
- Bahlis LF, Diogo LP, Fuchs SC. 2021. Charlson Comorbidity Index and other predictors of in-hospital mortality among adults with community-acquired pneumonia. *J Bras Pneumol* :24;47(1):e20200257. doi: 10.36416/1806-3756/e20200257. ba
- Benkouiten, S., Al-Tawfiq, J. A., Memish, Z. A., Albarrak, A., *et al.* 2018. Clinical respiratory infections and pneumonia during the Hajj pilgrimage: A systematic review. *Travel Medicine and Infectious Disease*. doi:10.1016/j.tmaid.2018.12.002
- Benschop R, Rodriguez-Feuerhahn M, Schedlowski M. 1996. Catecholamine-induced leukocytosis: early observations, current research, and future directions. *Brain Behav Immun*;10(2):77-91. <https://www.ncbi.nlm.nih.gov/pubmed/8811932>.
- Boe, D. M., Boule, L. A., Kovacs, E. J. 2016. Innate immune responses in the ageing lung. *Clinical & Experimental Immunology*, 187(1), 16–25. doi:10.1111/cei.12881
- Boyd Angela R. Orihuela Carlos J. 2011. Dysregulated Inflammation as a Risk Factor for Pneumonia in the Elderly. *Aging and disease* :Issue (6) : 487-500.
- Buising KL, Thursky KA, Black JF, MacGregor L, Street AC, *et al.* 2006. A prospective comparison of severity scores for identifying patients with severe community acquired pneumonia: reconsidering what is meant by severe pneumonia. *Thorax*; 61:419-24.

- Bulut, Kilic, Domínguez-Andrés, Netea. 2020. Overcoming immune dysfunction in the elderly: trained immunity as a novel approach. *International Immunology*. doi:10.1093/intimm/dxaa052.
- Candemir M, Kiziltunç E, Nurkoç S, *et al.* 2021. Relationship Between Systemic Immune Inflammation Index (SII) and the Severity of Stable Coronary Artery Disease. *Angiology*; 72(6): 575–581, doi: 10.1177/0003319720987743.
- Capelastegui A, España PP, Quintana JM, *et al.* 2009. Development of a prognostic index for 90-day mortality in patients discharged after admission to hospital for community-acquired pneumonia. *Thorax*.;64(6):496-501. doi: 10.1136/thx.2008.098814.
- Castillo Juan González, Sánchez Francisco Javier Martín, Llinares Pedro, *et al.* 2014. Guidelines for the management of community-acquired pneumonia in the elderly patient. Consensus document. *Rev Esp Quimioter.* 27(1): 69-86.
- Cataudella, Giraffa , Di Marca, Pulvirenti, Alaimo, *et al.* 2017. Neutrophil-To-Lymphocyte Ratio: An Emerging Marker Predicting Prognosis in Elderly Adults with Community- Acquired Pneumonia. *Journal of the American Geriatrics Society*, 65(8), 1796–1801.
- Celiksoz A, Kavak M, Tarlacik A. 2023. Inflammatory Index as a Predictor of Mortality in Elderly Patients With Intrapneumoniasular Femoral Neck Fracture. *Cureus* 15(10): e46318. DOI 10.7759/cureus.46318.
- Chandra, R. K. 1997. Nutrition and the immune system: an introduction. *The American Journal of Clinical Nutrition*, 66(2), 460S–463S. doi:10.1093/ajcn/66.2.460s
- Charlson ME, Pompei P, Ales KL, MacKenzie CR. 1987. A new method of classifying prognostic comorbidity in longitudinal studies development and validation. *J Chronic Dis.*;40(5):373–383. doi: 10.1016/0021-9681(87)90171-8.
- Cho, S. J, Stout-Delgado, H. W. 2020. Aging and lung disease. *Annu. Rev. Physiol.* 82, 433– 459.
- Chou, H.C, Huang, C.T., Sheng. 2019. Differential roles of comorbidity burden and functional status in elderly and non-elderly patients with infections in general wards. *Journal of the Formosan Medical Association*. doi:10.1016/j.jfma.2019.08.032

- Cillóniz C, Polverino E, Ewig S, Aliberti S, Gabarrús A, Menéndez R, *et al.* 2013. Impact of age and comorbidity on cause and outcome in community-acquired pneumonia. *Chest*; 144:999-1007.
- Conrad, Wu, Sieper, Syrbe. 2015. In vivo pre-activation of monocytes in patients with axial spondyloarthritis. *Arthritis Res. Ther.* 17(1), 179.
- Corica Bernadette, Tartaglia Francesco, D’Amico Tania, Romiti GF. 2022. Sex and gender differences in community-acquired pneumonia. *Springer. Internal and Emergency Medicine* 17:1575–1588. <https://doi.org/10.1007/s11739-022-02999-7>
- Curtis, J. L. 2005. Cell-mediated Adaptive Immune Defense of the Lungs. *Proceedings of the American Thoracic Society*, 2(5), 412–416. doi:10.1513/pats.200507-070js.
- Dahlan Sopiudin. 2018. Langkah-langkah membuat proposal penelitian bidang kedokteran dan kesehatan Seri 3 edisi 2 cetakan 5. *Segung seto*. Jakarta
- De Stoppelaar, van’t Veer, Claushuis, Albersen, *et al.* 2014. Thrombocytopenia impairs host defense in gram-negative pneumonia-derived sepsis in mice. *Blood*, 124(25), 3781–3790. doi:10.1182/blood-2014-05-573915
- Del Castillo Juan González, Sánchez Francisco Javier Martín, *et al.* 2017. Pneumonia. Hazzard’s Geriatric Medicine and Gerontology seventh edition. New York : McGraw- Hill Education Medical Book: chapter 126.
- Deng, Standiford. 2005. The Systemic Response to Lung Infection. *Clinics in Chest Medicine*, 26(1), 1–9. doi:10.1016/j.ccm.2004.10.009.
- Deputi 6. 2023. Kemenko PMK : Pelaksanaan Haji 2023 Berjalan Dengan Baik, Namun Perlu Evaluasi Lebih Lanjut Guna Tingkatkan Kualitas Penyelenggaraan Pada Tahun Depan. <https://www.kemenkopmk.go.id/kemenko-pmk-pelaksanaan-haji-2023-berjalan-denganbaik-namun-perlu-evaluasi-lebih-lanjut-guna>.
- Djordjevic, Rondovic, Surbatovic, Stanojevic, *et al.* 2018. Neutrophil-to-Lymphocyte Ratio, Monocyte-to-Lymphocyte Ratio, Platelet-to-Lymphocyte Ratio, and Mean Platelet Volume-to-Platelet Count

Ratio as Biomarkers in Critically Ill and Injured Patients: Which Ratio to Choose to Predict Outcome and Nature of Bacteremia? *Mediators of Inflammation*, 1–15. doi:10.1155/2018/3758068.

Dong, Chu, Wang. 2017. Leukocyte-mediated Delivery of Nanotherapeutics in Inflammatory and Tumor Sites. *Theranostics*, 7(3), 751–763.

Ewig, Kleinfeld, T., Bauer, T., Seifert, K., Schafer, Go ke. 1999. Comparative validation of prognostic rules for community acquired pneumonia in an elderly population. *Eur Respir J* 14: 370-375.

Fahham Achmad M. 2023. Urgensi layanan haji ramah lansia. Bidang kesejahteraan rakyat. Info kajian singkat terhadap isu actual dan strategis Vol XV, No 12/II/Pusaka/Juni/2023. https://berkas.dpr.go.id/pusaka/files/info_singkat/Info%20Singkat-XV-12-II-P3DI-Juni-2023-1947.pdf

Febriyanti N, Adisasmita A. 2023. Trend Epidemiologi Kematian Jemaah Haji Indonesia Tahun 2017-2023. *Jurnal Epidemiologi Kesehatan Indonesia*; Vol 7, No.2

Fine MJ, Auble TE, Yealy, Hanusa BH, Weissfeld, *et al.* 1997. A prediction rule to identify low-risk patients with community-acquired pneumonia. *N Engl J Med* 1997; 336:243- 50.

Fois AG, Paliogiannis P, Scano V, Cau S, Babudieri S, Perra R, *et al.* 2020. The Systemic inflammation index on admission predicts in-hospital mortality in COVID-19 patients. *Molecules*;25(23):5725.

Fucà, G., Guarini, V., Antoniotti, C., Morano, F., *et al.* 2020. The Pan-Immune-Inflammation Value is a new prognostic biomarker in metastatic colorectal cancer: results from a pooled-analysis of the Valentino and TRIBE first- line trials. *British Journal of Cancer*. doi:10.1038/s41416-020-0894-7.

Gambichler T, Said S, Abu Rached N, Scheel CH, Susok L, *et al.* 2022. Pan-Immune- Inflammation Value Independently Predicts Disease Recurrence in Patients With Merkel Cell Carcinoma. *J Cancer Res Clin Oncol*.doi: 10.1007/s00432-022-03929-y.

Garcia-Ordóñez, M., García-Jiménez, J., Páez, F., Alvarez, *et al.* 2001. Clinical aspects and prognostic factors in elderly patients hospitalised for community acquired pneumonia. *Eur J Clin Microbiol Infect Dis* 20: 14-19.

- Ginhoux F, Jung S. 2014. Monocytes and macrophages: developmental pathways and tissue homeostasis. *Nature reviews Immunology*; 14: 392-404..
- Gopallawa I, Dehinwal R, Bhatia V, Gujar V, Chirmule N. 2023. A four-part guide to lung immunology: Invasion, inflammation, immunity, and intervention. *Front Immunol*. 14:1119564.
- Grudzinska, F. S., Brodlie, M., Scholefield, B. R., Jackson, T, *et al*. 2019. Neutrophils in community-acquired pneumonia: parallels in dysfunction at the extremes of age. *Thorax*, thoraxjnl-2018-212826. doi:10.1136/thoraxjnl-2018-212826.
- Hafez Mohamed Ahmed Abdel, Shoeib Sabry Abdullah, *et al*. 2023. Pan Immune Inflammation Value to Predict Early Mortality in Adults with Severe Covid 19: An Observational Retrospective Study. *The Egyptian Journal of Hospital Medicine* Vol. 92, Page 6171- 6176.
- Haseeb, A.,Saleem, Z., Faidah, H.S.*et al*. 2023. Threat of Antimicrobial Resistance among Pilgrims with Infectious Diseases during Hajj: Lessons Learnt from COVID-19 Pandemic. *Antibiotics*, 12, 1299. <https://doi.org/10.3390/antibiotics12081299>
- Hearps, A. C., Martin, G. E., Angelovich, T. A, *et al*. 2012. Aging is associated with chronic innate immune activation and dysregulation of monocyte phenotype and function. *Aging Cell*, 11(5), 867–875. doi:10.1111/j.1474-9726.2012.00851.x.
- Heffernan DS, Monaghan SF, Chung CS, Cioffi WG, *et al*. 2014. A divergent response of innate regulatory T-cells to sepsis in humans: circulating invariant natural killer T-cells are preserved. *Human Immunology*;75(3):277–282
- Hu HC, Huang CC, Tsai YH, Lee CH, Hsieh MJ. 2005. Outcome analysis of patients requiring mechanical ventilation with severe community-acquired pneumonia and identified bacterial pathogens. *Chang Gung Med J* 28: 229–236.
- Huang, Y., Liu, A., Liang, L., Jiang, J., Luo, H., Deng, W.Jiang, Y. 2018. Diagnostic value of blood parameters for community-acquired pneumonia. *International Immunopharmacology*, 64, 10–15.
- Huang, Y., Ying, Z., Quan, W., , Xiang, W., Xie, D., *et al*. 2018. The clinical significance of neutrophil-to-lymphocyte ratio and monocyte-to-lymphocyte ratio in Guillain-Barré syndrome.Int. *J. Neurosci*. 128(8), 729–735.

- Ikhsan Mukhtar. 2021. Air Pollution and Respiratory Diseases During The Hajj Season in The Holy City of Mekah. *Respir Sci*, Vol.2 No.2: 124-131.
- Ince, N., Güçlü, E., Sungur, M. A. Karabay, O. 2020. Evaluation of neutrophil to lymphocyte ratio, platelet to lymphocyte ratio, and lymphocyte to monocyte ratio in patients with cellulitis. *Rev. Assoc. Med. Bras.* 66(8), 1077–1081
- Jahn K, Kohler T.P, Hammerschmidt S. 2022. Platelets, Bacterial Adhesins and the Pneumococcus. *Cells*, 11,1121. <https://doi.org/10.3390/cells11071121>
- Jakubzick, C. V., Randolph, G. J., & Henson, P. M. 2017. Monocyte differentiation and antigen-presenting functions. *Nature Reviews Immunology*, 17(6), 349–362. doi:10.1038/nri.2017.28.
- Ji Hanhua, Li Yang, Fan Zeyuan, Zuo Bo, *et al.* 2017. Monocyte/lymphocyte ratio predicts the severity of coronary artery disease: A syntax score assessment. *BMC Cardiovasc.Disord.* 17, 90
- Jiang R, Li P, Shen W, *et al.* 2023. The predictive value of the preoperative systemic immune- inflammation index in the occurrence of post operative pneumonia in non-small cell lung cancer: A retrospective study based on 1486 cases. *Thorac Cancer*; 14(1): 30– 35, doi:10.1111/1759-7714.14691, indexed in Pubmed: 36495040.
- Jomrich G, Paireder M, Kristo I, *et al.* 2021. High Systemic Immune-Inflammation Index is an Adverse Prognostic Factor for Patients With Gastroesophageal Adenocarcinoma. *Ann Sur*; 273(3): 532– 541,doi: 10.1097/SLA.0000000000003370
- Kaplan V, Angus DC. 2003. Community-acquired pneumonia in the elderly. *Crit Care Clin*;19:729–748.
- Karagoz I, Yoldas, H. 2019. Platelet to lymphocyte and neutrophil to lymphocyte ratios as strong predictors of mortality in intensive care population. *Revista Da Associação Médica Brasileira*, 65(5), 633– 636. doi:10.1590/1806-9282.65.5.633.
- Kartal, O, Kartal, AT. 2017. Value of neutrophil to lymphocyte and platelet to lymphocyte ratios in pneumonia. *Bratislava Medical Journal*, 118(09), 513–516. doi:10.4149/bll_2017_099.
- Kelly E, MacRedmond RE, Cullen G, *et al.* 2009. Community acquired pneumonia in older patients: Does age influence systemic cytokine

levels in community acquired pneumonia: *Respirology*;14:210–216.

Kemenkes RI. 2016. Peraturan Menteri kesehatan Republik Indonesia nomor 15 tahun 2016 tentang istithaah kesehatan Jemaah haji. Jakarta

Kemenkes RI. 2018. Petunjuk Teknis Pemeriksaan Dan Pembinaan Kesehatan Haji (Petunjuk Teknis Permenkes Nomor 15 tahun 2016). Jakarta.

Kemenkes RI. 2019. Profil Kesehatan Indonesia Tahun 2018. Jakarta.

Kemenkes RI. 2018. Profil Kesehatan Indonesia Tahun 2017. Jakarta.

Kemenkes RI. 2020. Petunjuk Teknis Pelayanan Kesehatan Klinik Kesehatan Haji Indonesia Mekah-Panitia Penyelenggara Ibadah Haji Arab Saudi Bidang Kesehatan Tahun 2020 M/ 1441 H. Jakarta.

Kemenkes RI. 2021. Peraturan Menteri Kesehatan Republik Indonesia Nomor 9 Tahun 2021 Tentang Petunjuk Teknis Penyelenggaraan Kesehatan Haji Di Arab Saudi. No 139. Jakarta.

Kemenkes RI. 2023. Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MENKES/2118/2023 Tentang Standar Teknis Pemeriksaan Kesehatan Dalam Rangka Penetapan Status Istithaah Kesehatan Jemaah Haji. jdih.kemkes.go.id.

Kemenkes RI. 2023. Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MENKES/2147/2023 tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana Penumonia Pada Dewasa. Jakarta

Khan NA, Ishag AM, Ahmad MS, El-Sayed FM, *et al.* 2006. Pattern of medical diseases and determinants of prognosis of hospitalization during 2005 Muslim pilgrimage Hajj in a tertiary care hospital. A prospective cohort study. *Saudi Med J*;27(9):1373–80.

Kim, J. H., Seo, J. W., Mok, J. H., Kim, M. H., Cho, W. H., *et al.* 2013. Usefulness of Plasma Procalcitonin to Predict Severity in Elderly Patients with Community Acquired Pneumonia. *Tuberculosis and Respiratory Diseases*, 74(5), 207.

Korkmaz Filiz T, Traber Katrina E. 2023. Innate immune responses in pneumonia. Review. *BMJ*. <https://doi.org/10.1186/s41479-023-00106-8>.

- Koupenova, M., Clancy, L., Corkrey, H. A., Freedman, J. E. 2018. Circulating Platelets as Mediators of Immunity, Inflammation, and Thrombosis. *Circulation Research*, 122(2), 337–351. doi:10.1161/circresaha.117.310795.
- Kovacs, E. J., Boe, D. M., Boule, L. A., Curtis, B. J. 2017. Inflammaging and the Lung. *Clinics in Geriatric Medicine*, 33(4), 459–471. doi:10.1016/j.cger.2017.06.002.
- Krone Cassandra, van de Groep Kirsten, Trzeciński Krzysztof, *et al.* 2014. Immunosenescence and pneumococcal disease: an imbalance in host–pathogen interactions. *www.thelancet.com/respiratory* Vol 2.
- Kurashi N, al-Hamdan A, Ibrahim E, al Idrissi H, al al-Bayari T. 1999. Community acquired acute bacterial and atypical pneumonia in Saudi Arabia. *Thorax*;47(2):115-8
- LeBien TW, Tedder TF. 2008. B lymphocytes: how they develop and function. *Blood*; 112: 1570-80.
- Lee LE, Ahn SS, Pyo JY, Song JJ, Park YB, Lee SW. 2021. Pan-immune-inflammation value at diagnosis independently predicts all-cause mortality in patients with antineutrophil cytoplasmic antibody-associated vasculitis. *Clin Exp Rheumatol*; 39: 88-93.
- Liani, P. S., Machmud, P. B. 2020. Risk factors for respiratory death among indonesian pilgrims in 2018. *Jurnal Berkala Epidemiologi*, 8(1), 57–64. <https://doi.org/10.20473/jbe.V8I12020.57-64>
- Li Lan, Shen Qing, Sijie Rao. 2022. Association of Neutrophil-to-Lymphocyte Ratio and Platelet-to-Lymphocyte Ratio with Diabetic Kidney Disease in Chinese Patients with Type 2 Diabetes: A Cross-Sectional Study. Dovepress. *Ther Clin Risk Manag*; 18: 1157–1166.
- Li X , Liu J.B , Han .P , *et al* . 2019. Value of platelet-lymphocyte ratio in predicting the prognosis of community-acquired pneumonia. *Chinese General Practice*: 659-663
- Li Xia, Li Chentao, Zhang Wanying, Wang Yanan, Qian Pengxu, Huang He. 2023. Inflammation and aging: signaling pathways and intervention therapies. *Signal Transduction and Targeted Therapy* 8:239 ; <https://doi.org/10.1038/s41392-023- 01502-8>.

- Li Y, Wang C, Peng M. 2021. Aging Immune System and Its Correlation With Liability to Severe Lung Complications. *Front. Public Health* 9:735151. doi: 10.3389/fpubh.2021.735151.
- Lim W, Macfarlane J. 2001. Defining prognostic factors in the elderly with community acquired pneumonia: a case controlled study of patients aged > 75 yrs. *Eur Respir J* 17: 200-205.
- Lim WS, van der Eerden MM, Laing R, Boersma WG, *et al.* 2003. Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study. *Thorax*; 58:377-82.
- Lin F, Zhang L-P, Xie S-Y, Huang H-Y, Chen X-Y, Jiang T-C, *et al.* 2022. Pan Immune- Inflammation Value: A New Prognostic Index in Operative Breast Cancer. *Front. Oncol.* 12:830138. doi: 10.3389/fonc.2022.830138.
- Liu, P., Li, P., Peng, Z., Xiang, Y., Xia, C., Wu, *et al.* 2020. Predictive value of the neutrophil- to-lymphocyte ratio, monocyte-to-lymphocyte ratio, platelet-to-neutrophil ratio, and neutrophil-to-monocyte ratio in lupus nephritis. *Lupus*. 096120332092975.
- Luk, A. O. Y. *et al.* 2021. Temporal trends in rates of infection-related hospitalisations in Hong Kong people with and without diabetes, 2001–2016: A retrospective study. *Diabetologia* 64, 109–118. [https:// doi. org/ 10. 1007/ s00125- 020- 05286-2](https://doi.org/10.1007/s00125-020-05286-2)
- Madani TA, Ghabrah TM, Al-Hedaithy MA, Alhazmi MA, *et al.* 2006. Causes of hospitalization of pilgrims in the Hajj season of the Islamic year 1423 (2003). *Ann Saudi Med*:26(5):346–51.
- Magd AboEl, Gehan, Alkhotani, Nashwad, Elsayy, Abdelrahmanb. 2020. The prevalence and pattern of pneumonia among Hajj pilgrims : a study of two successive Hajj seasons. *The Egyptian Journal of Chest Diseases and Tuberculosis* 69(2):p 407-414
- Majhi A, Adhikary R, Bhattacharyya A, *et al.* 2014 Levofloxacin-ceftriaxone combination attenuates lung inflammation in a mouse model of bacteremic pneumonia caused by multidrug-resistant *Streptococcus pneumoniae* via inhibition of cytolytic activities of pneumolysin and autolysin. *Antimicrob Agents Chemother.* 58(9):5164-80. doi: 10.1128/AAC.03245-14.
- Malézieux-Picard, Azurmendi, L, Pagano, Vuilleumier, *et al.* 2022. Role of Clinical Characteristics and Biomarkers at Admission to Predict One-Year Mortality in Elderly Patients with Pneumonia. *J. Clin. Med.* 11, 105.

- Manne BK, Xiang SC, Rondina MT. 2016. Platelet secretion in inflammatory and infectious diseases. *Platelets*, 28(2), 155–164. doi:10.1080/09537104.2016.1240766.
- Marik, P, Kaplan, D. 2003. Aspiration pneumonia and dysphagia in the elderly. *Chest* 124: 328!336.
- Mary E. Charlson, Danilo Carrozzino, Jenny Guidi, Chiara Patierno. 2022. Charlson Comorbidity Index: A Critical Review of Clinimetric Properties. *Psychother Psychosom* ; 91 (1): 8–35.
- Marrie J. Thomas. 2000. Community-Acquired Pneumonia in the Elderly. Special Section: Aging And Infectious Diseases. *Infectious Diseases Society of America*.
- Marrie, T.J.,Wu, L., 2005. Factors influencing in-hospital mortality in community-acquired pneumonia: a prospective study of patients not initially admitted to the ICU. *Chest* 127:1260–1270.
- Mavrommatis AC, Theodoridis T, Orfanidou A, Roussos C, *et al.* 2000. Coagulation system and platelets are fully activated in uncomplicated sepsis. *Crit Care Med* 28:451–457
- Medzhitov R. 2008. Origin and physiological roles of inflammation. *Nature*; 454: 428-35.
- Merekoulias, G., Alexopoulos, E. C., Belezos, T., *et al.* 2010. Lymphocyte to monocyte ratio as a screening tool for influenza. *PLoS Curr.* 2, 1154.
- Metlay JP, Waterer GW, Long AC, Anzueto A, Brozek J, Crothers K, *et al.* 2019. Diagnosis and treatment of adults with community-acquired pneumonia. An official clinical practice guideline of the American Thoracic Society and Infectious Diseases Society of America. *Am J Respir Crit Care Med.*;200(7):e45–67.
- Mirsaeidi, Peyrani, Aliberti, Filardo, *et al.* 2010. Thrombocytopenia and Thrombocytosis at Time of Hospitalization Predict Mortality in Patients With Community-Acquired Pneumonia. *Chest*, 137(2), 416–420. doi:10.1378/chest.09-0998
- Misiewicz Aleksandra, Piekarska Violetta Dymicka. 2023. Fashionable, but What is Their Real Clinical Usefulness? NLR, LMR, and PLR as a Promising Indicator in Colorectal Cancer Prognosis: A Systematic Review. *Dovepress. Journal of Inflammation Research*:16: 69–8.
- Misirlioğlu, Raziye sinem, Aksay, *et al.* 2021. Can thrombocytosis or thrombocytopenia predict complicated clinical course and 30-days

mortality in patients with pneumonia. *Turkish Journal of Medical Sciences*: Vol. 51: No. 6, Article 12.

Montecino-Rodriguez E, Berent-Maoz B, Dorshkind K. 2013. Causes, consequences, and reversal of immune system aging. *J Clin Invest*. 123:958–65. doi: 10.1172/JCI64096.

Moulis, Christiansen, Darvalics, Andersen, Nørgaard. 2020. Platelet Count within the Normal Range at Hospital Admission is Associated with Mortality in Patients with Community-Acquired Pneumonia. *Clinical Epidemiology*, Volume 12, 711–716.

Murat Bektas, Murat Selda, Ozgeyik Mehmet, Bilgin Muzaffer. 2023. Comparison of pan-immune-inflammation value with other inflammation markers of long-term survival after ST-segment elevation myocardial infarction. *European Society for Clinical Investigation Journal Foundation*;53(1):e13872.

Myint, P., Kamath, A., Vowler, S., Maisey, D, Harrison, B. 2006. Severity assessment criteria recommended by the British Thoracic Society (BTS) for community-acquired pneumonia and older patients. Should SOAR (systolic blood pressure, oxygenation, age and respiratory rate) criteria be used in older people? A compilation study of two prospective cohorts. *Age Ageing* 35: 286-291.

Naito, T., Suda, T., Yasuda, K., Yamada, T., Todate, A, *et al.* 2006. A validation and potential modification of the pneumonia severity index in elderly patients with community-acquired pneumonia. *J Am Geriatr Soc* 54: 1212-1219.

Nice. 2023. Pneumonia in adults: diagnosis and management. *NICE Guideline*, No.191. <https://www.ncbi.nlm.nih.gov/books/NBK552669/>

Núñez J, Miñana G, Bodí V, Núñez E, *et al.* 2011. Low lymphocyte count and cardiovascular diseases. *Curr Med Chem*;18(21):3226-33. doi: 10.2174/092986711796391633. PMID: 21671854.

Ochoa-Gondar, O., Vila-Co´rcoles, A., de Diego, C., Arija, V., *et al.* 2008. The burden of community-acquired pneumonia in the elderly: the Spanish EVAN-65 study. *BMC Public Health* 8: 222.

Özdin, S., Sarisoy, G., Böke, Ö. 2017. A comparison of the neutrophil-lymphocyte, platelet-lymphocyte and monocyte-lymphocyte ratios in schizophrenia and bipolar disorder patients – a retrospective file review. *Nordic Journal of Psychiatry*, 71(7), 509–512. doi:10.1080/08039488.2017.1340517.

- Palmer CS, Kimmey JM. 2022. Neutrophil Recruitment in Pneumococcal Pneumonia. *Front. Cell. Infect. Microbiol.* 12:894644.
- Parihar A, Eubank TD, Doseff AI. 2010. Monocytes and macrophages regulate immunity through dynamic networks of survival and cell death. *Journal of innate immunity*; 2: 204-15.
- Park, M. Kim M, Chae SH, Kim H, Han J, Park K. 2018. Lymphocyte-to-monocyte ratio on day 7 is associated with outcomes in acute ischemic stroke. *Neurol. Sci.* 39(2), 243– 249.
- Park CM, Rhim HC, Lee ES, Kim W, Kim JH, Kim D. 2021. Association of Social Determinants, Multimorbidity, and Functional Status with Mortality after Pneumonia. *Innov Aging.* 17;5(Suppl 1):624.
- Pence, B. D. 2020. Severe COVID-19 and aging: are monocytes the key? *GeroScience.* doi:10.1007/s11357-020-00213-0.
- Price, J., Lord, J. M., Harrison, P. 2020. Inflammaging and platelet hyperreactivity: A new therapeutic target?. *Journal of Thrombosis and Haemostasis*, 18(1), 3–5. doi:10.1111/jth.14670
- Prihatin Rohani B. 2023. Permasalahan penyelenggaraan haji 2023. Bidang kesejahteraan rakyat : Info singkat. *Pusat Analisis Keparlemenan Badan Keahlian DPR RI Badan Keahlian DPR RI*; Vol. XV, No. 13/I/Pusaka/Juli.
- Prina E, Ferrer M, Ranzani OT, Polverino E, Cillóniz C, *et al.* 2013. Thrombocytosis is a marker of poor outcome in community acquired pneumonia. *Chest*; 143 (3): 767-775.
- Puchta, A., Naidoo, A., Verschoor, C. P., Loukov, *et al.* 2016. TNF Drives Monocyte Dysfunction with Age and Results in Impaired Anti-pneumococcal Immunity. *PLOS Pathogens*, 12(1), e1005368. doi:10.1371/journal.ppat.100.
- Qu, R., Ling, Y., Zhang, Y., Wei, L., Chen, X., Li, X Wang, Q. 2020. Platelet-to-lymphocyte ratio is associated with prognosis in patients with Corona Virus Disease-19. *Journal of Medical Virology.* doi:10.1002/jmv.25767.
- Rayes, J., Bourne, J. H., Brill, A., Watson, S. P. 2019. The dual role of platelet-innate immune cell interactions in thrombo-inflammation. *Research and Practice in Thrombosis and Haemostasis*, 4(1), 23– 35. doi:10.1002/rth2.12266.
- Rello, J., Rodriguez, R., Jubert, P. and Alvarez, B. 1996. Severe community-acquired pneumonia in the elderly: epidemiology and prognosis.

Study Group for Severe Community-Acquired Pneumonia. *Clin Infect Dis* 23: 723728.

- Rello J, Rodriguez A, Torres A, Roig J, *et al.* 2006. Implications of COPD in patients admitted to the intensive care unit by community-acquired pneumonia. *Eur Respir J*;27:1210–1216.
- Riquelme R, Torres A, el-Ebiary M, *et al.* 1997. Community-acquired pneumonia in the elderly. Clinical and nutritional aspects. *Am J Respir Crit Care Med*;156: 1908–1914.
- Riquelme R, TorresA, El-EbiaryM, *et al.* 1996. Community-acquired pneumonia in the elderly: a multivariate analysis of risk and prognostic factors. *AmJ Respir Crit CareMed*;154:1450–5.
- Restrepo MI, Mortensen EM, Pugh JA, Anzueto A. 2006. COPD is associated with increased mortality in patients with community acquired pneumonia. *Eur Respir J*;28(2):346-51.
- Ross R. 1994. The role of T lymphocytes in inflammation. *Proceedings of the National Academy of Sciences of the United States of America*; 91: 2879.
- Santiago J. Ballaz, Martha Fors. 2023. Predictive value of the platelet times neutrophil-to- lymphocyte ratio for COVID-19 in-hospital mortality. *The Journal of the International Federation of clinical chemistry and laboratory medicine. EJIFCC*: 34(2):167-173.
- Schneider, J. L., Rowe, J. H., Garcia-de-Alba, C., Kim, C. F., *et al.* 2021. The aging lung: Physiology, disease, and immunity. *Cell*, 184(8), 1990–2019.
- Seo M, Yamada T, Morita T, *et al.* 2018. Prognostic value of systemic immune-inflammation index in patients with chronic heart failure. *European Heart Journal*. 2018; 39(suppl_1), doi: 10.1093/eurheartj/ehy564.p589.
- Shi, C., Pamer, E. G. 2011. Monocyte recruitment during infection and inflammation. *Nature Reviews Immunology*, 11(11), 762–774. doi:10.1038/nri3070.
- Shirah BH, Zafar SH, Alferaidi OA, Sabir AMM. 2017. Mass gathering medicine (Hajj pilgrimage in Saudi Arabia): the clinical pattern of pneumonia among pilgrims during Hajj. *J Infect Public Health*;10(3):277–86.
- Simmons SR, Bhalla M, Herring SE, Tchalla EYI, Bou Ghanem EN. 2021. Older but not wiser: the age-driven changes in neutrophil responses

during pulmonary infections. *Infect Immun* 89:e00653-20.
<https://doi.org/10.1128/IAI.00653-20>

Siskohatkes. 2023. <https://siskohatkes.kemkes.go.id/Authenticate/Login>

Song, J. Zhang, Y. Zhang, *et al.*, 2018. Hepatic recruitment of CD11b+Ly6C⁺ inflammatory monocytes promotes hepatic ischemia/reperfusion injury, *Int. J. Mol. Med.* 41 (2).

Suastika NKW, Aryana IGP, Kuswardhani RA, Tuty. 2016. Korelasi negatif antara charlson comorbidity index dengan jumlah limfosit total dan kadar albumin pada pasien geriatri. *Medicina.* 46 (3): 2540-2832

Tarmizi Siti Nadia. 2023. 54 Hari Operasional Haji 2023, KKHI Mekah Layani 3.745 Jemaah Sakit. Kementerian Kesehatan Republik Indonesia. <https://www.kemkes.go.id/id/rilis-kesehatan/54-hari-operasional-haji-2023-kkhi-mekah-layani-3-745-jemaah-sakit>

Tarmizi Siti Nadia. 2023. Sebagian Jemaah Haji Indonesia Mulai Bergerak ke Mekah, KKHI Mekah Siap Melayani. <https://www.kemkes.go.id/id/rilis-kesehatan/sebagian-jemaah-haji-indonesia-mulai-bergerak-ke-mekah-kkhi-mekah-siap-melayani>.

Thiem, U., Niklaus, D., Sehlhoff, B., Stüćkle, C., Heppner, H., Endres, *et al.* 2009. C-reactive protein, severity of pneumonia and mortality in elderly, hospitalised patients with community acquired pneumonia. *Age Ageing* 38: 693697.

Tong Ling, Wang Shan, Zhang Ranran, Wu Yibo, Xu Dewu, Chen Ling. 2023. High Levels of SII and PIV are the Risk Factors on Axillary Lymph Node Metastases in Breast Cancer: A Retrospective Study. *International Journal of General Medicine.* Vol:16 Pages 2211—2218.

Torrelles JB, Restrepo BI, Bai Y, Ross C, Schlesinger LS and Turner J. 2022. The Impact of Aging on the Lung Alveolar Environment, Predetermining Susceptibility to Respiratory Infections. *Front. Aging* 3:818700. doi: 10.3389/fragi.2022.818700.

Tortum Fatma, Tekin Erdal, Ozda Emine. 2023. Use of the systemic immune-inflammation index to predict the severity of pneumonia in the emergency department. *Medical Research Journal*; Volume 8, Number 3, 186–191:10.5603/mrj.96312.

Tunjungputri RN, Mobegi FM, Cremers AJ, *et al.* 2017. Phage-derived protein induces increased platelet activation and is associated with mortality in patients with invasive pneumococcal disease. *mBio*

8:e01984-16. <https://doi.org/10.1128/mBio.01984-16>.

- Turan YB. 2024. The prognostic importance of the pan-immune-inflammation value in patients with septic shock. *BMC Infectious Diseases*. 24:69. <https://doi.org/10.1186/s12879-023-08963-w>
- Van Duin, D., Mohanty, S., Thomas, V., Ginter, S., Montgomery, R. R., *et al.* 2007. Age- Associated Defect in Human TLR-1/2 Function. *The Journal of Immunology*, 178(2), 970–975.
- Vila Co´rcoles, A., Ochoa Gondar, O. and Rodr´iguez Blanco, T. 2010. Usefulness of the CRB-65 scale for prognosis assessment of patients 65 years or older with community- acquired pneumonia. *Med Clin (Barc)* 135: 97-102.
- Villena Julio, Laiño Jonathan, Suvorov Alexander, *et al.* 2015. Immunobiotic and Recombinant Lactic Acid Bacteria:Soldiers in the Fight Against Streptococcus pneumoniae. *Recent Trends in Immunology*. <https://www.researchgate.net/publication/280978990>.
- Wang, J. L., Lu X.Y., Xu, X.H., Zhang, Gong, Lv,D., *et al.* 2019. Predictive role of monocyte- to-lymphocyte ratio in patients with Klebsiella pneumonia infection: A single-center experience. *Medicine (United States)* 98, e17215.
- Wang G, Mivefroshan A, Yaghoobpoor S, *et al.* 2022. Prognostic Value of Platelet to Lymphocyte Ratio in Sepsis: A Systematic Review and Meta-analysis. *Biomed Res Int*:9056363.
- Wing-Sze Ng Wincy, Lam Sin-Man ,Yan Wing-Wa, Shum Hoi-Ping. 2022. NLR, MLR, PLR and RDW to predict outcome and differentiate between viral and bacterial pneumonia in the intensive care unit. <https://doi.org/10.1038/s41598-022-20385-3>.
- Wu B, Zhang C, Lin S, Zhang Y, Ding, Song W. 2023. The relationship between the pan-immune-inflammation value and long term prognoses in patients with hypertension: National Health and Nutrition Examination Study, 1999–2018. *Front. Cardiovasc. Med*. 10:1099427. doi: 10.3389/fcvm.2023.1099427
- Xiang, J. Zhou, L., Li,X., Bao, W., Chen, T., *et al.* 2017. Preoperative monocyte-to-lymphocyte ratio in peripheral blood predicts stages, metastasis, and histological grades in patients with ovarian cancer. *Transl. Oncol*. 10(1), 33–39.
- Xie M, Yuan K, Zhu X, *et al.* 2023. Systemic Immune-Inflammation Index and Long-Term Mortality in Patients with Stroke-Associated Pneumonia. *J Inflamm Res*; 16: 1581– 1593, doi:

10.2147/JIR.S399371, indexed in *Pubmed*: 37092129.

Xiong, H., Pamer, E. G. 2015. Monocytes and infection: Modulator, messenger and effector. *Immunobiology*, 220(2), 210–214. doi:10.1016/j.imbio.2014.08.007.

Yekedüz Emre, Tural Deniz, Ertürk İsmail, Karakaya Serdar, *et al.* 2022. The relationship between pan-immune-inflammation value and survival outcomes in patients with metastatic renal cell carcinoma treated with nivolumab in the second line and beyond: a Turkish oncology group kidney cancer consortium (TKCC) study. *Journal of Cancer Research and Clinical Oncology*, 148:3537–3546. <https://doi.org/10.1007/s00432-022-04055-5>.

Yen, FS., Wei, J.CC., Shih, YH. *et al.* 2022. Metformin use and the risk of bacterial pneumonia in patients with type 2 diabetes. *Sci Rep* 12, 3270. <https://doi.org/10.1038/s41598-022-07294-1>

Zhang F, Gong W. 2020. Prognostic Value of the Platelet-to-Lymphocyte Ratio in Patients With Melanoma: A Meta-Analysis. *Front. Oncol.* 10:1116. doi: 10.3389/fonc.2020.01116.

Zhou Y, Fu B, Zheng X, Wang D, Zhao C, Qi Y, *et al.* 2020. Pathogenic T-cells and inflammatory monocytes incite inflammatory storms in severe COVID-19 patients. *Natl Sci Rev*: 7(6):998–1002. doi: 10.1093/nsr/nwaa041