

DAFTAR PUSTAKA

- [1] Perhimpunan Dokter Paru Indonesia, Pedoman diagnosis dan penatalaksanaan tuberkulosis di Indonesia, Revisi 2 penyunt., Jakarta: Perhimpunan Dokter Paru Indonesia, 2021.
- [2] World Health Organization, Global Tuberculosis Report 2023, Geneva: World Health Organization, 2023.
- [3] Kementerian Kesehatan Republik Indonesia, Profil Kesehatan Indonesia 2023, Jakarta: Kementerian Kesehatan Republik Indonesia, 2023.
- [4] A. McIvor, H. Koornhof dan B. D. Kana, "Relapse, Re-infection and Mixed Infections in Tuberculosis Disease," *Pathogens and Disease*, vol. 75, no. 3, 2017.
- [5] Marini, N. H. Suryaningtyas dan Santoso, "Faktor Risiko Terjadinya Kasus Tuberkulosis Berulang di Kabupaten Muara Enim Provinsi Sumatera Selatan," *Majalah Kesehatan*, vol. 10, no. 2, pp. 99-110, 2023.
- [6] H. Nasution, P. Sitompul dan L. P. Sinaga, "Effect of the Vaccine on the Dynamics of Spread of Tuberculosis SIR Models," *Journal of Physics: Conference Series*, 2021.
- [7] E. Whittaker, M. P. Nicol, H. J. Zar, N. G. Tena-Coki dan B. Kampmann, "Age-related waning of immune responses to BCG in healthy children supports the need for a booster dose of BCG in TB endemic countries," *Scientific Reports*, vol. 8, no. 1, 2018.
- [8] Widowati dan Sutimin, *Pemodelan Matematika: Analisis dan Aplikasinya*, Semarang: UNDIP Press, 2013.
- [9] H. Nasution dan S. Marlina, "Mathematical Model Susceptible, Infected and Recovered with Therapy of Tuberculosis Transmission," *Journal of Physics: Conference Series*, 2020.
- [10] F. A. Taqiya, Sutimin, R. H. Tjahjana, R. H. S. Utomo, R. Herdiana dan A. H. Permatasari, "Local Stability Analysis for Tuberculosis Epidemic with SII12R Model," *Journal of Physics: Conference Series*, 2020.

- [11] S. T. Akinyemi, A. O. Ibrahim, I. G. Usman dan O. Odetunde, "Global Stability Analysis of Sir Epidemic Model with Relapse and Immunity Loss," *International Journal of Applied Science and Mathematical Theory*, vol. 2, no. 1, 2016.
- [12] Sutimin, R. Herdiana, R. H. S. Utomo dan A. H. Permatasari, "Analysis of TB Epidemic Model with Relapse and Treatment," *Journal of Physics: Conference Series*, 2020.
- [13] N. A. Lestari, Sutimin, S. Khabibah, R. H. S. Utomo, R. Herdiana dan A. H. Permatasari, "Local Stability Analysis for Tuberculosis Epidemic Model with Different Infection Stages and Treatments," *Journal of Physics: Conference Series*, 2020.
- [14] G. T. Tilahun, M. T. Belachew dan Z. Gebreselassie, "Stochastic model of tuberculosis with vaccination of newborns," *Advances in Difference Equations*, 2020.
- [15] F. Sulayman, F. A. Abdullah dan M. H. Mohd, "An SVEIRE Model of Tuberculosis to Assess the Effect of an Imperfect Vaccine and Other Exogenous Factors," *Mathematics*, vol. 9, p. 327, 2021.
- [16] D. Mahardika dan S. Kartika, "Dynamic System of Tuberculosis Model using Optimal Control in Semarang City Indonesia," *Journal of Mathematics and Its Applications*, vol. 18, no. 1, pp. 0043-0052, 2024.
- [17] D. Otoo, S. Osman, S. A. Poku dan E. K. Donkoh, "A Deterministic Model for the Transmission Dynamics of Tuberculosis (TB) with Optimal Control," *Commun. Math. Biol. Neurosci*, 2021.
- [18] L. H. Saputra, "Optimal Control of Tuberculosis Disease Spread with Imperfect Vaccination," dalam *AIP Conference Proceedings*, 2024.
- [19] S. Ullah, O. Ullah, M. A. Khan dan T. Gul, "Optimal Control Analysis of Tuberculosis (TB) with Vaccination and Treatment," *The European Physical Journal Plus*, vol. 135, no. 602, pp. 1-27, 2020.
- [20] S. Majee, S. Barman, A. Khatua, T. K. Kar dan S. Jana, "The Impact of Media Awareness on a Fractional-Order SEIR Epidemic Model with Optimal

- Treatment and Vaccination,” *The European Physical Journal Special Topics*, vol. 232, pp. 2459-2483, 2023.
- [21] Q. Li dan F. Wang, “An Epidemiological Model for Tuberculosis Considering Environmental Transmission and Reinfection,” *mathematics*, vol. 23, no. 2423, 2023.
- [22] P. Z. Kamalia, T. Ayumi, A. Y. Fathiyah dan D. Aldila, “Global Stability Analysis and Optimal Control Problem arise from Tuberculosis Transmission Model with Monitored Treatment,” *Commun. Math. Biol. Neurosci*, 2024.
- [23] S. Ma, T. Tian dan H. Huo, “Global Stability and Optimal Control of an Age-Structured SVEIR Epidemic Model with Waning Immunity and Relapses,” *Journal of Mathematical Biology*, vol. 89, no. 32, 2024.
- [24] R. F. Appiah, Z. Jin, J. Yang dan J. K. K. Asamoah, “Optimal Control and Cost-Effectiveness Analysis for a Tuberculosis Vaccination Model with Two Latent Classes,” *Modeling Earth Systems and Environment*, vol. 10, p. 6761–6785, 2024.
- [25] C. R. Howard Anton, *Elementary Linear Algebra*, 9th penyunt., John Wiley and Sons, Inc., 2005.
- [26] W. S. Burnside dan A. W. Panton, *Theory of Equations: with an Introduction to the Theory of Binary Algebraic Forms*, Second Edition penyunt., Dublin University Press, 1886.
- [27] Ross, *Differential Equations*, Third penyunt., New York: John Willey & Sons, Inc, 1984.
- [28] R. G. Bartle dan D. D. Sherbert, *Introduction to Real Analysis*, Third penyunt., John Wiley & Sons, Inc, 2000.
- [29] S. Boyd dan L. andenberghe, *Convex Optimization*, Cambridge University Press, 2004.
- [30] A. L. Peressini, F. E. Sullivan dan J. J. Uhl, *The Mathematics of Nonlinear Programming*, Springer-Verlag New York Inc., 1988.

- [31] Widowati, P. S. Sasongko, E. Triyana dan U. A. Fitriyani, *Pemodelan Matematika Epidemik*, Semarang: UNDIP Press Semarang, 2022.
- [32] M. Martcheva, *An Introduction to Mathematical Epidemiology*, vol. 61, New York: Springer, 2015.
- [33] P. v. d. Driessche dan J. Watmough, "Reproduction numbers and sub-threshold endemic equilibria for compartmental models of disease transmission," *Mathematical Biosciences*, vol. 180, pp. 29-48, 2002.
- [34] Subiono, *Sistem Linear dan Kontrol Optimal*, Surabaya: Institut Teknologi Sepuluh November, 2013.
- [35] Iswanto dan R. Juli, *Pemodelan Matematika Aplikasi dan Terapannya*, Yogyakarta: Graha Ilmu, 2011.
- [36] J.-J. E. Slotine dan W. Li, *Applied Nonlinear Control*, New Jersey: Prentice Hall, Inc, 1991.
- [37] B. S. Goh, "Global Stability in Many-Species Systems," *The American Naturalist*, vol. 111, no. 977, pp. 135-143, 1977.
- [38] E. C. Manda, "Within Host Dynamics for Treatment of R5 HIV Infection in the Langerhans Cells," South Africa, 2014.
- [39] C. Castillo-Chavez dan B. Song, "Dynamical Models of Tuberculosis and Their Applications," *Mathematical Biosciences and Engineering*, vol. 1, no. 2, pp. 361-404, 2004.
- [40] S. Marino, I. B. Hogue, C. J. Ray dan D. E. Kirschner, "A methodology for performing global uncertainty and sensitivity analysis in systems biology," *Journal of Theoretical Biology*, pp. 178-196, 2008.
- [41] N. Chitnis, J. M. Hyman dan J. M. Cushing, "Determining Important Parameters in the Spread of Malaria Through the Sensitivity Analysis of a Mathematical Model," *Bulletin of Mathematical Biology*, pp. 1272-1296, 2008.
- [42] S. Lenhart dan J. T. Workman, *Optimal Control Applied to Biological Models*, Taylor & Francis Group, 2007.

- [43] W. H. Fleming dan R. W. Rishel, *Deterministic and Stochastic Optimal Control*, New York Heidelberg Berlin: Springer-Verlag, 1975.
- [44] J. K. Hedrick dan A. Girard, *Control of Nonlinear Dynamic Systems*, 2015.
- [45] B. I. Oruh dan E. U. Agwu, "Application of Pontryagin's Maximum Principles and Runge-Kutta Methods in Optimal Control Problems," *IOSR Journal of Mathematics*, vol. 11, no. 5, pp. 43-63, 2015.
- [46] B. Triatmodjo, *Metode Numerik*, 8 penyunt., Yogyakarta: Beta Offset, 2010.
- [47] W. Y. Yang, W. Cao, T.-S. Chung dan J. Morris, *Applied Numerical Methods Using MATLAB*, 1 penyunt., Hoboken, New Jersey: John Wiley & Sons, Inc, 2005.
- [48] K. K. R. Indonesia, *Pedoman Nasional Pelayanan Kedokteran Tata Laksana Tuberkulosis*, Jakarta, 2020.
- [49] Centers for Disease Control (CDC) and Preventions, *Core Curriculumon Tuberculosis: What the Clinician Should Know*, seventh penyunt., Centers for Disease Control and Prevention, 2021.
- [50] R. J. W. Arts, S. J. C. F. M. Moorlag, Novakovic, H. G. Stunnenberg, R. v. Crevel dan M. G. Netea, "BCG Vaccination Protects against Experimental Viral Infection in Humans through the Induction of Cytokines Associated with Trained Immunity," *Cell Host & Microbe*, vol. 23, pp. 89-100, 2018.
- [51] E. D. A. Ginting, A. Dipo dan I. H. Febiriana, "A deterministic compartment model for analyzing tuberculosis dynamics considering vaccination and reinfection," *Health care Analytics*, vol. 5, 2024.
- [52] Badan Pusat Statistik Provinsi Jawa Tengah, "Jumlah Penduduk Menurut Kelompok Umur dan Jenis Kelamin di Provinsi Jawa Tengah, 2022," 2022. [Online]. Available: <https://jateng.bps.go.id/id/statistics-table/3/WVc0MGEyMXBkVFUxY25KeE9HdDZkbTQzWkVkb1p6MDkjMw==/jumlah-penduduk-menurut-kelompok-umur-dan-jenis-kelamin--ribu-jiwa--di-provinsi-jawa-tengah--2025.html?year=2022>.
- [53] Badan Pusat Statistik Provinsi Jawa Tengah, "Angka Harapan Hidup (AHH) Menurut Kabupaten/Kota dan Jenis Kelamin di Jawa Tengah," 2022.

[Online]. Available: <https://semarangkab.bps.go.id/id/statistics-table/2/MTYxIzI=/angka-harapan-hidup-ahh-menurut-kabupaten-kota-dan-jenis-kelamin-di-jawa-tengah.html>.

- [54] P. N. Djomo, E. Heldal, L. C. Rodrigues, I. Abubakar dan P. Mangtani, "Duration of BCG protection against tuberculosis and change in effectiveness with time since vaccination in Norway: a retrospective population-based cohort study," *The Lancet Infectious Diseases*, 2016.
- [55] T. P. Setiabudiawan, R. K. Reurink, P. C. Hill, M. G. Netea, R. v. Crevel dan V. A. C. M. Koeken, "Protection against tuberculosis by Bacillus Calmette-Gue'rin (BCG) vaccination: A historical perspective," *Med*, vol. 3, no. 1, pp. 6-24, 2022.
- [56] M. Mirsaeidi dan R. T. Sadikot, "Patients at High Risk of Tuberculosis Recurrence," *International Journal of Mycobacteriology*, vol. 7, no. 1, pp. 1-6, 2018.