ANALISIS EFEKTIVITAS BIAYA PENGGUNAAN ANTIBIOTIK SEFIKSIM, SEFOTAKSIM DAN SEFTRIAKSON PADA PASIEN ANAK RAWAT INAP DENGAN DEMAM TIFOID DI SALAH SATU RSUD DI KOTA BANDUNG

SKRIPSI

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Sebagai salah satu syarat untuk memperoleh gelar Sarjana Farmasi

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ABSTRAK

Demam tifoid masih menjadi masalah kesehatan masyarakat yang signifikan, terutama pada anak-anak. Total kasus demam tifoid di Indonesia mencapai 883.658. Terapi antibiotik yang efektif dan efisien sangat penting untuk mengurangi beban ekonomi dan mempercepat pemulihan pasien. Beberapa antibiotik yang termasuk dalam golongan sefalosporin, seperti sefiksim, sefotaksim, seftriakson, menunjukkan efektivitas yang baik dalam menangani infeksi *Salmonella Typhi.* Penelitian ini bertujuan untuk menganalisis efektivitas biaya penggunaan antibiotik sefiksim, sefotaksim, dan seftriakson pada pasien anak rawat inap dengan demam tifoid di salah satu RSUD di Kota Bandung. Penelitian ini menggunakan metode kuantitatif deskriptif dengan pendekatan retrospektif. Pemilihan data menggunakan teknik total sampling. Data diperoleh dari rekam medis 64 pasien anak yang dirawat pada tahun 2024 dan dianalisis dengan metode *Cost-Effectiveness Analysis* (CEA) melalui perhitungan ACER. Hasil penelitian menunjukkan Seftriakson merupakan antibiotik dengan efektivitas klinis tertinggi dengan biaya medis langsung terendah dan nilai ACER terendah. Kesimpulan dari penelitian ini adalah bahwa Seftriakson merupakan antibiotik paling efektif dibandingkan sefotaksim dan sefiksim, serta direkomendasikan sebagai terapi utama demam tifoid pada anak di fasilitas perawatan inap.

Kata kunci : anak, demam tifoid, efektivitas biaya, sefiksim, sefotaksim, seftriakson

ABSTRACT

Typhoid fever remains a significant public health issue, especially among children. In Indonesia, the total number of typhoid cases has reached 883,658. Effective and efficient antibiotic therapy is essential to reduce the economic burden and accelerate patient recovery. Several antibiotics from the cephalosporin group, such as cefixime, cefotaxime, and ceftriaxone, have shown good effectiveness in treating Salmonella Typhi infections. This study aims to analyze the cost-effectiveness of cefixime, cefotaxime, and ceftriaxone in pediatric inpatients with typhoid fever at a regional public hospital (RSUD) in Bandung City. A descriptive quantitative method with a retrospective approach was used. Data were selected using a total sampling technique. Medical records from 64 pediatric patients hospitalized in 2024 were analyzed using the Cost-Effectiveness Analysis (CEA) method by calculating the Average Cost-Effectiveness Ratio (ACER). The results showed that ceftriaxone had the highest clinical effectiveness, the lowest direct medical cost and the lowest ACER value. It is concluded that ceftriaxone is the most effective antibiotic compared to cefotaxime and cefixime and is recommended as the primary therapy for pediatric typhoid fever in inpatient care settings.

Keywords: *children, cefixime, cefotaxime, ceftriaxone, cost effectiveness, typhoid fever*

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DAFTAR PUSTAKA

Abdelfattah R.H et al (2019) 'The Correlation between the Environmental Risk Factors and Typhoid Disease Among Children and their Care Givers, Alqalioubiya Governorate', *The Medical Journal of Cairo University*, 87(9), pp. 3117–3125. Available at: https://doi.org/10.21608/MJCU.2019.59515.

Agnes, A.S., Citraningtyas, G. and Sudewi, S. (2019) 'Analisis Efektivitas Biaya Pada Pasien Anak Demam Tifoid Di Rumah Sakit Bhayangkara Manado'.

Ajaya Jang Kunwar, Sandeep Thapa, Nilam Thakur., *et al*. (2024) 'Antibiogram and Salmonella typhi detection in suspected patients using advanced PCR technique, serology, and conventional blood culture*'. 12*(02), 5–12. https://doi.org/10.3126/JMCJMS.V12I02.68326.

Akwa, T.E., & Simone, N. (2020). 'Prevalence and Associated Risk Factors of Typhoid Fever in Children in Douala, Cameroon'. Preprints. https://doi.org/10.20944/preprints202006.0252.v1.

Alam, A. *et al.* (2023) 'Unusual Presentation of Typhoid Encephalopathy: Case Reports'. Available at: https://doi.org/10.21203/RS.3.RS-3330156/V1.

Albright, R.H. and Fleischer, A.E. (2023) 'A Primer on Cost-Effectiveness Analysis.', *Clinics in Podiatric Medicine and Surgery*, 41(2), pp. 313–321. Available at: https://doi.org/10.1016/J.CPM.2023.07.006.

Ashfaq, S., et al. (2023). 'Drug resistant typhoid fever: its clinical spectrum and management in different age groups'. The Professional Medical Journal, 30(10), 1301–1308

Ashton, P.M. *et al.* (2024) 'Interplay Between the Gut Microbiome and Typhoid Fever: Insights from Endemic Countries and a Controlled Human Infection Model'. Available at: https://doi.org/10.1101/2024.09.02.24312347.

Ayunda D.J (2021) 'Evaluasi Ekonomi dan Penilaian Teknologi Kesehatan Concept and Best Practice : Seri ekonomi kesehatan IV' (pp. 91–92). PPJK Kementerian Kesehatan Republik Indonesia.

Boscato, S., Regina Godoy, M. and Heineck, I. (2023) 'Cost Minimization Analysis (CMA) of XELOX versus MFOLFOX6 in the treatment of colorectal cancer in an universitary hospital in Brazil', *Jornal de Assistência Farmacêutica e Farmacoeconomia*, 3(s.1). Available at: https://doi.org/10.22563/2525-7323.2018.V3.S1.P.35.

Cardoso da Mata, V. and Adrian, E.M. (2024) 'Systematic review on the safety of the use of quinolones in the pediatric population', *Salud, Ciencia y Tecnología - Serie de Conferencias*, 3, pp. 941–941. Available at: https://doi.org/10.56294/SCTCONF2024941.

Cavlin, M., Dmitrović, V. and Majstorović, A. (2024) 'Cost-Benefit Analysis in the Function of Controlling Sustainable Investments', *Journal of Agronomy,*

Technology and Engineering Management, 7(4), pp. 1148–1157. Available at: https://doi.org/10.55817/AFQF5722.

Delorme, C., Viel-Thériault, I., Moradipour, T., Le Saux, N., & Le Saux, N. (2020). 'Drug use evaluation (DUE) of ceftriaxone: A quality metric in a pediatric hospital'. *5*(3), 139–144. https://doi.org/10.3138/JAMMI-2019-0026

Di Filippo, P., Venanzi, A., Ciarelli, F., Di Pillo, S., Chiarelli, F., & Attanasi, M. (2023). 'Drug-Induced Enterocolitis Syndrome in Children'. *International Journal of Molecular Sciences*, *24*(9), 7880. https://doi.org/10.3390/ijms24097880

Durgavich, J. and Koester, F. (2024) 'Cost benefit analysis', *International Scientific Journal of Engineering and Management*, 03(05), pp. 1–9. Available at: https://doi.org/10.55041/ISJEM01828.

Dyson, Z.A. *et al.* (2019) 'Antibiotic resistance and typhoid', *Clinical Infectious Diseases*, 68, pp. S165–S170. Available at: https://doi.org/10.1093/cid/ciy1111.

El-Ashry, A.H. *et al.* (2022) 'Molecular and Serological Diagnostic Approach to Define the Microbiological Origin of Blood Culture-Negative Infective Endocarditis', *Pathogens*, 11(11), pp. 1220–1220. Available at: https://doi.org/10.3390/PATHOGENS11111220.

Efriani, L., et al. (2024). 'Efektivitas Perbandingan Obat Seftriakson dan Sefotaksim pada Pasien Demam Tifoid'. *Ranah Research Journal*, 7(1), 263–271.

Fautrel, B. *et al.* (2020) 'Cost assessment of health interventions and diseases.', *RMD Open*, 6(3). Available at: https://doi.org/10.1136/RMDOPEN-2020-001287.

Franklin, M. (2017) 'Cost Utility Analysis', *Mental Health Economics: The Costs and Benefits of Psychiatric Care*, pp. 89–119. Available at: https://doi.org/10.1007/978-3-319-55266-8_6.

Gautam, U. *et al.* (2024) 'Prevalence and Clinico-diagnostic Correlation of Hepatosplenomegaly in Children Admitted at a Tertiary Center in Kathmandu', *Journal of Karnali Academy of Health Sciences*, 7(2). Available at: https://doi.org/10.61814/JKAHS.V7I2.953.

Gomez de Alba, S.E. *et al.* (2023) 'Update on Treatment of Enteric Fever in Pediatric Patients According to Current Multidrug Resistance', *journal of medical science and clinical research*, 03(10). Available at: https://doi.org/10.47191/IJMSCRS/V3-I10-20.

Gouda, Z.A. (2024) 'Enteric fever (typhoid and paratyphoid fever)', *SHIFAA*, 2024, pp. 56–62. Available at: https://doi.org/10.70470/SHIFAA/2024/007.

Greeshma Gireesh and Manju CS (2024) 'Cost minimization analysis of chronic kidney disease management: Evaluating economic strategies for early intervention and treatment optimization', *World Journal of Biology*

Pharmacy and Health Sciences, 20(1), pp. 056–062. Available at: https://doi.org/10.30574/WJBPHS.2024.20.1.0707.

Hadi, A.O. *et al.* (2022) 'PCR-based Detection of Typhoidal Salmonella from Human Clinical Samples and Evaluation of Traditional PCR, Nested-PCR and Widal Test in Pune, India'. Available at: https://doi.org/10.20944/PREPRINTS202211.0030.V1.

Hagedoorn, N.N. *et al.* (2024) 'Mortality, morbidity, and post-operative complications of typhoid intestinal perforations: global systematic review and meta-analysis'. Available at: https://doi.org/10.1101/2024.06.28.24309663.

Hassan, M. ul *et al.* (2020) 'Enteric Fever in Patients of Lahore: Association of Positive Blood Cultures with the Typhidot Immunoassay Tests and Widal Agglutination', *Annals of Gulf Medicine*, 2(1). Available at: https://doi.org/10.37978/AGM.V2I1.277.

Hazmen, P., Kumala, S. and Sarnianto, P. (2019) 'Analisa Biaya Pengobatan Demam Tifoid Berdasarkan Clinical Pathway Di Rumah Sakit Harapan Bunda', *Jurnal Profesi Medika : Jurnal Kedokteran dan Kesehatan*, 13(2). Available at: https://doi.org/10.33533/jpm.v13i2.1314.

Hidayatallah, Z.H. (2024) 'Comparative Analysis Of Azithromycin And Cefixime In The Treatment Of Typhoid Fever', *Journal Of Advanced Zoology*, pp. 48–56. Available at: https://doi.org/10.53555/JAZ.V45IS2.3756.

Imran, H. *et al.* (2024) 'Uncovering the growing burden of enteric fever: A molecular analysis of Salmonella typhi antimicrobial resistance.', *Microbial Pathogenesis*, 191, pp. 106676–106676. Available at: https://doi.org/10.1016/J.MICPATH.2024.106676.

Jadav, P.K., Sukharamwala, P.H. and Mehta, N.T. (2023) 'Drug Utilization Study in Pediatric Patients with Typhoid Fever', *Journal for Research in Applied Sciences and Biotechnology*, 2(2), pp. 241–247. Available at: https://doi.org/10.55544/JRASB.2.2.34.

Jamilah, J. *et al.* (2020) 'Analysis of existence of multidrug-resistant H58 gene in Salmonella enterica serovar Typhi isolated from typhoid fever patients in Makassar, Indonesia', *New Microbes and New Infections*, 38, p. 100793. Available at: https://doi.org/10.1016/j.nmni.2020.100793.

Jeon, H.J. *et al.* (2022) 'Typhoid fever presenting with gastric ulcer bleeding', *BMC Gastroenterology*, 22(1). Available at: https://doi.org/10.1186/S12876-022-02192-2.

Kariuki, S. and Onsare, R.S. (2024) 'High burden of typhoid disease in sub-Saharan Africa calls for urgent roll-out of typhoid conjugate vaccines.', *The Lancet Global Health*, 12(4), pp. e537–e538. Available at: https://doi.org/10.1016/S2214-109X(24)00079-2.

Katsikostas-Michopoulos, G. *et al.* (2024) 'Impact of the use of cost-effectiveness analysis (CEA) on patient access to innovative medicines for cancer and

rare diseases: A comparison of CEA versus non-CEA markets'. Available at: https://doi.org/10.21203/RS.3.RS-5312921/V1.

Kemenkes (2013) 'Pedoman penerapan kajian Farmakoekonomi'. Jakarta: Kementerian Kesehatan RI.

Kementerian Kesehatan (2014) 'Pedoman Tatalaksana Demam Tifoid'. Jakarta: Kementerian Kesehatan RI.

Ketan, M. (2023) 'Cefotaxime in Enteric Fever: Therapeutic Reappraisal.. Journal of Association of Physicians of India', pp. 11-12.

Key Title, A. *et al.* (2020) 'Electrolyte Status in Children with Dehydration Caused by Acute Diarrhea', *Scholars Journal of Applied Medical Sciences*, 8(8), pp. 1940–1943. Available at: https://doi.org/10.36347/SJAMS.2020.V08I08.031.

Khairani, S. *et al.* (2024) 'Cost effectiveness analysis of ceftriaxone with cefoperazon in thypoid patients at x mataram hospital', *Jurnal Ilmu Kefarmasian Indonesia*, 22(1). Available at: https://doi.org/10.35814/JIFI.V22I1.1585.

Kithan, H.M. *et al.* (2023) 'Clinical and antimicrobial susceptibility profile of typhoid fever in children in the era of antibiotic resistance.', *Tropical Doctor*, 54(2), pp. 494755231217317–494755231217317. Available at: https://doi.org/10.1177/00494755231217317.

Krivitskaya, A. V. and Khrenova, M.G. (2022) 'Evolution of Ceftriaxone Resistance of Penicillin-Binding Proteins 2 Revealed by Molecular Modeling', *International Journal of Molecular Sciences*, 24(1), pp. 176–176. Available at: https://doi.org/10.3390/IJMS24010176.

Kuehn, R. *et al.* (2022) 'Treatment of enteric fever (typhoid and paratyphoid fever) with cephalosporins', *The Cochrane library*, 2022(11). Available at: https://doi.org/10.1002/14651858.CD010452.PUB2.

Kulchar, R. J., Singh, R., Ding, S., Alexander, E., Leong, K. W., & Daniell, H. (2023). Delivery of biologics: Topical administration. *Biomaterials*. https://doi.org/10.1016/j.biomaterials.2023.122312.

Lu, Yuqiong *et al.* (2023) 'Whether and How Disutilities of Adverse Events were Used in the Economic Evaluation of Drug Therapy for Cancer Treatment', *PharmacoEconomics*, 41(3), pp. 295–306. Available at: https://doi.org/10.1007/S40273-022-01232-9.

Mahendrakar, A. *et al.* (2024) 'Pharmacoeconomics in Healthcare By IJISRT', *International journal of innovative science and research technology*, pp. 1102–1107. Available at: https://doi.org/10.38124/IJISRT/IJISRT24MAR1293.

Mahmood, A., Khan, L. A., Ijaz, M. A., Nazir, I., Naseem, M., Tahir, M. A., Aamir, M., Rehman, M. U., & Hussain Asim, M. (2023). 'Enhanced Intestinal 39 Permeability of Cefixime by Self-Emulsifying Drug Delivery System: In-

Vitro and Ex-Vivo Characterization'. *Molecules*, *28*(6), 2827. https://doi.org/10.3390/molecules28062827.

Marselina, S., & Ardayani, T. (2024). 'The Relationship of Hand Washing Behavior with Soap and the Incidence of Typhoid Fever in Children Aged 5 - 12 Years in RW 01 Cikembar Village Cikembar District Sukabumi Dist'. *Indonesian Journal of Health Research and Development*, *2*(2), 64–69. https://doi.org/10.58723/ijhrd.v2i2.226.

Marchello, C.S., Hong, C.Y. and Crump, J.A. (2019) 'Global Typhoid Fever Incidence: A Systematic Review and Meta-analysis', *Clinical Infectious Diseases*, 68, pp. S105–S116. Available at: https://doi.org/10.1093/CID/CIY1094.

Matsumoto, K. *et al.* (2023) 'Comprehensive cost of illness of all diseases in Japan: Measurement of the social burden of diseases in a super-aged society', *Health policy and technology*, 12(3), pp. 100774–100774. Available at: https://doi.org/10.1016/J.HLPT.2023.100774.

McMullan, B., Bryant, P. A., Duffy, E., Bielicki, J., De Cock, P., Science, M., Zembles, T. N., Timberlake, K., Monsees, E., Hamdy, R. F., Tribble, A. C., Newland, J. G., & Patel, S. V. (2022). 'Multinational consensus antimicrobial stewardship recommendations for children managed in hospital settings'. *Lancet Infectious Diseases*, *23*(6), e199–e207. https://doi.org/10.1016/s1473-3099(22)00726-5.

Mehta, K.K. (2023) 'Cefotaxime in Enteric Fever: Therapeutic Reappraisal.', *Journal of Association of Physicians of India*, 71 7(7), pp. 11–12. Available at: https://doi.org/10.59556/JAPI.71.0292.

Mudathir Qossim *et al.* (2023) 'Stool or blood culture? A search for a gold standard for isolation of Salmonella typhi from patients with clinical symptoms of enteric fever in Bauchi state tertiary hospital', *International Journal of Science and Technology Research Archive*, 4(1), pp. 326–332. Available at: https://doi.org/10.53771/IJSTRA.2023.4.1.0046.

Nguyen, T. Van *et al.* (2023) 'Typhoid fever, complicated by syncope due to relative bradycardia: A case report', *SAGE open medical case reports*, 11, pp. 2050313X2311771-2050313X2311771. Available at: https://doi.org/10.1177/2050313X231177108.

Nyerere A, O.R.S. dan K.S. (2019) 'Performance of TUBEX® TF IgM Antibody Test Against Culture to Detect Typhoid Fever Among Hospitalized Patients in Nairobi County', *Journal of Biology, Agriculture and Healthcare* [Preprint]. Available at: https://doi.org/10.7176/JBAH/9-4-08.

Obremskey, A.W. *et al.* (2024) 'Life-threatening bradycardia in an anorexia nervosa patient: A case report', *Journal of pediatric critical care*, 11(4), pp. 179–181. Available at: https://doi.org/10.4103/JPCC.JPCC_29_24.

Onsongo, S., Mulwa, E. and Mutiso, B. (2023) 'A patient with leishmaniasis presenting with longstanding pancytopenia and hepatosplenomegaly',

Clinical Case Reports, 11(2). Available at: https://doi.org/10.1002/CCR3.6940.

Ousenu, K. *et al.* (2021) 'A Cross-Sectional Comparative Study of the Performance of the Widal Test and the Typhidot Immunoassay for Typhoid Fever Diagnosis in the West Region of Cameroon', *Canadian Journal of Infectious Diseases & Medical Microbiology*, 2021, p. 8279122. Available at: https://doi.org/10.1155/2021/8279122.

Pacifici, G.M. (2018) 'Management of Typhoid Fever and Bacterial Meningitis by Chloramphenicol in Infants and Children', *International Journal of Pediatrics*, 6(1), pp. 6783–6808. Available at: https://doi.org/10.22038/IJP.2017.28254.2447.

Paulden, M. (2020) 'Calculating and Interpreting ICERs and Net Benefit', *PharmacoEconomics*, 38(8), pp. 785–807. Available at: https://doi.org/10.1007/S40273-020-00914-6.

Permenkes (2021) *Peraturan Menteri Kesehatan RI Nomor 28 tahun 2021 tentang Pedoman Penggunaan Antibiotik*.

Pham Thi Thu, H. *et al.* (2024) 'Direct non-medical cost and associated factors in treatment of type 2 diabetes with complications at several hospitals in Ho Chi Minh city', *Tạp chí Khoa học Nghiên cứu Sức khỏe và Phát triển*, 08(01), pp. 83–91. Available at: https://doi.org/10.38148/JHDS.0801SKPT24-001.

Picconi, P. *et al.* (2020) 'New Broad-Spectrum Antibiotics Containing a Pyrrolobenzodiazepine Ring with Activity against Multidrug-Resistant Gram-Negative Bacteria.', *Journal of Medicinal Chemistry*, 63(13), pp. 6941–6958. Available at: https://doi.org/10.1021/ACS.JMEDCHEM.0C00328.

Price, E. *et al.* (2023) 'A systematic review of economic evaluations of pharmacist services.', *International Journal of Pharmacy Practice*, 31(5), pp. 459–471. Available at: https://doi.org/10.1093/IJPP/RIAD052.

Pusat Kebijakan Pembiayaan dan Desentralisasi Kesehatan (2023) 'Laporan Kerja Tahun 2022'. Jakarta.

Pustake, M. *et al.* (2022) 'Extensively Drug-Resistant Typhoid Fever: A Call to Action', *Indian Journal of Community Medicine*, 47(1), pp. 153–154. Available at: https://doi.org/10.4103/IJCM.IJCM_1008_21.

Rapp (2024) 'Cost-effectiveness analysis', *Medical Decision Making*, pp. 323–339. Available at: https://doi.org/10.1002/9781119627876.CH15.

Rayhana, R. and S. Hernawan, L. (2022) 'Typhoid Pediatric Inpatient Clinical Symptoms, Laboratory and Antibiotic Treatment', *KnE Life Sciences*. Available at: https://doi.org/10.18502/KLS.V7I5.12538.

Restyana, A. (2023) 'Cost-effectiveness analysis Of Ceftriaxon And Chloramphenicol In Pediatric Patients With Tyfoid Fever In Hospital X,

Jombang Regency' *Journal for Quality in Public Health*, *6*(2), 365–373. https://doi.org/10.30994/jqph.v6i2.446

Riskesdas. (2018) 'Laporan Nasional Riskesdas 2018*'* Jakarta: Kementerian Kesehatan Republik Indonesia.

Rosdiana *et al.* (2023) 'Risk Factors Typhoid Fever Incidence at Lau Health Center, Lau District, Maros Regency in 2021', *Green Medical Journal*, 5(1), pp. 25–39. Available at: https://doi.org/10.33096/GMJ.V5I1.138.

Salman Ahmad *et al.* (2024) 'Antibiotic Resistance: Targeting Extensively Drug Resistant (XDR)<i> Salmonella Typhi</i&gt';, *Deleted Journal*, 3(2), pp. 55–64. Available at: https://doi.org/10.62746/NJLHS.V3N2.58.

Sam, E.K. *et al.* (2024) 'Diagnostic performance of Typhidot RDT in diagnosis of typhoid fever and antibiotic resistance characterisation in a cross-sectional study in Southern Ghana', *BMC infectious diseases*, 24(1), p. 1262. Available at: https://doi.org/10.1186/S12879-024-10160-2.

Sanchez, L.A. (2008) 'Pharmacoeconomics: Principles, Methods, and Applications', in. The McGraw-Hill Companies, Inc.

Sang, Y., Ren, J. and Yao, Y.F. (2024) 'Salmonella typhi and Salmonella Paratyphi', *Molecular Medical Microbiology, Third Edition*, pp. 1173–1205. Available at: https://doi.org/10.1016/B978-0-12-818619-0.00005-8.

Santana, C.H. and Santos, R.L. (2024) 'Interactions of nontyphoidal Salmonella with host cells', *Molecular Medical Microbiology, Third Edition*, pp. 1207–1222. Available at: https://doi.org/10.1016/B978-0-12-818619-0.00112-X.

Saywell, N.L. *et al.* (2024) 'The intangible costs of living with low back pain from a patient perspective: a scoping review', *Disability and Rehabilitation*, pp. 1–13. Available at: https://doi.org/10.1080/09638288.2024.2423776.

Shahraki, A.R. (2024) 'Caecal and Colon Rupture Due to Thyphoid Fever in A 22 Years Old Male, A Rare Complication: A Case Report', *Journal of Infectious Diseases & Treatments*, pp. 1–4. Available at: https://doi.org/10.61440/JIDT.2024.V2.13.

Shegute, T. *et al.* (2023) 'Ceftriaxone Use Evaluation in Western Zone Tigray Hospitals, Ethiopia: A Retrospective Cross-Sectional Study', *BioMed Research International*, 2023. Available at: https://doi.org/10.1155/2023/7688896.

Shrinivas, A. *et al.* (2023) 'The importance of wage loss in the financial burden of illness: Longitudinal evidence from India', *Social Science & Medicine*, 317, p. 115583. Available at: https://doi.org/10.1016/J.SOCSCIMED.2022.115583).

Siggins, M. *et al.* (2019) 'Lymphatic metastasis of virulent extracellular bacteria drives systemic infection', *Social Science Research Network* [Preprint]. Available at: https://doi.org/10.2139/SSRN.3380255.

Smith (2020) 'Cost-Benefit Analysis', *Encyclopedia of Geography* [Preprint]. Available at: https://doi.org/10.4135/9781412939591.N225.

Susanti, E., Andriani, L.L. and Rahmah, M. (2022) 'Antibacterial Sensitivity Test of Generic Ceftriaxone Injection Against Salmonella typhi', *Journal Pharmasci (Journal of pharmacy and science)*, 7(1), pp. 9–13. Available at: https://doi.org/10.53342/PHARMASCI.V7I1.235.

Tanjaya, F. *et al.* (2024) 'Re-Emergence of Ampicillin Sensitive Salmonella typhi and the Increase of Ciprofloxacin Resistance in Typhoid Fever Treatment in Asia: A Systematic Review', *Indonesian Journal of Tropical and Infectious Disease*, 12(1). Available at: https://doi.org/10.20473/IJTID.V12I1.42305.

Tarek, Y., Mohammed., H.A.E.Tawab., A.A.E.-Moktader., M.O., E. (2018) *Efficacy And Safety Of Oral Cefixime For The Short-Term Treatment Of Typhoid Fever In A Group Of Egyptian Children.* Available at: https://typeset.io/papers/efficacy-and-safety-of-oral-cefixime-for-the-short-term-1sbuwf2c3n (Accessed: 16 December 2024).

Tran, A.D. *et al.* (2024) 'The use of health utility in cost-utility analysis: A systematic review in substance use disorders', *International Journal of Drug Policy*, 133, pp. 104570–104570. Available at: https://doi.org/10.1016/J.DRUGPO.2024.104570.

Van Be Bay, P. *et al.* (2022) 'Quantitative bacterial counts in the bone marrow of Vietnamese patients with typhoid fever', *Transactions of The Royal Society of Tropical Medicine and Hygiene*, 116(8), pp. 736–744. Available at: https://doi.org/10.1093/TRSTMH/TRAC003.

World Health Organization (2003) 'Background document: The diagnosis, treatment and prevention of typhoid fever Communicable Disease Surveillance and Response Vaccines and Biologicals', in. Available at: www.who.int/vaccines-documents/.

Xie, P. *et al.* (2023) 'Direct medical costs of ischemic heart disease in urban Southern China: a 5-year retrospective analysis of an all-payer health claims database in Guangzhou City', *Frontiers in Public Health*, 11. Available at: https://doi.org/10.3389/FPUBH.2023.1146914/PDF.

Yasmeen, S., et al. (2024). 'Epidemiological Study of Typhoid Fever Prevalence in Rawalpindi and Islamabad'. *Biological and Clinical Sciences Research Journal*, 2024(1), Article 728.

Yushananta, P. and Putri, M.F.E. (2024) 'Household and Environmental Typhoid Fever Transmission in Bandar Lampung City, Indonesia: A Case-Control Study', *Journal of Nepal Medical Association*, 62(277), pp. 564–569. Available at: https://doi.org/10.31729/JNMA.8744.

Yusransyah, Y., Rahmawati, Y., Udin, B., & Kurnia, N. M. (2023) 'Cost-effectiveness analysis of ceftriaxone and cefixime in typhoid fever patients hospitalized at berkah pandeglang regional hospital for the period 2020-2021' Jurnal Farmasi Sains Dan Praktis, 178–184. https://doi.org/10.31603/pharmacy.v9i2.8648 43

Warembourg, M., Lonca, N., Filleron, A., Tran, T. A., Knight, M., Janes, A., Soulairol, I., & Leguelinel-Blache, G. (2020). 'Assessment of anti-infective medication adherence in pediatric outpatients'. *European Journal of Pediatrics*, *179*(9), 1343–1351. https://doi.org/10.1007/S00431-020-03605-8.