

DAFTAR PUSTAKA

- Afrilina, I., Erly, E., & Almurdi, A. (2017). Identifikasi Mikroorganisme Penyebab Infeksi Saluran Kemih pada Pasien Pengguna Kateter Urine di ICU RSUP Dr. M. Djamil Padang Periode 01 Agustus-30 November 2014. *Jurnal Kesehatan Andalas*, 6(1).
- Al-Asoufi, A., Khlaifat, A., Tarawneh, A. A., Alsharafa, K., Al-Limoun, M., & Khleifat, K. (2017). Bacterial Quality of Urinary Tract Infections in Diabetic and Non Diabetics of the Population of Ma'an Province, Jordan. *Pak J Biol Sci*, 20(4), 179-188. <https://doi.org/10.3923/pjbs.2017.179.188>
- Al-Bayati, M., & Samarasinghe, S. (2022). Biofilm and Gene Expression Characteristics of the Carbapenem-Resistant Enterobacterales, *Escherichia coli* IMP, and *Klebsiella pneumoniae* NDM-1 Associated with Common Bacterial Infections. *Int J Environ Res Public Health*, 19(8). <https://doi.org/10.3390/ijerph19084788>
- Alcantar-Curiel, M. D., Alpuche-Aranda, C. M., Varona-Bobadilla, H. J., Gayosso-Vazquez, C., Jarillo-Quijada, M. D., Frias-Mendivil, M., Sanjuan-Padron, L., & Santos-Preciado, J. I. (2015). Risk factors for extended-spectrum beta-lactamases-producing *Escherichia coli* urinary tract infections in a tertiary hospital. *Salud Publica Mex*, 57(5), 412-418. <https://doi.org/10.21149/spm.v57i5.7621>
- Aly, S. A., Tawfeek, R. A., & Mohamed, I. S. (2014). Bacterial catheter-associated urinary tract infection in the Intensive Care Unit of Assiut University Hospital. *Al-Azhar Assiut Medical Journal*, 14(2), 52-58.
- Anggi, A., Wijaya, D. W., & Ramayani, O. R. (2019). Risk Factors for Catheter-Associated Urinary Tract Infection and Uropathogen Bacterial Profile in the Intensive Care Unit in Hospitals in Medan, Indonesia. *Macedonia Journal of Medical Science* 7(20), 3488-3492. <https://doi.org/https://doi.org/10.3889/oamjms.2019.684>
- APSIC, T. A. P. S. o. I. C. (2022). *APSIC Guide of Prevention of Catheter Associated Urinary Tract Infections (CAUTIs)*.
- Awoke, N., Kassa, T., & Teshager, L. (2019). Magnitude of Biofilm Formation and Antimicrobial Resistance Pattern of Bacteria Isolated from Urinary Catheterized Inpatients of Jimma University Medical Center, Southwest Ethiopia. *Int J Microbiol*, 2019, 5729568. <https://doi.org/10.1155/2019/5729568>
- Azmy, M., Nawar, N., Mohiedden, M., & Warille, L. (2016). Electron Microscopic Assay of Bacterial Biofilm Formed on Indwelling Urethral Catheters. *J Egypt Soc Parasitol*, 46(3), 475-484. <https://www.ncbi.nlm.nih.gov/pubmed/30230743>
- Ballen, V., Cepas, V., Ratia, C., Gabasa, Y., & Soto, S. M. (2022). Clinical *Escherichia coli*: From Biofilm Formation to New Antibiofilm Strategies. *Microorganisms*, 10(6). <https://doi.org/10.3390/microorganisms10061103>
- Barford, J., & Coates, A. (2009). The pathogenesis of catheter-associated urinary tract infection. *Journal of Infection Prevention*, 10(2), 50. <https://doi.org/110.1177/1757177408098265>

- Becker, K., Both, A., Weisselberg, S., Heilmann, C., & Rohde, H. (2020). Emergence of coagulase-negative staphylococci. *Expert Rev Anti Infect Ther*, 18(4), 349-366. <https://doi.org/10.1080/14787210.2020.1730813>
- Becker, K., Heilmann, C., & Peters, G. (2014). Coagulase-negative staphylococci. *Clin Microbiol Rev*, 27(4), 870-926. <https://doi.org/10.1128/CMR.00109-13>
- Bizuayehu, H., Bitew, A., Abdeta, A., & Ebrahim, S. (2022). Catheter-associated urinary tract infections in adult intensive care units at a selected tertiary hospital, Addis Ababa, Ethiopia. *PLoS One*, 17(3), e0265102. <https://doi.org/10.1371/journal.pone.0265102>
- CDC. (2015a). *Catheter-Associated Urinary Tract Infections (CAUTI)*.
- CDC. (2015b). *Healthcare-Associated Infections (HAIs)*. Retrieved from <https://www.cdc.gov/nhsn/index.html>
- CDC. (2019). *Health care Associated Infections (HAIs)*. Retrieved from <https://www.cdc.gov/hai/organisms/cre/technical-info.html>
- CDC. (2021). *Hospital Acquired Infections (HAIs)*. Retrieved from <https://www.cdc.gov/hai/index.html>
- CDC. (2022). *Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events*. Retrieved from <https://www.cdc.gov/nhsn/pdfs/pscmanual/7psccauticurrent.pdf>
- Chant, C., Smith, O. M., Marshall, J. C., & Friedrich, J. O. (2011). Relationship of catheter-associated urinary tract infection to mortality and length of stay in critically ill patients: a systematic review and meta-analysis of observational studies. *Crit Care Med*, 39(5), 1167-1173. <https://doi.org/10.1097/CCM.0b013e31820a8581>
- Chen, H., Lee, J. W. Y., Yu, K. C. H., Chan, C. K. W., Wong, A. T. Y., Lai, R. W. M., & Fung, K. S. C. (2020). Prevalence survey on catheter-associated urinary tract infection (CAUTI) in public hospitals in Hong Kong 2018. *Infect Control Hosp Epidemiol*, 41(3), 365-368. <https://doi.org/10.1017/ice.2019.370>
- Cortese, Y. J., Wagner, V. E., Tierney, M., Devine, D., & Fogarty, A. (2018). Review of Catheter-Associated Urinary Tract Infections and In Vitro Urinary Tract Models. *J Healthc Eng*, 2018, 2986742. <https://doi.org/10.1155/2018/2986742>
- Dadi, B. R., Abebe, T., Zhang, L., Mihret, A., Abebe, W., & Amogne, W. (2020). Distribution of virulence genes and phylogenetics of uropathogenic Escherichia coli among urinary tract infection patients in Addis Ababa, Ethiopia. *BMC Infect Dis*, 20(1), 108. <https://doi.org/10.1186/s12879-020-4844-z>
- De, N., & Godlove, M. (2010). Prevalence of S. aureus and S. epidermidis among patients with indwelling catheters and their antibiogram using some commonly used antibiotics. *Journal of American Science* 6(11), 515-520.
- Deyno, S., Fekadu, S., & Seyfe, S. (2018). Prevalence and antimicrobial resistance of coagulase negative staphylococci clinical isolates from Ethiopia: a meta-analysis. *BMC Microbiol*, 18(1), 43. <https://doi.org/10.1186/s12866-018-1188-6>

- Duerink, D. O., Roeshadi, D., Wahjono, H., Lestari, E. S., Hadi, U., Wille, J. C., De Jong, R. M., Nagelkerke, N. J., Van den Broek, P. J., Study Group 'antimicrobial Resistance In Indonesia, P., & Prevention, A. (2006). Surveillance of healthcare-associated infections in Indonesian hospitals. *J Hosp Infect*, 62(2), 219-229. <https://doi.org/10.1016/j.jhin.2005.08.004>
- Fattahi, S., Kafil, H. S., Nahai, M. R., Asgharzadeh, M., Nori, R., & Aghazadeh, M. (2015). Relationship of biofilm formation and different virulence genes in uropathogenic *Escherichia coli* isolates from Northwest Iran. *GMS Hyg Infect Control*, 10, Doc11. <https://doi.org/10.3205/dgkh000254>
- Flores-Mireles, A. L., Walker, J. N., Caparon, M., & Hultgren, S. J. (2015). Urinary tract infections: epidemiology, mechanisms of infection and treatment options. *Nat Rev Microbiol*, 13(5), 269-284. <https://doi.org/10.1038/nrmicro3432>
- Folliero, V., Franci, G., Dell'Annunziata, F., Giugliano, R., Foglia, F., Sperlongano, R., De Filippis, A., Finamore, E., & Galdiero, M. (2021). Evaluation of Antibiotic Resistance and Biofilm Production among Clinical Strain Isolated from Medical Devices. *Int J Microbiol*, 2021, 9033278. <https://doi.org/10.1155/2021/9033278>
- Gajdacs, M., Abrok, M., Lazar, A., & Burian, K. (2021). Urinary Tract Infections in Elderly Patients: A 10-Year Study on Their Epidemiology and Antibiotic Resistance Based on the WHO Access, Watch, Reserve (AWaRe) Classification. *Antibiotics (Basel)*, 10(9). <https://doi.org/10.3390/antibiotics10091098>
- Ganderton, L., Chawla, J., Winters, C., Wimpenny, J., & Stickler, D. (1992). Scanning electron microscopy of bacterial biofilms on indwelling bladder catheters. *Eur J Clin Microbiol Infect Dis*, 11(9), 789-796. <https://doi.org/10.1007/BF01960877>
- Gilani, M., Usman, J., Latif, M., Munir, T., Gill, M. M., Anjum, R., & Babar, N. (2016). Methicillin resistant coagulase negative staphylococcus: From colonizer to a pathogen. *Pak J Pharm Sci*, 29(4), 1117-1121. <https://www.ncbi.nlm.nih.gov/pubmed/27393446>
- Girma, A., & Aemiro, A. (2022). The Bacterial Profile and Antimicrobial Susceptibility Patterns of Urinary Tract Infection Patients at Pawe General Hospital, Northwest Ethiopia. *Scientifica (Cairo)*, 2022, 3085950. <https://doi.org/10.1155/2022/3085950>
- Gould, C. V., Umscheid, C. A., Agarwal, R. K., Kuntz, G., Pegues, D. A., & Healthcare Infection Control Practices Advisory, C. (2010). Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol*, 31(4), 319-326. <https://doi.org/10.1086/651091>
- Govindarajan, D. K., & Kandaswamy, K. (2022). Virulence factors of uropathogens and their role in host pathogen interactions. *Cell Surf*, 8, 100075. <https://doi.org/10.1016/j.tcsu.2022.100075>
- Guerra, M. E. S., Destro, G., Vieira, B., Lima, A. S., Ferraz, L. F. C., Hakansson, A. P., Darrieux, M., & Converso, T. R. (2022). *Klebsiella pneumoniae* Biofilms and Their Role in Disease Pathogenesis. *Front Cell Infect Microbiol*, 12, 877995. <https://doi.org/10.3389/fcimb.2022.877995>
- Guiton, P. S., Cusumano, C. K., Kline, K. A., Dodson, K. W., Han, Z., Janetka, J. W., Henderson, J. P., Caparon, M. G., & Hultgren, S. J. (2012).

- Combinatorial small-molecule therapy prevents uropathogenic *Escherichia coli* catheter-associated urinary tract infections in mice. *Antimicrob Agents Chemother*, 56(9), 4738-4745. <https://doi.org/10.1128/AAC.00447-12>
- Gunardi, W. D., Karuniawati, A., Umbas, R., Bardosono, S., Lydia, A., Soebandrio, A., & Safari, D. (2021). Biofilm-Producing Bacteria and Risk Factors (Gender and Duration of Catheterization) Characterized as Catheter-Associated Biofilm Formation. *International Journal of Microbiology* 8869275.
- Hadi, C. (2020). *Laporan Tahunan RSUD Dr. Moewardi 2020*. Retrieved from https://ppid.rsmoewardi.com/wp-content/uploads/2021/03/Lap.-Tahunan-2020_OK.pdf
- Hall, C. W., & Mah, T. F. (2017). Molecular mechanisms of biofilm-based antibiotic resistance and tolerance in pathogenic bacteria. *FEMS Microbiol Rev*, 41(3), 276-301. <https://doi.org/10.1093/femsre/fux010>
- Hariati, H., Suza, D. E., & Tarigan, R. (2019). Risk Factors Analysis for Catheter-Associated Urinary Tract Infection in Medan, Indonesia. *Macedonia Journal Medical Science* (798), 1-6.
- Hijriani, B. I., & Pauzan, P. (2023). Bacteriological Profile of Catheter Associated Urinary Tract Infection at West Nusa Tenggara's Hospital. *ICoMTech(AHSR 51)*, 43-48. https://doi.org/https://doi.org/10.2991/978-94-6463-018-3_6
- Hojati, Z., Zamanzad, B., Hashemzadeh, M., Molaie, R., & Gholipour, A. (2015). The FimH Gene in Uropathogenic *Escherichia coli* Strains Isolated From Patients With Urinary Tract Infection. *Jundishapur J Microbiol*, 8(2), e17520. <https://doi.org/10.5812/jjm.17520>
- Hooton, T. M., Bradley, S. F., Cardenas, D. D., Colgan, R., Geerlings, S. E., Rice, J. C., Saint, S., Schaeffer, A. J., Tambayh, P. A., Tenke, P., Nicolle, L. E., & Infectious Diseases Society of, A. (2010). Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clin Infect Dis*, 50(5), 625-663. <https://doi.org/10.1086/650482>
- Horcajada, J. P., Shaw, E., Padilla, B., Pintado, V., Calbo, E., Benito, N., Gamallo, R., Gozalo, M., Rodriguez-Bano, J., group, I., Grupo de Estudio de Infeccion, H., & Sociedad Espanola de Enfermedades Infecciosas y Microbiologia, C. (2013). Healthcare-associated, community-acquired and hospital-acquired bacteraemic urinary tract infections in hospitalized patients: a prospective multicentre cohort study in the era of antimicrobial resistance. *Clin Microbiol Infect*, 19(10), 962-968. <https://doi.org/10.1111/1469-0691.12089>
- Jacobsen, S. M., Stickler, D. J., Mobley, H. L., & Shirtliff, M. E. (2008). Complicated catheter-associated urinary tract infections due to *Escherichia coli* and *Proteus mirabilis*. *Clin Microbiol Rev*, 21(1), 26-59. <https://doi.org/10.1128/CMR.00019-07>
- Jagannathan, V., & Viswanathan, P. (2018). Proanthocyanidins-Will they effectively restrain conspicuous bacterial strains devolving on urinary tract infection? *J Basic Microbiol*, 58(7), 567-578. <https://doi.org/10.1002/jobm.201800131>

- Jayakaran, J., Soundararajan, N., & Shanmugam, P. (2019). Phenotypic and genotypic characterization of multidrug-resistant isolates from patients with catheter-associated urinary tract infection in a tertiary care hospital. *J Lab Physicians*, 11(3), 206-211. https://doi.org/10.4103/JLP.JLP_22_19
- Joya, M., Aalemi, A. K., & Baryali, A. T. (2022). Prevalence and Antibiotic Susceptibility of the Common Bacterial Uropathogen Among UTI Patients in French Medical Institute for Children. *Infect Drug Resist*, 15, 4291-4297. <https://doi.org/10.2147/IDR.S353818>
- Kanai, H., Sato, H., & Takei, Y. (2014). Community-acquired methicillin-resistant *Staphylococcus epidermidis* pyelonephritis in a child: a case report. *J Med Case Rep*, 8, 415. <https://doi.org/10.1186/1752-1947-8-415>
- Karigoudar, R. M., Karigoudar, M. H., Wavare, S. M., & Mangalgi, S. S. (2019). Detection of biofilm among uropathogenic *Escherichia coli* and its correlation with antibiotic resistance pattern. *J Lab Physicians*, 11(1), 17-22. https://doi.org/10.4103/JLP.JLP_98_18
- Katayama, K., Meddings, J., Saint, S., Fowler, K. E., Ratz, D., Tagashira, Y., Kawamura, Y., Fujikawa, T., Nishiguchi, S., Kayauchi, N., Takagaki, N., Tokuda, Y., & Kuriyama, A. (2022). Prevalence and appropriateness of indwelling urinary catheters in Japanese hospital wards: a multicenter point prevalence study. *BMC Infect Dis*, 22(1), 175. <https://doi.org/10.1186/s12879-022-07162-3>
- Katongole, P., Nalubega, F., Florence, N. C., Asimwe, B., & Andia, I. (2020). Biofilm formation, antimicrobial susceptibility and virulence genes of Uropathogenic *Escherichia coli* isolated from clinical isolates in Uganda. *BMC Infect Dis*, 20(1), 453. <https://doi.org/10.1186/s12879-020-05186-1>
- Keten, D., Aktas, F., Tunncan, O. G., Kalkanci, A., Biter, G., & Keten, H. S. (2014). Catheter-associated urinary tract infections in intensive care units at a University hospital in Turkey. *Bosn J Basic Med Sci*, 14(4), 227-233.
- Kitagawa, K., Shigemura, K., Yamamichi, F., Alimsardjono, L., Rahardjo, D., Kuntaman, K., Shirakawa, T., & Fujisawa, M. (2018). International Comparison of Causative Bacteria and Antimicrobial Susceptibilities of Urinary Tract Infections between Kobe, Japan, and Surabaya, Indonesia. *Jpn J Infect Dis*, 71(1), 8-13. <https://doi.org/10.7883/yoken.JJID.2017.233>
- Koves, B., Magyar, A., & Tenke, P. (2017). Spectrum and antibiotic resistance of catheter-associated urinary tract infections. *GMS Infect Dis*, 5, Doc06. <https://doi.org/10.3205/id000032>
- Kumar, R., Kumar, R., Perswani, P., Taimur, M., Shah, A., & Shaukat, F. (2019). Clinical and Microbiological Profile of Urinary Tract Infections in Diabetic versus Non-Diabetic Individuals. *Cureus*, 11(8), e5464. <https://doi.org/10.7759/cureus.5464>
- Le Bouguenec, C., Archambaud, M., & Labigne, A. (1992). Rapid and specific detection of the *pap*, *afa*, and *sfa* adhesin-encoding operons in uropathogenic *Escherichia coli* strains by polymerase chain reaction. *J Clin Microbiol*, 30(5), 1189-1193. <https://doi.org/10.1128/jcm.30.5.1189-1193.1992>
- Linhares, I., Raposo, T., Rodrigues, A., & Almeida, A. (2013). Frequency and antimicrobial resistance patterns of bacteria implicated in community

- urinary tract infections: a ten-year surveillance study (2000-2009). *BMC Infect Dis*, 13, 19. <https://doi.org/10.1186/1471-2334-13-19>
- Liu, X., Sai, F., Li, L., Zhu, C., & Huang, H. (2020). Clinical characteristics and risk factors of catheter-associated urinary tract infections caused by *Klebsiella Pneumoniae*. *Ann Palliat Med*, 9(5), 2668-2677. <https://doi.org/10.21037/apm-20-1052>
- Magill, S. S., O'Leary, E., Janelle, S. J., Thompson, D. L., Dumyati, G., Nadle, J., Wilson, L. E., Kainer, M. A., Lynfield, R., Greissman, S., Ray, S. M., Beldavs, Z., Gross, C., Bamberg, W., Sievers, M., Concannon, C., Buhr, N., Warnke, L., Maloney, M., . . . Ebrahim, S. (2018). Changes in Prevalence of Health Care-Associated Infections in U.S. Hospitals. *N Engl J Med*, 379(18), 1732-1744. <https://doi.org/10.1056/NEJMoa1801550>
- Magiorakos, A. P., Srinivasan, A., Carey, R. B., Carmeli, Y., Falagas, M. E., Giske, C. G., Harbarth, S., Hindler, J. F., Kahlmeter, G., Olsson-Liljequist, B., Paterson, D. L., Rice, L. B., Stelling, J., Struelens, M. J., Vatopoulos, A., Weber, J. T., & Monnet, D. L. (2012). Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance. *Clin Microbiol Infect*, 18(3), 268-281. <https://doi.org/10.1111/j.1469-0691.2011.03570.x>
- Maharjan, G., Khadka, P., Siddhi Shilpakar, G., Chapagain, G., & Dhungana, G. R. (2018). Catheter-Associated Urinary Tract Infection and Obstinate Biofilm Producers. *Can J Infect Dis Med Microbiol*, 2018, 7624857. <https://doi.org/10.1155/2018/7624857>
- Mancini, A., Pucciarelli, S., Lombardi, F. E., Barocci, S., Pauri, P., & Lodolini, S. (2020). Differences between Community - and Hospital - acquired urinary tract infections in a tertiary care hospital. *New Microbiol*, 43(1), 17-21. <https://www.ncbi.nlm.nih.gov/pubmed/31814033>
- Matsukawa, M., Kunishima, Y., Takahashi, S., Takeyama, K., & Tsukamoto, T. (2005). Bacterial colonization on intraluminal surface of urethral catheter. *Urology*, 65(3), 440-444. <https://doi.org/10.1016/j.urology.2004.10.065>
- May, L., Klein, E. Y., Rothman, R. E., & Laxminarayan, R. (2014). Trends in antibiotic resistance in coagulase-negative staphylococci in the United States, 1999 to 2012. *Antimicrob Agents Chemother*, 58(3), 1404-1409. <https://doi.org/10.1128/AAC.01908-13>
- Medina-Polo, J., Naber, K. G., & Bjerklund Johansen, T. E. (2021). Healthcare-associated urinary tract infections in urology. *GMS Infect Dis*, 9, Doc05. <https://doi.org/10.3205/id000074>
- Megged, O. (2022). Coagulase-negative Staphylococci: a rare cause of urinary tract infections in children with consequences on clinical practice. *Eur J Pediatr*, 181(3), 1099-1104. <https://doi.org/10.1007/s00431-021-04308-4>
- Michaelis, C., & Grohmann, E. (2023). Horizontal Gene Transfer of Antibiotic Resistance Genes in Biofilms. *Antibiotics (Basel)*, 12(2). <https://doi.org/10.3390/antibiotics12020328>
- Mohan, U., Jindal, N., & Aggarwal, P. (2002). Species distribution and antibiotic sensitivity pattern of Coagulase negative staphylococci isolated from various clinical specimens. *Indian J Med Microbiol*, 20(1), 45-46. <https://www.ncbi.nlm.nih.gov/pubmed/17657025>

- Monegro, A. F., Muppidi, V., & Regunath, H. (2022). Hospital Acquired Infections. In *StatPearls*. <https://www.ncbi.nlm.nih.gov/pubmed/28722887>
- Murni, I. K., Duke, T., Kinney, S., Daley, A. J., Wirawan, M. T., & Soenarto, Y. (2022). Risk factors for healthcare-associated infection among children in a low-and middle-income country. *BMC Infect Dis*, 22(1), 406. <https://doi.org/10.1186/s12879-022-07387-2>
- Navarro, S., Sherman, E., Colmer-Hamood, J. A., Nelius, T., Myntti, M., & Hamood, A. N. (2022). Urinary Catheters Coated with a Novel Biofilm Preventative Agent Inhibit Biofilm Development by Diverse Bacterial Uropathogens. *Antibiotics (Basel)*, 11(11). <https://doi.org/10.3390/antibiotics11111514>
- Naziri, Z., Kilegolan, J. A., Moezzi, M. S., & Derakhshandeh, A. (2021). Biofilm formation by uropathogenic *Escherichia coli*: a complicating factor for treatment and recurrence of urinary tract infections. *J Hosp Infect*, 117, 9-16. <https://doi.org/10.1016/j.jhin.2021.08.017>
- NHSN, C. (2023). *Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events*. Retrieved from <https://www.cdc.gov/nhsn/pdfs/pscmanual/7psccauticurrent.pdf>
- Nirwati, H., Sinanjung, K., Fahrurnissa, F., Wijaya, F., Napitupulu, S., Hati, V. P., Hakim, M. S., Meliala, A., Aman, A. T., & Nuryastuti, T. (2019). Biofilm formation and antibiotic resistance of *Klebsiella pneumoniae* isolated from clinical samples in a tertiary care hospital, Klaten, Indonesia. *BMC Proc*, 13(Suppl 11), 20. <https://doi.org/10.1186/s12919-019-0176-7>
- Odoki, M., Aliero, A. A., Tibyangye, J., Maniga, J. N., Eilu, E., Ntulume, I., Wampande, E., Kato, C. D., Agwu, E., & Bazira, J. (2020). Fluoroquinolone resistant bacterial isolates from the urinary tract among patients attending hospitals in Bushenyi District, Uganda. *Pan Afr Med J*, 36, 60. <https://doi.org/10.11604/pamj.2020.36.60.18832>
- Paterson, D. L., & Bonomo, R. A. (2005). Extended-spectrum beta-lactamases: a clinical update. *Clin Microbiol Rev*, 18(4), 657-686. <https://doi.org/10.1128/CMR.18.4.657-686.2005>
- Penesyan, A., Paulsen, I. T., Gillings, M. R., Kjelleberg, S., & Manefield, M. J. (2020). Secondary Effects of Antibiotics on Microbial Biofilms. *Front Microbiol*, 11, 2109. <https://doi.org/10.3389/fmicb.2020.02109>
- Peng, D., Li, X., Liu, P., Luo, M., Chen, S., Su, K., Zhang, Z., He, Q., Qiu, J., & Li, Y. (2018). Epidemiology of pathogens and antimicrobial resistance of catheter-associated urinary tract infections in intensive care units: A systematic review and meta-analysis. *Am J Infect Control*, 46(12), e81-e90. <https://doi.org/10.1016/j.ajic.2018.07.012>
- Pompilio, A., Crocetta, V., Savini, V., Petrelli, D., Di Nicola, M., Bucco, S., Amoroso, L., Bonomini, M., & Di Bonaventura, G. (2018). Phylogenetic relationships, biofilm formation, motility, antibiotic resistance and extended virulence genotypes among *Escherichia coli* strains from women with community-onset primitive acute pyelonephritis. *PLoS One*, 13(5), e0196260. <https://doi.org/10.1371/journal.pone.0196260>
- Poursina, F., Sepehrpour, S., & Mobasherizadeh, S. (2018). Biofilm Formation in Nonmultidrug-resistant *Escherichia coli* Isolated from Patients with Urinary

- Tract Infection in Isfahan, Iran. *Adv Biomed Res*, 7, 40.
https://doi.org/10.4103/abr.abr_116_17
- Prinzi, S., & Rohde, R. (2023). *The Role of Bacterial Biofilms in Antimicrobial Resistance*. <https://asm.org/Articles/2023/March/The-Role-of-Bacterial-Biofilms-in-Antimicrobial-Re>
- Qian, W., Li, X., Yang, M., Liu, C., Kong, Y., Li, Y., Wang, T., & Zhang, Q. (2022). Relationship Between Antibiotic Resistance, Biofilm Formation, and Biofilm-Specific Resistance in *Escherichia coli* Isolates from Ningbo, China. *Infect Drug Resist*, 15, 2865-2878.
<https://doi.org/10.2147/IDR.S363652>
- Qin, X., Hu, F., Wu, S., Ye, X., Zhu, D., Zhang, Y., & Wang, M. (2013). Comparison of adhesin genes and antimicrobial susceptibilities between uropathogenic and intestinal commensal *Escherichia coli* strains. *PLoS One*, 8(4), e61169. <https://doi.org/10.1371/journal.pone.0061169>
- Rahdar, M., Rashki, A., Miri, H. R., & Rashki Ghalehnoo, M. (2015). Detection of pap, sfa, afa, foc, and fim Adhesin-Encoding Operons in Uropathogenic *Escherichia coli* Isolates Collected From Patients With Urinary Tract Infection. *Jundishapur J Microbiol*, 8(8), e22647.
<https://doi.org/10.5812/jjm.22647>
- Ramadan, R., Omar, N., Dawaba, M., & Moemen, D. (2021). Bacterial biofilm dependent catheter associated urinary tract infections: Characterization, antibiotic resistance pattern and risk factors. *Egyptian Journal of Basic and Applied Sciences*, 8(1), 64-74.
<https://doi.org/10.1080/2314808X.2021.1905464>
- Rawat, D., & Nair, D. (2010). Extended-spectrum beta-lactamases in Gram Negative Bacteria. *J Glob Infect Dis*, 2(3), 263-274.
<https://doi.org/10.4103/0974-777X.68531>
- Reham Ramadan, Nesrene Omar, Mohamed Dawaba, & Moemen, D. (2021). Bacterial biofilm dependent catheter associated urinary tract infections: Characterization, antibiotic resistance pattern and risk factors. *Egyptian Journal of Basic and Applied Sciences*, 8(1), 64-74.
<https://doi.org/https://doi.org/10.1080/2314808X.2021.1905464>
- Rita Teixeira-Santos, Luciana C. Gomes, & Mergulhão, F. J. M. (2022). Recent advances in antimicrobial surfaces for urinary catheters. *Current Opinion in Biomedical Engineering*, 22, 100394.
- Russo, P. L., Stewardson, A. J., Cheng, A. C., Bucknall, T., & Mitchell, B. G. (2020). Prevalence of device use and transmission based precautions in nineteen large Australian acute care public hospitals: Secondary outcomes from a national healthcare associated infection point prevalence survey. *Infect Dis Health*, 25(4), 262-267.
<https://doi.org/10.1016/j.idh.2020.05.006>
- Sabih, A., & Leslie, S. W. (2022). Complicated Urinary Tract Infections. In *StatPearls*. <https://www.ncbi.nlm.nih.gov/pubmed/28613784>
- Sabir, N., Ikram, A., Zaman, G., Satti, L., Gardezi, A., Ahmed, A., & Ahmed, P. (2017). Bacterial biofilm-based catheter-associated urinary tract infections: Causative pathogens and antibiotic resistance. *Am J Infect Control*, 45(10), 1101-1105. <https://doi.org/10.1016/j.ajic.2017.05.009>

- Sarshar, M., Behzadi, P., Ambrosi, C., Zagaglia, C., Palamara, A. T., & Scribano, D. (2020). FimH and Anti-Adhesive Therapeutics: A Disarming Strategy Against Uropathogens. *Antibiotics (Basel)*, 9(7). <https://doi.org/10.3390/antibiotics9070397>
- Schembri, M. A., Sokurenko, E. V., & Klemm, P. (2000). Functional flexibility of the FimH adhesin: insights from a random mutant library. *Infect Immun*, 68(5), 2638-2646. <https://doi.org/10.1128/IAI.68.5.2638-2646.2000>
- Schiebel, J., Bohm, A., Nitschke, J., Burdukiewicz, M., Weinreich, J., Ali, A., Roggenbuck, D., Rodiger, S., & Schierack, P. (2017). Genotypic and Phenotypic Characteristics Associated with Biofilm Formation by Human Clinical Escherichia coli Isolates of Different Pathotypes. *Appl Environ Microbiol*, 83(24). <https://doi.org/10.1128/AEM.01660-17>
- Schwan, W. R. (2011). Regulation of fim genes in uropathogenic Escherichia coli. *World J Clin Infect Dis*, 1(1), 17-25. <https://doi.org/10.5495/wjcid.v1.i1.17>
- Shackley, D. C., Whytock, C., Parry, G., Clarke, L., Vincent, C., Harrison, A., John, A., Provost, L., & Power, M. (2017). Variation in the prevalence of urinary catheters: a profile of National Health Service patients in England. *BMJ Open*, 7(6), e013842. <https://doi.org/10.1136/bmjopen-2016-013842>
- Sharma, D., Misba, L., & Khan, A. U. (2019). Antibiotics versus biofilm: an emerging battleground in microbial communities. *Antimicrob Resist Infect Control*, 8, 76. <https://doi.org/10.1186/s13756-019-0533-3>
- Sheu, C. C., Chang, Y. T., Lin, S. Y., Chen, Y. H., & Hsueh, P. R. (2019). Infections Caused by Carbapenem-Resistant Enterobacteriaceae: An Update on Therapeutic Options. *Front Microbiol*, 10, 80. <https://doi.org/10.3389/fmicb.2019.00080>
- Siqueira, A. K., Ribeiro, M. G., Leite Dda, S., Tiba, M. R., Moura, C., Lopes, M. D., Prestes, N. C., Salerno, T., & Silva, A. V. (2009). Virulence factors in Escherichia coli strains isolated from urinary tract infection and pyometra cases and from feces of healthy dogs. *Res Vet Sci*, 86(2), 206-210. <https://doi.org/10.1016/j.rvsc.2008.07.018>
- Sitepu, W. I. (2019). Effectiveness Implementation Healthcare Infection Control Practices Advisory Committe to Catheter-associated Urinary Tract Infection. *Journal ARSI Juni*, 165. <https://doi.org/https://orcid.org/0000-0002-5502-5593>
- Sokurenko, E. V., Chesnokova, V., Dykhuizen, D. E., Ofek, I., Wu, X. R., Krogfelt, K. A., Struve, C., Schembri, M. A., & Hasty, D. L. (1998). Pathogenic adaptation of Escherichia coli by natural variation of the FimH adhesin. *Proc Natl Acad Sci U S A*, 95(15), 8922-8926. <https://doi.org/10.1073/pnas.95.15.8922>
- Szczuka, E., Jablonska, L., & Kaznowski, A. (2016). Coagulase-negative staphylococci: pathogenesis, occurrence of antibiotic resistance genes and in vitro effects of antimicrobial agents on biofilm-growing bacteria. *J Med Microbiol*, 65(12), 1405-1413. <https://doi.org/10.1099/jmm.0.000372>
- Szemraj, M., Grazul, M., Balcerzak, E., & Szewczyk, E. M. (2020). Staphylococcal species less frequently isolated from human clinical specimens - are they a threat for hospital patients? *BMC Infect Dis*, 20(1), 128. <https://doi.org/10.1186/s12879-020-4841-2>

- Tabibian, J. H., Gornbein, J., Heidari, A., Dien, S. L., Lau, V. H., Chahal, P., Churchill, B. M., & Haake, D. A. (2008). Uropathogens and host characteristics. *J Clin Microbiol*, 46(12), 3980-3986. <https://doi.org/10.1128/JCM.00339-08>
- Tewawong, N., Kowaboot, S., Pimainog, Y., Watanagul, N., Thongmee, T., & Poovorawan, Y. (2020). Distribution of phylogenetic groups, adhesin genes, biofilm formation, and antimicrobial resistance of uropathogenic *Escherichia coli* isolated from hospitalized patients in Thailand. *PeerJ*, 8, e10453. <https://doi.org/10.7717/peerj.10453>
- Trautner, B. W., & Darouiche, R. O. (2004). Role of biofilm in catheter-associated urinary tract infection. *Am J Infect Control*, 32(3), 177-183. <https://doi.org/10.1016/j.ajic.2003.08.005>
- Upadhyayula, S., Kambalapalli, M., & Asmar, B. I. (2012). *Staphylococcus epidermidis* Urinary Tract Infection in an Infant. *Case Rep Infect Dis*, 2012, 983153. <https://doi.org/10.1155/2012/983153>
- Vebrilian, S. (2016). Catheter Associated Urinary Tract Infection Based on Surveillance Attributes in RSU Haji Surabaya. *Tropical and Infectious Diseases Control and Management*, 4(3). <https://doi.org/https://doi.org/10.20473/jbe.V4I32016.313-325>
- Verma, A., Bhani, D., Tomar, V., Bachhiwal, R., & Yadav, S. (2016). Differences in Bacterial Colonization and Biofilm Formation Property of Uropathogens between the Two most Commonly used Indwelling Urinary Catheters. *J Clin Diagn Res*, 10(6), PC01-03. <https://doi.org/10.7860/JCDR/2016/20486.7939>
- Werneburg, G. T. (2022). Catheter-Associated Urinary Tract Infections: Current Challenges and Future Prospects. *Res Rep Urol*, 14, 109-133. <https://doi.org/10.2147/RRU.S273663>
- Werneburg, G. T., Nguyen, A., Henderson, N. S., Rackley, R. R., Shoskes, D. A., Le Sueur, A. L., Corcoran, A. T., Katz, A. E., Kim, J., Rohan, A. J., & Thanassi, D. G. (2020). The Natural History and Composition of Urinary Catheter Biofilms: Early Uropathogen Colonization with Intraluminal and Distal Predominance. *J Urol*, 203(2), 357-364. <https://doi.org/10.1097/JU.0000000000000492>
- WHO. (2017). *WHO publishes list of bacteria for which new antibiotics are urgently needed* <https://www.who.int/news/item/27-02-2017-who-publishes-list-of-bacteria-for-which-new-antibiotics-are-urgently-needed>
- WHO. (2020). *GLASS-AMR Module: Antimicrobial Resistance surveillance*. Retrieved from <https://www.who.int/initiatives/glass/glass-routine-data-surveillance>
- Yi, J., & Kim, K. H. (2021). Identification and infection control of carbapenem-resistant Enterobacterales in intensive care units. *Acute Crit Care*, 36(3), 175-184. <https://doi.org/10.4266/acc.2021.00409>
- Zamani, H., & Salehzadeh, A. (2018). Biofilm formation in uropathogenic *Escherichia coli*: association with adhesion factor genes. *Turk J Med Sci*, 48(1), 162-167. <https://doi.org/10.3906/sag-1707-3>