

REFERENCES

- Alvarado, A., 1986. A practical score for the early diagnosis of acute appendicitis. *Ann. Emerg. Med.* 15, 557–564. [https://doi.org/10.1016/S0196-0644\(86\)80993-3](https://doi.org/10.1016/S0196-0644(86)80993-3)
- Anderson, D.J., Podgorny, K., Berrios-Torres, S.I., Bratzler, D.W., Dellinger, E.P., Greene, L., Nyquist, A.-C., Saiman, L., Yokoe, D.S., Maragakis, L.L., Kaye, K.S., 2014. Strategies to Prevent Surgical Site Infections in Acute Care Hospitals: 2014 Update. *Infect. Control Hosp. Epidemiol.* 35, 605–627. <https://doi.org/10.1086/676022>
- Arumugham, V.B., Gujarathi, R., Cascella, M., 2022. Third Generation Cephalosporins, in: *StatPearls*. StatPearls Publishing, Treasure Island (FL).
- Barlow, A., Muhleman, M., Gielecki, J., Matusz, P., Tubbs, R.S., Loukas, M., 2013. The vermiform appendix: a review. *Clin. Anat. N. Y. N* 26, 833–842. <https://doi.org/10.1002/ca.22269>
- Beltrán, M.A., Cruces, K.S., 2008. Incisional hernia after McBurney incision: retrospective case-control study of risk factors and surgical treatment. *World J. Surg.* 32, 596–601; discussion 602–603. <https://doi.org/10.1007/s00268-007-9342-6>
- Bhangu, A., Søreide, K., Di Saverio, S., Assarsson, J.H., Drake, F.T., 2015. Acute appendicitis: modern understanding of pathogenesis, diagnosis, and management. *The Lancet* 386, 1278–1287. [https://doi.org/10.1016/S0140-6736\(15\)00275-5](https://doi.org/10.1016/S0140-6736(15)00275-5)
- Blot, S.I., Pea, F., Lipman, J., 2014. The effect of pathophysiology on pharmacokinetics in the critically ill patient — Concepts appraised by the example of antimicrobial agents. *Adv. Drug Deliv. Rev.*, Meeting the challenges of advanced drug delivery in critical illness 77, 3–11. <https://doi.org/10.1016/j.addr.2014.07.006>
- Bradley, A.C., Hutson, M.S., Kyle, J.A., 2019. Acute Appendicitis in Adults [WWW Document]. URL <https://www.uspharmacist.com/article/acute-appendicitis-in-adults> (accessed 2.16.22).
- Bratzler, D.W., Dellinger, E.P., Olsen, K.M., Perl, T.M., Auwaerter, P.G., Bolon, M.K., Fish, D.N., Napolitano, L.M., Sawyer, R.G., Slain, D., Steinberg, J.P., Weinstein, R.A., American Society of Health-System Pharmacists, Infectious Disease Society of America, Surgical Infection Society, Society for Healthcare Epidemiology of America, 2013. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am. J. Health-Syst. Pharm. AJHP Off. J. Am. Soc. Health-Syst. Pharm.* 70, 195–283. <https://doi.org/10.2146/ajhp120568>
- Bratzler, D.W., Houck, P.M., Richards, C., Steele, L., Dellinger, E.P., Fry, D.E., Wright, C., Ma, A., Carr, K., Red, L., 2005. Use of Antimicrobial Prophylaxis for Major Surgery: Baseline Results From the National Surgical Infection Prevention Project. *Arch. Surg.* 140, 174–182. <https://doi.org/10.1001/archsurg.140.2.174>
- Chandrasekaran, T.V., Johnson, N., 2014. Acute appendicitis. *Surg. Oxf.* 32, 413–417. <https://doi.org/10.1016/j.mpsur.2014.06.004>
- Chen, C.-Y., Chen, Y.-C., Pu, H.-N., Tsai, C.-H., Chen, W.-T., Lin, C.-H., 2012. Bacteriology of acute appendicitis and its implication for the use of prophylactic antibiotics. *Surg. Infect.* 13, 383–390. <https://doi.org/10.1089/sur.2011.135>
- Crader, M.F., Varacallo, M., 2022. Preoperative Antibiotic Prophylaxis, in: *StatPearls*. StatPearls Publishing, Treasure Island (FL).
- Dai, L., Shuai, J., 2017. Laparoscopic versus open appendectomy in adults and children: A meta-analysis of randomized controlled trials. *United Eur. Gastroenterol. J.* 5, 542–553. <https://doi.org/10.1177/2050640616661931>

- Danwang, C., Bigna, J.J., Tochie, J.N., Mbonda, A., Mbanga, C.M., Nzalio, R.N.T., Guifo, M.L., Essomba, A., 2020. Global incidence of surgical site infection after appendectomy: a systematic review and meta-analysis. *BMJ Open* 10, e034266. <https://doi.org/10.1136/bmjopen-2019-034266>
- Daskalakis, K., Juhlin, C., Pahlman, L., 2014. The use of pre- or postoperative antibiotics in surgery for appendicitis: A systematic review. *Scand. J. Surg.* 103, 14–20. <https://doi.org/10.1177/1457496913497433>
- de Jonge, S.W., Gans, S.L., Atema, J.J., Solomkin, J.S., Dellinger, P.E., Boermeester, M.A., 2017. Timing of preoperative antibiotic prophylaxis in 54,552 patients and the risk of surgical site infection. *Medicine (Baltimore)* 96, e6903. <https://doi.org/10.1097/MD.00000000000006903>
- Di Saverio, S., Podda, M., De Simone, B., Ceresoli, M., Augustin, G., Gori, A., Boermeester, M., Sartelli, M., Coccolini, F., Tarasconi, A., de' Angelis, N., Weber, D.G., Tolonen, M., Birindelli, A., Biffl, W., Moore, E.E., Kelly, M., Soreide, K., Kashuk, J., Ten Broek, R., Gomes, C.A., Sugrue, M., Davies, R.J., Damaskos, D., Leppäniemi, A., Kirkpatrick, A., Peitzman, A.B., Fraga, G.P., Maier, R.V., Coimbra, R., Chiarugi, M., Sganga, G., Pisanu, A., de' Angelis, G.L., Tan, E., Van Goor, H., Pata, F., Di Carlo, I., Chiara, O., Litvin, A., Campanile, F.C., Sakakushev, B., Tomadze, G., Demetrashvili, Z., Latifi, R., Abu-Zidan, F., Romeo, O., Segovia-Lohse, H., Baiocchi, G., Costa, D., Rizoli, S., Balogh, Z.J., Bendinelli, C., Scalea, T., Ivatury, R., Velmahos, G., Andersson, R., Kluger, Y., Ansaloni, L., Catena, F., 2020. Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. *World J. Emerg. Surg.* 15, 27. <https://doi.org/10.1186/s13017-020-00306-3>
- Doyle, D.J., Goyal, A., Garmon, E.H., 2022. American Society of Anesthesiologists Classification, in: *StatPearls*. StatPearls Publishing, Treasure Island (FL).
- El-Shoubary, W., Elsheikh, M., Al Maani, A., 2015. Evaluation of surgical antimicrobial prophylaxis practices in a tertiary care center in Oman, 2015. *Antimicrob. Resist. Infect. Control* 4, P177. <https://doi.org/10.1186/2047-2994-4-S1-P177>
- Enzler, M.J., Berbari, E., Osmon, D.R., 2011. Antimicrobial Prophylaxis in Adults. *Mayo Clin. Proc.* 86, 686–701. <https://doi.org/10.4065/mcp.2011.0012>
- Fitzmaurice, G., 2011. Antibiotics versus appendectomy in the management of acute appendicitis: a review of the current evidence. *Can. J. Surg.* 54, 307–314. <https://doi.org/10.1503/cjs.006610>
- Garcell, H.G., Arias, A.V., Sandoval, C.A.P., Sado, A.B., Serrano, R.N.A., Gutierrez García, F., 2019. Risk Factors for Surgical Site Infection After Appendectomy for Acute Appendicitis; Results of a Cross-Sectional Study Carried out at a Community Hospital in Qatar (2013-2016). *Hosp. Pract. Res.* 4, 45–49. <https://doi.org/10.15171/hpr.2019.08>
- Giesen, L.J.X., van den Boom, A.L., van Rossem, C.C., den Hoed, P.T., Wijnhoven, B.P.L., 2016. Retrospective Multicenter Study on Risk Factors for Surgical Site Infections after Appendectomy for Acute Appendicitis. *Dig. Surg.* 34, 103–107. <https://doi.org/10.1159/000447647>
- Gorbach, S.L., Condon, R.E., Conte, J.E., Kaiser, A.B., Ledger, W.J., Nichols, R.L., 1992. Evaluation of new anti-infective drugs for surgical prophylaxis. *Infectious Diseases Society of America and the Food and Drug Administration. Clin. Infect. Dis. Off. Publ.*

- Infect. Dis. Soc. Am. 15 Suppl 1, S313-338.
https://doi.org/10.1093/clind/15.supplement_1.s313
- Hamill, J.K., Hill, A.G., 2016. A history of the treatment of appendicitis in children: lessons learned. *ANZ J. Surg.* 86, 762–767. <https://doi.org/10.1111/ans.13627>
- Hernández-Cortez, J., León-Rendón, J.L.D., Martínez-Luna, M.S., Guzmán-Ortiz, J.D., Palomeque-López, A., Cruz-López, N., José-Ramírez, H., 2019. Acute appendicitis: literature review. *Cir. Gen.* 41, 33–38.
- Ierano, C., Nankervis, J.-A.M., James, R., Rajkhowa, A., Peel, T., Thursky, K., 2017. Surgical antimicrobial prophylaxis. *Aust. Prescr.* 40, 225–229. <https://doi.org/10.18773/austprescr.2017.073>
- Ierano, C., Thursky, K., Peel, T., Rajkhowa, A., Marshall, C., Ayton, D., 2019. Influences on surgical antimicrobial prophylaxis decision making by surgical craft groups, anaesthetists, pharmacists and nurses in public and private hospitals. *PLOS ONE* 14, e0225011. <https://doi.org/10.1371/journal.pone.0225011>
- Jaschinski, T., Mosch, C.G., Eikermann, M., Neugebauer, E.A., Sauerland, S., 2018. Laparoscopic versus open surgery for suspected appendicitis. *Cochrane Database Syst. Rev.* <https://doi.org/10.1002/14651858.CD001546.pub4>
- Jones, M.W., Lopez, R.A., Deppen, J.G., 2022. Appendicitis, in: *StatPearls*. StatPearls Publishing, Treasure Island (FL).
- Koumu, M.I., Jawhari, A., Alghamdi, S.A., Hejazi, M.S., Alturaif, A.H., Aldaqal, S.M., 2021. Surgical Site Infection Post-appendectomy in a Tertiary Hospital, Jeddah, Saudi Arabia. *Cureus* 13. <https://doi.org/10.7759/cureus.16187>
- Lin, K.-B., Lai, K.R., Yang, N.-P., Chan, C.-L., Liu, Y.-H., Pan, R.-H., Huang, C.-H., 2015. Epidemiology and socioeconomic features of appendicitis in Taiwan: a 12-year population-based study. *World J. Emerg. Surg.* 10, 42. <https://doi.org/10.1186/s13017-015-0036-3>
- Lissovoy, G. de, Fraeman, K., Hutchins, V., Murphy, D., Song, D., Vaughn, B.B., 2009. Surgical site infection: Incidence and impact on hospital utilization and treatment costs. *Am. J. Infect. Control* 37, 387–397. <https://doi.org/10.1016/j.ajic.2008.12.010>
- Llor, C., Bjerrum, L., 2014. Antimicrobial resistance: risk associated with antibiotic overuse and initiatives to reduce the problem. *Ther. Adv. Drug Saf.* 5, 229–241. <https://doi.org/10.1177/2042098614554919>
- Mariage, M., Sabbagh, C., Grelpois, G., Prevot, F., Darmon, I., Regimbeau, J.-M., 2019. Surgeon's Definition of Complicated Appendicitis: A Prospective Video Survey Study. *Euroasian J. Hepato-Gastroenterol.* 9, 1–4. <https://doi.org/10.5005/jp-journals-10018-1286>
- Martin, E.T., Kaye, K.S., Knott, C., Nguyen, H., Santarossa, M., Evans, R., Bertran, E., Jaber, L., 2016. Diabetes and Risk of Surgical Site Infection: A systematic review and meta-analysis. *Infect. Control Hosp. Epidemiol.* 37, 88–99. <https://doi.org/10.1017/ice.2015.249>
- Mazuski, J.E., Tessier, J.M., May, A.K., Sawyer, R.G., Nadler, E.P., Rosengart, M.R., Chang, P.K., O'Neill, P.J., Mollen, K.P., Huston, J.M., Diaz, J.J., Prince, J.M., 2017. The Surgical Infection Society Revised Guidelines on the Management of Intra-Abdominal Infection. *Surg. Infect.* 18, 1–76. <https://doi.org/10.1089/sur.2016.261>
- Moges, G., Belete, L., Mengesha, Y., Ahmed, S., 2020. <p>Evaluation of Surgical Antimicrobial Prophylaxis and Incidence of Surgical Site Infection at Borumeda

- Hospital, Northeast Ethiopia: Retrospective Cross-Sectional Study. *Drug Healthc. Patient Saf.* 12, 257–268. <https://doi.org/10.2147/DHPS.S280442>
- Patel, I.H., Kaplan, S.A., 1984. Pharmacokinetic profile of ceftriaxone in man. *Am. J. Med.* 77, 17–25.
- Pittet, D., Allegranzi, B., Storr, J., Nejad, S.B., Dziekan, G., Leotsakos, A., Donaldson, L., 2008. Infection control as a major World Health Organization priority for developing countries. *J. Hosp. Infect.* 68, 285–292. <https://doi.org/10.1016/j.jhin.2007.12.013>
- Pletz, M.W., Hagel, S., Forstner, C., 2017. Who benefits from antimicrobial combination therapy? *Lancet Infect. Dis.* 17, 677–678. [https://doi.org/10.1016/S1473-3099\(17\)30233-5](https://doi.org/10.1016/S1473-3099(17)30233-5)
- Purushotham, S., Udachan, T., 2015. A comparative study of prophylactic antibiotics versus empiric therapy in clean and clean contaminated elective general surgical procedures. *J. Evol. Med. Dent. Sci.* 4, 5462–5472.
- Roberts, J.A., Norris, R., Paterson, D.L., Martin, J.H., 2012. Therapeutic drug monitoring of antimicrobials. *Br. J. Clin. Pharmacol.* 73, 27–36. <https://doi.org/10.1111/j.1365-2125.2011.04080.x>
- Sadraei-Moosavi, S.-M., Nikhbakhsh, N., Darzi, A., 2017. Postoperative antibiotic therapy after appendectomy in patients with non-perforated appendicitis. *Casp. J. Intern. Med.* 8, 104–107. <https://doi.org/10.22088/cjim.8.2.104>
- Salminen, P., Paajanen, H., Rautio, T., Nordström, P., Aarnio, M., Rantanen, T., Tuominen, R., Hurme, S., Virtanen, J., Mecklin, J.-P., Sand, J., Jartti, A., Rinta-Kiikka, I., Grönroos, J.M., 2015. Antibiotic Therapy vs Appendectomy for Treatment of Uncomplicated Acute Appendicitis: The APPAC Randomized Clinical Trial. *JAMA* 313, 2340–2348. <https://doi.org/10.1001/jama.2015.6154>
- Sievert, D.M., Ricks, P., Edwards, J.R., Schneider, A., Patel, J., Srinivasan, A., Kallen, A., Limbago, B., Fridkin, S., National Healthcare Safety Network (NHSN) Team and Participating NHSN Facilities, 2013. Antimicrobial-resistant pathogens associated with healthcare-associated infections: summary of data reported to the National Healthcare Safety Network at the Centers for Disease Control and Prevention, 2009–2010. *Infect. Control Hosp. Epidemiol.* 34, 1–14. <https://doi.org/10.1086/668770>
- Snyder, M.J., Guthrie, M., Cagle, S., 2018. Acute Appendicitis: Efficient Diagnosis and Management. *Am. Fam. Physician* 98, 25–33.
- Stein, G.Y., Rath-Wolfson, L., Zeidman, A., Atar, E., Marcus, O., Joubran, S., Ram, E., 2012. Sex differences in the epidemiology, seasonal variation, and trends in the management of patients with acute appendicitis. *Langenbecks Arch. Surg.* 397, 1087–1092. <https://doi.org/10.1007/s00423-012-0958-0>
- Tamma, P.D., Avdic, E., Li, D.X., Dzintars, K., Cosgrove, S.E., 2017. Association of Adverse Events With Antibiotic Use in Hospitalized Patients. *JAMA Intern. Med.* 177, 1308–1315. <https://doi.org/10.1001/jamainternmed.2017.1938>
- Tingstedt, B., Johansson, J., Nehez, L., Andersson, R., 2004. Late abdominal complaints after appendectomy—readmissions during long-term follow-up. *Dig. Surg.* 21, 23–27. <https://doi.org/10.1159/000075378>
- Varadhan, K.K., Neal, K.R., Lobo, D.N., 2012. Safety and efficacy of antibiotics compared with appendectomy for treatment of uncomplicated acute appendicitis: meta-analysis of randomised controlled trials. *BMJ Open* 344. <https://doi.org/10.1136/bmj.e2156>

Weir, C.B., Le, J.K., 2022. Metronidazole, in: StatPearls. StatPearls Publishing, Treasure Island (FL).

Winfield, R.D., Reese, S., Bochicchio, K., Mazuski, J.E., Bochicchio, G.V., 2016. Obesity and the Risk for Surgical Site Infection in Abdominal Surgery. Am. Surg. 82, 331–336.

APPENDICES

Appendix 1. Case Report Form (CRF)

Patient's data

| No | No RM | Age (years, months) | BW (kg) | Height (cm) | Hospital entry date (dd-mm-yy) | Hospital discharge date (dd-mm-yy) | Diagnosis (ICD-10) | Comorbidities | ASA Score (1-4) |
|----|-------|---------------------|---------|-------------|--------------------------------|------------------------------------|--------------------|---------------|-----------------|
| | | | | | | | | | |
| | | | | | | | | | |

Surgery related data

| Type (Open / Laparoscopic) | Elective / Emergency | Date of procedure (dd-mm-yy) | Time of incision (hours, minutes) | Duration of procedure (minutes) | SSI (yes/no, type of SSI) | Length of hospital stay |
|----------------------------|----------------------|------------------------------|-----------------------------------|---------------------------------|---------------------------|-------------------------|
| | | | | | | |
| | | | | | | |

SAP related data

| Preoperative | | | | | |
|-------------------|-------------|------------------|-------|----------------------------------|---------------|
| Antibiotic choice | Dosage (mg) | Duration (hours) | Route | Time of administration (minutes) | Frequency (x) |