

Appropriateness of Care: Antimicrobial Stewardship and Asymptomatic Bacteriuria (ASAB)

BIBLIOGRAPHY – February 2023



Primary Literature:

1. Abbo LM, Hooton TM. Antimicrobial stewardship and urinary tract infections. *Antibiotics* 2014;3:174-92.
2. Abrutyn E, et al. Does asymptomatic bacteriuria predict mortality and does antimicrobial treatment reduce mortality in elderly ambulatory women? *Ann Intern Med* 1994 May 15;120(10):827-33. [PMID: 7818631](#).
3. Ainsley M, Doull M, Grad R, et al. Recommendations on screening for asymptomatic bacteriuria in pregnancy. *CMAJ* 2018;190(27) E823-E830
4. Alghamdi A, Almajid M, Alalawi R, et al. Evaluation of asymptomatic bacteriuria management before and after antimicrobial stewardship program implementation: retrospective study. *BMC Infect Dis*. 2021;21(1):869. Published 2021 Aug 25. doi:10.1186/s12879-021-06460-6
5. Almulhim AS, Aldayyen A, et al. Optimization of antibiotic selection in the emergency department for urine culture follow ups, a retrospective pre-post intervention study: clinical pharmacist efforts. *J Pharm Policy Pract*. 2019;12:8. Published 2019 Apr 9. doi:10.1186/s40545-019-0168-z
6. Blakiston M, Zaman S. Nosocomial bacteriuria in elderly inpatients may be leading to considerable antibiotic overuse: an audit of current management practice in a secondary level care hospital in New Zealand. *Infection and Drug Resistance*. 2014;7:301-8. doi:10.2147/IDR.S66036.
7. Bohn BC, Athans V, et al. Impact of asymptomatic bacteriuria incidence and management post-kidney transplantation. *Clin Transplant*. 2019;33(6):e13583. doi:10.1111/ctr.13583
8. Cai T, Mazzoli S, Mondaini N, et al. The Role of Asymptomatic Bacteriuria in Young Women With Recurrent Urinary Tract Infections: To Treat or Not to Treat?. *Clinical Infectious Diseases*, 2012;55(6):771–777, <https://doi.org/10.1093/cid/cis534>
9. Cai T, Mazzoli S, Lanzafame P, et al. Asymptomatic Bacteriuria in Clinical Urological Practice: Preoperative Control of Bacteriuria and Management of Recurrent UTI. *Pathogens*. 2016;5(1):4. Published 2016 Jan 5. doi:10.3390/pathogens5010004
10. Chan-Tack, K, Trautner, B, Morgan, D. The varying specificity of urine cultures in different populations. *Infection Control & Hospital Epidemiology* 2020;41(4), 489-491. doi:10.1017/ice.2020.16
11. Chidester JC, Spangler AA. Fluid intake in the institutionalized elderly. *J Am Diet Assoc*. 1997 Jan;97(1):23–8.
12. Das R, Towle V, Van Ness PH, Juthani-Mehta M. Adverse outcomes in nursing home residents with increased episodes of observed bacteriuria. *Infect Control Hosp Epidemiol*. 2011 Jan;32(1):84-6. doi: 10.1086/657664.
13. Dasgupta M, Brymer C, Elsayed S. Treatment of asymptomatic UTI in older delirious medical in-patients: A prospective cohort study. *Archives of Gerontology and Geriatrics*. 2017;72:127-34, <http://www.sciencedirect.com/science/article/pii/S0167494317302339>

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BIBLIOGRAPHY – February 2023

14. Dellinger R.P., Levy M.M., Rhodes A. et al. Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012. *Intensive Care Med.* 2013;39:165. <https://doi.org/10.1007/s00134-012-2769-8>
15. Ducharme J, Neilson S, Ginn JL. Can urine cultures and reagent test strips be used to diagnose urinary tract infection in elderly emergency department patients without focal urinary symptoms? *CJEM.* 2007 Mar;9(2):87–92.
16. Dull RB, Friedman SK, Risoldi ZM, et al. Antimicrobial treatment of asymptomatic bacteriuria in noncatheterized adults: a systematic review. *Pharmacotherapy* 2014;34(9):941-60.
17. Drekonja DM, Grigoryan L, Lichtenberger P, et al. Teamwork and safety climate affect antimicrobial stewardship for asymptomatic bacteriuria. *Infect Control Hosp Epidemiol.* 2019;40(9):963-967. doi:10.1017/ice.2019.176
18. Drekonja DM, Trautner B, Amundson C, et al. Effect of 7 vs 14 Days of Antibiotic Therapy on Resolution of Symptoms Among Afebrile Men With Urinary Tract Infection: A Randomized Clinical Trial. *JAMA.* 2021;326(4):324–331. doi:10.1001/jama.2021.9899
19. Fabre V, Pleiss A, Klein E, et al. A Pilot Study to Evaluate the Impact of a Nurse-Driven Urine Culture Diagnostic Stewardship Intervention on Urine Cultures in the Acute Care Setting. *Jt Comm J Qual Patient Saf.* 2020;46(11):650-655. doi:10.1016/j.jcjq.2020.07.003
20. Finucane T. E. “Urinary Tract Infection”—Requiem for a Heavyweight. *J Am Geriatr Soc.* 2017, 65: 1650–1655. <http://dx.doi.org/10.1111/jgs.14907>
21. Flokas ME, Andreatos N, Alevizakos M, et al. Inappropriate management of asymptomatic patients with positive urine cultures: a systematic review and meta-analysis. *Open Forum Infectious Diseases.* 2017;4(4):ofx207 <https://doi.org/10.1093/ofid/ofx207>
22. Frisoli Junior A, de Paula AP, Feldman D, et al. Subcutaneous hydration by hypodermoclysis. A practical and low cost treatment for elderly patients. *Drugs Aging.* 2000 Apr;16(4):313–9.
23. Goebel MC, Trautner BW, Wang Y, et al. Organizational readiness assessment in acute and long-term care has important implications for antibiotic stewardship for asymptomatic bacteriuria. *Am J Infect Control.* 2020;48(11):1322-1328. doi:10.1016/j.ajic.2020.04.024
24. Gupta K, O'Brien W, Gallegos-Salazar J, Strymish J, Branch-Elliman W. How Testing Drives Treatment in Asymptomatic Patients: Level of Pyuria Directly Predicts Probability of Antimicrobial Prescribing. *Clin Infect Dis.* 2020;71(3):614-621. doi:10.1093/cid/ciz861
25. Hartley S, Kuhn L, Valley S, et al. Evaluating a hospitalist-based intervention to decrease unnecessary antimicrobial use in patients with asymptomatic bacteriuria. *ICHE* 2016;37(9):1044-51.
26. Hartley S, Valley S, Kuhn L, et al. Inappropriate testing for urinary tract infection in hospitalized patients: an opportunity for improvement. *ICHE* 2013;34(11):1204-7.

Appropriateness of Care: Antimicrobial Stewardship and Asymptomatic Bacteriuria (ASAB)

BIBLIOGRAPHY – February 2023

27. Henderson JT, Webber EM, Bean SI. Screening for asymptomatic bacteriuria in adults: updated evidence report and systematic review for the US Preventive Services Task Force [published September 24, 2019]. *JAMA*. doi:[10.1001/jama.2019.10060](https://doi.org/10.1001/jama.2019.10060)
28. Hooton TM, Bradley SF, Cardenas DD, et al. 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*. 2010;50(5):625–63.
29. Hooton TM, Roberts PL, Stapleton AE. Asymptomatic Bacteriuria and Pyuria in Premenopausal Women, *Clin Infect Dis*, 2021;72(8):1332–38, <https://doi.org/10.1093/cid/ciaa274>
30. Humphries RM, Dien Bard J. Point-Counterpoint: Reflex Cultures Reduce Laboratory Workload and Improve Antimicrobial Stewardship in Patients Suspected of Having Urinary Tract Infections. *J Clin Microbiol*. 2016;54(2):254-8.
31. James D, Lopez L. Impact of a pharmacist-driven education initiative on treatment of asymptomatic bacteriuria. *Am J Health Syst Pharm*. 2019;76(Supplement_2):S41-S48. doi:10.1093/ajhp/zxy081
32. Joo, P., Grant, L., Ramsay, T. et al. Effect of inpatient antibiotic treatment among older adults with delirium found with a positive urinalysis: a health record review. *BMC Geriatr* 22, 916 (2022). <https://doi.org/10.1186/s12877-022-03549-8>
33. Juthani-Mehta M, Tinetti M, Perrelli, E, et al. Role of Dipstick Testing in the Evaluation of Urinary Tract Infection in Nursing Home Residents. *Infection Control & Hospital Epidemiology* 2007;28(7), 889-891. doi:10.1086/518752
34. Karanika S, Paudel S, Grigoras C, et al. Systematic review and meta-analysis of clinical and economic outcomes from the implementation of hospital-based antimicrobial stewardship programs. *Antimicrob Agents Chemother* 2016;60(8):4840–4852. doi:10.1128/AAC.00825-16
35. Kelley D, Aaronson P, Poon E, et al. Evaluation of an antimicrobial stewardship approach to minimize overuse of antibiotics in patients with asymptomatic bacteriuria. *ICHE* 2014;35(2):193-5.
36. Köves, Bela et al. Benefits and Harms of Treatment of Asymptomatic Bacteriuria: A Systematic Review and Meta-analysis by the European Association of Urology Urological Infection Guidelines Panel. *European Urology* 2017;72(6):865-8.
37. Knottnerus BJ, Geerlings SE, Moll van Charante EP, et al. Women with symptoms of uncomplicated urinary tract infection are often willing to delay antibiotic treatment: a prospective cohort study. *BMC Fam Pract*. 2013;14:71.
38. Lamb MJ, Baillie L, Pajak D, et al. Elimination of Screening Urine Cultures Prior to Elective Joint Arthroplasty. *Clin Infect Dis*. 2017 Mar 15;64(6):806-9.
39. Lee ALH, Leung ECM, Lee MKP, Lai RWM. Diagnostic stewardship programme for urine culture: impact on antimicrobial prescription in a multi-centre cohort. *J Hosp Infect*. 2021;108:81-89. doi:10.1016/j.jhin.2020.10.027

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BIBLIOGRAPHY – February 2023

40. Leis JA, Rebeck GW, Daneman N, et al. Reducing antimicrobial therapy for asymptomatic bacteriuria among non-catheterized inpatients: a proof-of-concept study. *Clin Infect Dis.* 2014;58(7):980–3.
41. Leis JA, Soong C. De-adoption of Routine Urine Culture Testing—A Call to Action. *JAMA Intern Med.* Published online September 24, 2019. doi:10.1001/jamainternmed.2019.4515
42. Lim LL, Goyal N. Hospital clinical practice around urinalysis is an important opportunity for antimicrobial stewardship improvement activities. *Infect Dis Health.* 2021;S2468-0451(21)00026-2. doi:10.1016/j.idh.2021.05.001
43. Linares LA, Thornton DJ, et al. Electronic memorandum decreases unnecessary antimicrobial use for asymptomatic bacteriuria and culture-negative pyuria. *Infect Control Hosp Epidemiol.* 2011 Jul;32(7):644-8. doi: 10.1086/660764. PMID: 21666393.
44. Lo E, Nicolle LE, Coffin SE, et al. Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals: 2014 Update. *Infection Control and Hospital Epidemiology.* 2014;35(5):464-79. <http://www.jstor.org/stable/10.1086/675718>
45. Loeb M, Bentley DW, Bradley S, et al. Development of minimum criteria for the initiation of antibiotics in residents of long-term-care facilities: results of a consensus conference. *Infect Control Hosp Epidemiol.* 2001;22(2):120–4.
46. Loeb M, Brazil K, Lohfeld L, et al. Effect of a multifaceted intervention on number of antimicrobial prescriptions for suspected urinary tract infections in residents of nursing homes: cluster randomised controlled trial *BMJ* 2005;331:669 doi:10.1136/bmj.38602.586343.55
47. Luu A, Dominguez F, Yeshoua B, et al. Reducing Catheter-associated Urinary Tract Infections via Cost-saving Diagnostic Stewardship. *Clinical Infectious Diseases*, Volume 72, Issue 11, 1 June 2021, Pages e883–e886, <https://doi.org/10.1093/cid/ciaa1512>
48. Mayne AIW, Davies PSE. Screening for asymptomatic bacteriuria before total joint arthroplasty. *BMJ* 2016;354:i3569 doi: <https://doi.org/10.1136/bmj.i3569>
49. Midthun SJ, Paur R, Lindseth G. Urinary Tract Infections: Does the Smell Really Tell? *Journal of Gerontological Nursing* 2004;30(6):4-9 doi:10.3928/0098-9134-20040601-04
50. Morgan DJ, Malani P, Diekema DJ. Diagnostic Stewardship—Leveraging the Laboratory to Improve Antimicrobial Use. *JAMA.* 2017;318(7):607–608.
51. Mrkobrada M, Ying I, Mokrycke S, et al. CUA Guidelines an antibiotic prophylaxis for urologic procedures. *Can Urol Assoc J.* 2015;9(1-2):13-22 <http://dx.doi.org/10.5489/cuaj.2382>
52. Munigala S, et al. Effect of changing urine testing orderables and clinician order sets on inpatient urine culture testing: Analysis from a large academic medical center. *ICHE.* 2019;40(3):281-286. <https://doi.org/10.1017/ice.2018.356>

Appropriateness of Care: Antimicrobial Stewardship and Asymptomatic Bacteriuria (ASAB)

BIBLIOGRAPHY – February 2023

53. Naik AD, Skelton F, Amspoker AB, et al. A fast and frugal algorithm to strengthen diagnosis and treatment decisions for catheter-associated bacteriuria. *PLoS ONE*. 2017;12(3): e0174415.
<https://doi.org/10.1371/journal.pone.0174415>
54. Nicolle LE, Bradley S, Colgan R, et al. Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. *Clin Infect Dis*. 2005;40(5):643-54. [PMID: 15714408](#).
55. Nicolle LE, Gupta K, Bradley SF, et al. Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America. *Clin Infect Dis*. 2019;68(10):e83–e110.
<https://doi.org/10.1093/cid/ciy1121>
56. Nicolle LE. Antimicrobial stewardship in long term care facilities: what is effective? *Antimicrob Resist Infect Control*. 2014;3(1):6.
57. Nicolle LE. Asymptomatic bacteriuria in the elderly. *Infect Dis Clin North Am*. 1997;11(3):647-62. [PMID: 9378928](#).
58. Nicolle LE. Catheter-related urinary tract infection. *Drugs Aging*. 2005;22(8):627–39
59. Nicolle LE. Urinary Tract Infections in the Older Adult. *Clinics in Geriatric Medicine*. 2016;32:523-38.
<http://www.sciencedirect.com/science/article/pii/S0749069016300350>
60. Nicolle LE. Asymptomatic Bacteriuria and Bacterial Interference. *Microbiology Spectrum*. 2015;3(5):UTI-0001-2012
61. Nordenstam GR, Brandberg CA, Oden AS, et al. Bacteriuria and mortality in an elderly population. *N Engl J Med*. 1986;314(18):1152-6. [PMID: 3960089](#).
62. Pasay DK, Guirguis MS, et al. Antimicrobial stewardship in rural nursing homes: Impact of interprofessional education and clinical decision tool implementation on urinary tract infection treatment in a cluster randomized trial. *Infect Control Hosp Epidemiol*. 2019 Apr;40(4):432-437. doi: 10.1017/ice.2019.9.
63. Patterson PP, Ellingson KD, Backus D, Schmitz E, Matesan M. A syndrome-based approach to antimicrobial stewardship in an Arizona skilled nursing facility-Moving the needle through quality improvement. *Am J Infect Control*. 2020;48(12):1537-1539. doi:10.1016/j.ajic.2020.07.038
64. Petty LA, Vaughn VM, Flanders SA, et al. Risk Factors and Outcomes Associated With Treatment of Asymptomatic Bacteriuria in Hospitalized Patients. *JAMA Intern Med*. 2019;179(11):1519–1527.
doi:10.1001/jamainternmed.2019.2871
65. Rico M, Sulaiman R, MacLeod R. Asymptomatic bacteriuria: Impact of an antimicrobial stewardship bundle to reduce unnecessary antibiotics in patients without urinary catheters. *Am J Health Syst Pharm*. 2021;zxab220.
doi:10.1093/ajhp/zxab220
66. Robichaud S, Blondeau J. Urinary tract infections in older adults: current issues and new therapeutic options. *Geriatr Aging*. 2008;11(10):582–8.

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BIBLIOGRAPHY – February 2023

67. Rotjanapan P, Dosa D, Thomas KS. Potentially inappropriate treatment of urinary tract infections in two Rhode Island nursing homes. *Arch Intern Med*. 2011 Mar 14;171(5):438-43. doi: 10.1001/archinternmed.2011.13. PMID: 21403040.
68. Rowe TA, Juthani-Mehta M. Urinary tract infection in older adults. *Aging Health*. 2013;9(5):519-528
69. Salazar JG, O'Brien W, Strymish JM, et al. Association of screening and treatment for preoperative asymptomatic bacteriuria with postoperative outcomes among US veterans. *JAMA Surg*. Published online December 12, 2018. doi:10.1001/jamasurg.2018.4759
70. Schulz L, Hoffman RJ, Pothof J, et al. Top Ten Myths Regarding the Diagnosis and Treatment of Urinary Tract Infections. *J Emerg Med*. 2016;51(1):25-30.
71. Shah PJ, Ike C, et al. Impact of Antimicrobial Stewardship Interventions on Antimicrobial Utilization in Asymptomatic Bacteriuria. *Hosp Pharm*. 2021;56(4):210-214. doi:10.1177/0018578719888911
72. Silver SA, Baillie L, Simor AE. Positive urine cultures: A major cause of inappropriate antimicrobial use in hospitals? *The Canadian Journal of Infectious Diseases & Medical Microbiology*. 2009;20(4):107-11.
73. Singer M, Deutschman CS, Seymour CW, et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *JAMA*. 2016;315(8):801–810.
74. Stagg A, Lutz H, Kirpalaney S, et al. Impact of two-step urine culture ordering in the emergency department: a time series analysis. *BMJ Quality & Safety*. 2018;27:140-147.
75. Trautner BW, Grigoryan L, Petersen NJ, et al. Effectiveness of an Antimicrobial Stewardship Approach for Urinary Catheter-Associated Asymptomatic Bacteriuria. *JAMA Intern Med*. 2015;175(7):1120–1127.
76. Trautner BW. Asymptomatic bacteriuria: when the treatment is worse than the disease. *Nat Rev Urol*. 2012;9:85-93.
77. Trautner BW, Cope M, et al. Inappropriate Treatment of Catheter-Associated Asymptomatic Bacteriuria in a Tertiary Care Hospital. *Clinical Infectious Diseases*, Volume 48, Issue 9, 1 May 2009, Pages 1182–1188, <https://doi.org/10.1086/597403>
78. Trautner BW. Urinary Tract Infections as a Continuum: Implications for Diagnostic and Antibiotic Stewardship, *Clinical Infectious Diseases*, Volume 72, Issue 8, 15 April 2021, Pages 1339–1341, <https://doi.org/10.1093/cid/ciaa280>
79. Wagenlehner FME, Naber KG, Weidner W. Asymptomatic bacteriuria in elderly patients: significance and implications for treatment. *Drugs Aging*. 2005;22(10):801–7.
80. Watson KJ, Trautner B, Russo H, et al. Using clinical decision support to improve urine culture diagnostic stewardship, antimicrobial stewardship, and financial cost: A multicenter experience. *Infect Control Hosp Epidemiol*. 2020;41(5):564-570. doi:10.1017/ice.2020.37
81. Wiley Z, Jacob JT, Burd EM. Targeting Asymptomatic Bacteriuria in Antimicrobial Stewardship: the Role of the Microbiology Laboratory. *J Clin Microbiol*. 2020;58(5):e00518-18. Published 2020 Apr 23. doi:10.1128/JCM.00518-18

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BIBLIOGRAPHY – February 2023

82. Wingert A, Pillay J, Featherstone R, et al. Screening for asymptomatic bacteriuria in pregnancy: protocol for evidence review. Edmonton, AB; Evidence Review Synthesis Centre. Available at: <http://canadiantaskforce.ca/ctfphcguidelines/overview/>
83. van Horrik TM, Geerlings SE, Stalenhof JE, et al. Deimplementation strategy to reduce overtreatment of asymptomatic bacteriuria: a study protocol for a stepped-wedge cluster randomised trial. *BMJ Open*. 2021;11(2):e039085. Published 2021 Feb 9. doi:10.1136/bmjopen-2020-039085
84. Xhemali X, Forster D, Clemons B, et al. Evaluation of a Disease State Stewardship Intervention for Urinary Tract Infections at an Academic Medical Center. *Infection Control & Hospital Epidemiology*. 2020;41(S1):s226-s226. doi:10.1017/ice.2020.771
85. Yin P, Kiss A, Leis JA. Urinalysis orders among patients admitted to the general medicine service. *JAMA Internal Medicine* 2015;175(10):1711-3.
86. Zalmanovici Trestioreanu A, Lador A, Sauerbrun-Cutler MT, Leibovici L. Antibiotics for asymptomatic bacteriuria. *Cochrane Database of Systematic Reviews* 2015, Issue 4. Art. No.: CD009534.

Organizations/Programs:

Alberta College of Family Physicians. [Tools for Practice](#).

- COMING SOON. Asymptomatic Bacteriuria in the Elderly – Don't Drug the Bugs?
- #327. To Treat or Not Treat Uncomplicated UTIs
- #322. A dose a day keeps the UTI away

Alberta Health Services. Bugs & Drugs. www.bugsanddrugs.org

Alberta Health Services. Do Bugs Need Drugs. Antimicrobial Stewardship in Long Term Care Facilities.

<https://www.albertahealthservices.ca/assets/info/hp/as/if-hp-as-cpg-diagnosis-management-urinary-tract-infection-ltcf.pdf>

Alberta Health Services. Delirium: Prevention, Screening and Management.

<https://insite.albertahealthservices.ca/main/assets/cgv/tls-cgv-delirium-seniors-inpatient.pdf>

AMMI Canada Position Statement on Asymptomatic Bacteriuria

Edith Blondel-Hill, David Patrick, Caroline Nott, Kim Abbass, Tim TY Lau, and Greg German

Official Journal of the Association of Medical Microbiology and Infectious Disease Canada 2018 3:1, 4-7.

<https://jammi.utpjournals.press/doi/10.3138/jammi.3.1.02>

Association of State and Territorial Health Officials (ASTHO). Communication Toolkit for Health Departments: Healthcare-associated Infections and Antibiotic Resistance. Association of State and Territorial Health Officials, 2016. <http://www.astho.org/Enhancing-HAI-Prevention-and-Outbreak-Response/Communication-Toolkit/>

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BIBLIOGRAPHY – February 2023

- Canadian Agency for Drugs and Technologies in Health (CADTH). Treatment of Urinary Tract Infections in the Elderly: Clinical Effectiveness and Guidelines. Rapid Response: CADTH, February 3, 2015.
<https://www.cadth.ca/treatment-urinary-tract-infections-elderly-clinical-effectiveness-and-guidelines>
- Canadian Geriatrics Society. Five Things Physician and Patients Should Question. Choosing Wisely Canada: June 2017. <https://choosingwiselycanada.org/geriatrics/>
- Choosing Wisely Canada. Antibiotics for Urinary Tract Infections in Older People.
<https://choosingwiselycanada.org/antibiotics-urinary-tract-infections/>
- Health Canada. Summary Safety Review – Fluoroquinolones – Assessing the potential risk of persistent and disabling side effects. Available at: <https://www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada/safety-reviews/summary-safety-review-fluoroquinolones-assessing-potential-risk-persistent-disabling-effects.html> (accessed October 2019).
- Institute for Healthcare Improvement. How-to Guide: Prevent Catheter-Associated Urinary Tract Infections. Cambridge, MA: Institute for Healthcare Improvement; 2011. (Available at www.ihp.org) (accessed May 2017).
- Massachusetts Coalition for the Prevention of Medical Errors. Improving Evaluation of Urinary Tract Infections in the Elderly: Collaborative on Antibiotic Stewardship for Seniors in Long Term Care. [Practice Support & Education Tools for Clinicians in LTC](#). [Tools for Hospital Emergency Departments](#). (accessed February 2017)
- Public Health Ontario. Urinary tract infection (UTI) program. Ontario Agency for Health Protection and Promotion 2017. <https://www.publichealthontario.ca/en/BrowseByTopic/IPAC/Pages/UTI.aspx> (accessed February 2017)
- Toward Optimized Practice (TOP) Working Group for Multiple Sclerosis and UTI. Multiple Sclerosis and management of urinary tract infection: clinical practice guideline. November 2013. www.topalbertadoctors.org (accessed June 2018)
- Vancouver Coastal Health. VCH Management of Urinary Tract Infections (UTI) in Non-pregnant Adults. ASPIRES October 24, 2015.
http://www.vhpharmsci.com/Resources/Pocket/VCH%20UTI%20Algorithm%2024OCT15_%20FINAL_.pdf

Media Articles:

- Span, P. (October 14, 2019). Rx for Doctors: Stop With the Urine Tests. *New York Times*, Section D, page 5
<https://www.nytimes.com/2019/10/14/health/urine-tests-elderly.html?smid=nytcore-ios-share>