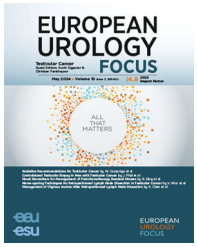
EUROPEAN UROLOGY FOCUS xxx (xxxx) xxx–xxx

available at www.sciencedirect.com
journal homepage: www.europeanurology.com/eufocus



Guidelines

Urinary Infection Management in Frail or Comorbid Older Individuals

Kathrin Bausch [a,b,*], *Fabian P. Stangl* [c], *Jacqui Prieto* [d], *Gernot Bonkat* [e], *Jennifer Kranz* [f,g]

[a] *Department of Urology, University Hospital Basel, Basel, Switzerland;* [b] *University of Basel, Basel, Switzerland;* [c] *Department of Urology, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland;* [d] *School of Health Sciences, University of Southampton, Southampton, UK;* [e] *alta Uro AG, Merian Iselin Klinik, Center of Biomechanics & Calorimetry, University of Basel, Basel, Switzerland;* [f] *Department of Urology and Pediatric Urology, RWTH Aachen University, Aachen, Germany;* [g] *Department of Urology and Kidney Transplantation, Martin-Luther-University, Halle, Germany*

Article info

Article history:
Accepted August 22, 2024

Keywords:
Antimicrobial resistance
Comorbidity
Geriatric
Guidelines
Polypharmacy
Urinary tract infections

Abstract

Urinary tract infection (UTI) is common among older individuals, especially those with frailty and comorbidity. Asymptomatic bacteriuria is also common in this group and does not require treatment. UTI diagnosis is complicated by atypical signs and symptoms such as confusion or functional decline. This necessitates a more holistic assessment according to a diagnostic algorithm that includes nonspecific symptoms to avoid overdiagnosis or underdiagnosis. Treatment strategies for UTI in older people generally align with those for younger people, with some exceptions. Prophylaxis is similar to that for postmenopausal women. However, it is crucial to carefully consider comorbidities, polypharmacy, and the risk of potential adverse events.

Patient summary: We provide recommendations for the management of urinary tract infection (UTI) in older individuals who are frail and have multiple medical conditions. These patients may have signs and symptoms that are not typical for UTI. Treatment plans for these vulnerable patients should take interactions with other drugs and possible side effects into account.

1. Introduction

Urinary tract infections (UTIs) are among the most common diseases, affecting more than 150 million individuals worldwide annually [1]. UTIs are frequent among young, sexually active women, with incidence rates ranging from 0.5 to 0.7 per person-year [2]. While the UTI incidence decreases during middle age, it rises again for older adults. More than 10% of women older than 65 yr report having had a UTI in the past 12 mo, increasing to almost 30% for women aged >85 yr. Furthermore, UTI recurrence is more frequent in this population [3]. As our population ages, the burden of UTIs in older people is expected to grow, underscoring the need for better diagnostic, management, and prevention strategies to enhance the health of this group.

Immunological aging heightens susceptibility to bacterial and viral infections, with UTIs ranking among the most common infections in the older population [4,5]. Factors

* Corresponding author. Department of Urology, University Hospital Basel, Spitalstrasse 21, 4031 Basel, Switzerland. Tel. +41 61 2657280; Fax: +41 61 2657690.
E-mail address: kathrin.bausch@usb.ch (K. Bausch).

https://doi.org/10.1016/j.euf.2024.08.007

Please cite this article as: K. Bausch, F.P. Stangl, J. Prieto et al., Urinary Infection Management in Frail or Comorbid Older Individuals, Eur Urol Focus (2024), https://doi.org/10.1016/j.euf.2024.08.007

such as urinary and fecal incontinence, dehydration, impaired cognitive function, and reduced mobility increase an individual's vulnerability to infection. UTI diagnosis and treatment in older people are complicated by underlying comorbidities and impaired general condition. In addition, atypical symptoms can delay diagnosis, and asymptomatic bacteriuria (ABU), which requires neither screening nor treatment, is highly prevalent in this population.

2. Patient population

When characterizing the older, often comorbid patient population, there is a distinction between frail and geriatric. Frail patients are commonly characterized by specific vulnerabilities and health risks because of diminished physiological functions. Geriatric patients, usually aged >70 yr, exhibit geriatric-typical multimorbidity involving two or more systemic diseases that have resulted in significant damage to body functions and structures. These conditions include cognitive deficits, fall susceptibility, chronic pain, incontinence, immobility, and malnutrition. Individuals aged >80 yr are also included in this group, irrespective of systemic diseases or their associated damage. Geriatric patients in this context may reside either at home or in a nursing home [6,7].

3. URI diagnosis in older patients

Typically, UTI is diagnosed on the basis of typical symptoms in combination with detection of pathogens in the urine. However, older women and men frequently present with atypical symptoms such as altered mental status (eg, new onset of confusion), functional decline, fatigue, or falls. Moreover, mere detection of bacteriuria does not confirm UTI because of high ABU prevalence. The specificity of urine dipstick tests ranges from 20% to 70% in the elderly. Negative results for nitrite and leukocyte esterase on dipsticks often suggest the absence of UTI [6].

To enhance diagnostic accuracy and guide treatment decisions for older patients, an algorithm that includes atypical symptoms has been developed (Fig. 1) [8].

4. Antimicrobial treatment of UTIs in older patients

Antimicrobial treatment of UTIs in older people generally aligns with the treatment for other patient groups, using the same antibiotics and treatment duration unless complicating factors are present. Fosfomycin, nitrofurantoin, pivmecillinam, fluoroquinolones, and cotrimoxazole (trimethoprim/sulfamethoxazole) exhibit a slight, albeit insignificant, age-associated resistance effect. For catheter-

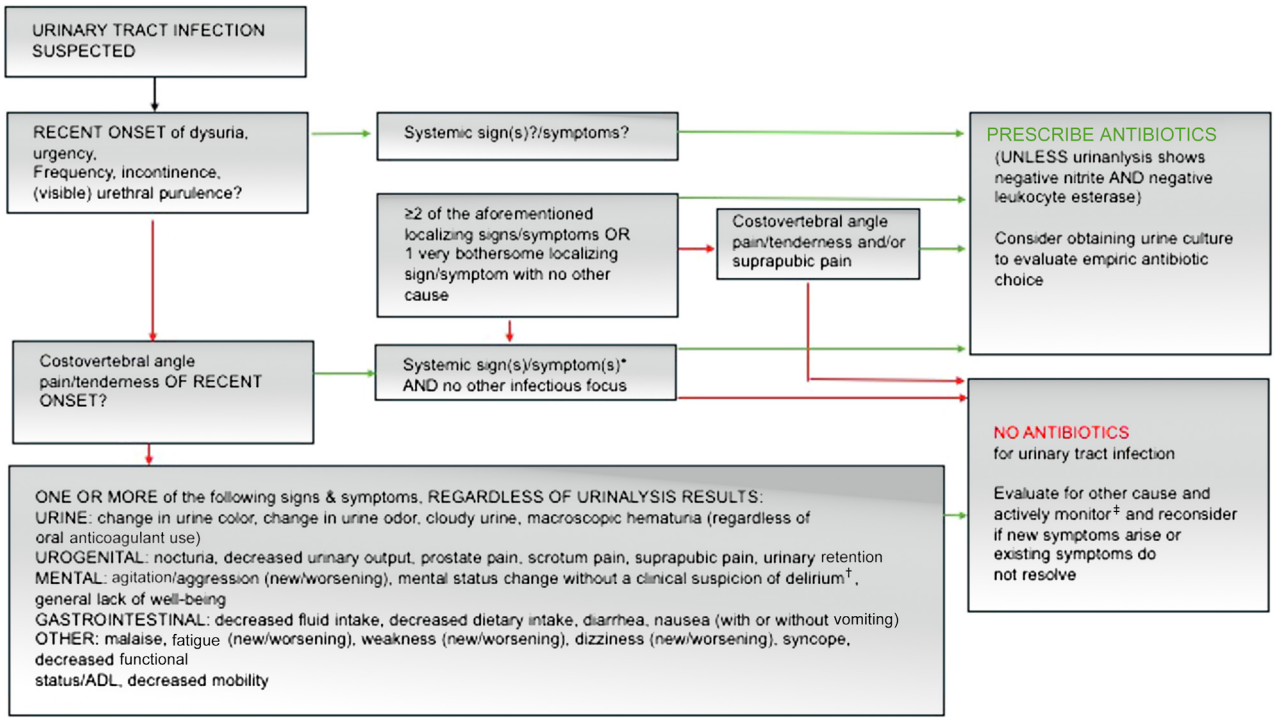


Fig. 1 – Algorithm for diagnosing urinary tract infections in frail and comorbid patients (according to [8]). Green arrows indicate yes and red arrows indicate no. ADL = activities of daily living. *Presence of at least fever (ie, a single oral temperature >37.8 °C, or repeated oral temperatures >37.2 °C, or a rectal temperature >37.5 °C, or a 1.1 °C increase over the baseline temperature), rigors/shaking chills, and/or clear-cut delirium†. †Delirium is defined according to the Diagnostic and Statistical Manual of Mental Disorders-5: (1) Disturbance in attention (ie, reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment). (2) The disturbance develops over a short period of time (usually hours to a few days), represents an acute change from baseline attention and awareness, and tends to fluctuate in severity during a day. (3) An additional disturbance in cognition (eg, memory deficit, disorientation, language, visuospatial ability, or perception). (4) The disturbances for criteria 1 and 3 are not better explained by a pre-existing, established, or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal such as coma. (5) There is evidence from the history, physical examination, or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal (ie, due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies. ‡ For example, monitoring vital signs, paying attention to hydration status, and repeated physical assessments by nursing home staff.

Please cite this article as: K. Bausch, F.P. Stangl, J. Prieto et al., Urinary Infection Management in Frail or Comorbid Older Individuals, Eur Urol Focus (2024), https://doi.org/10.1016/j.euf.2024.08.007

ized patients and those with urinary incontinence or other urinary tract conditions, higher rates of antimicrobial resistance may necessitate careful consideration when choosing empirical treatment [8].

Given the prevalence of comorbidities and polypharmacy among older people, treatment selection should take into account potential drug interactions and contraindications such as impaired kidney function, making fluoroquinolones generally inappropriate for this population [9].

For older people, there is no evidence supporting symptomatic treatment with non-steroidal anti-inflammatory drugs (NSAIDs). Furthermore, NSAIDs are considered potentially inappropriate medications for geriatric patients with associated risks (PRISCUS list 2.0) [8]. When selecting therapy for geriatric patients, it is important to note that most studies have been conducted in female cohorts. However, the above-mentioned factors should also be considered when treating male geriatric patients, particularly regarding the choice of fluoroquinolones for prostatitis treatment.

5. Prophylaxis for recurrent UTIs in older patients

The recommendations for prophylaxis for recurrent UTIs in frail women correspond to those for postmenopausal women, whereas explicit guidance for men is lacking because of insufficient data. In general, adherence to overall body and intimate hygiene as well as increased fluid intake is advisable in this patient group. Furthermore, for men it is important to ensure that conditions such as prostatitis, epididymitis, and urethritis are not overlooked, as antibiotic therapy is recommended in those cases [9,10]. Risk factors for UTI such as permanent catheterization should be avoided.

Non-antimicrobial prophylaxis options for women include vaginal estrogenization if symptoms can be attributed to local estrogen deficiency. Cranberry supplements have shown varying efficacy in studies, and the role of vaccinations is currently being investigated.

Potential underlying comorbidities can heighten the risk of recurrent UTIs, underscoring the need to manage conditions such as diabetes mellitus effectively and address structural or functional abnormalities of the urogenital tract.

Consideration of long-term antibiotic prophylaxis in frail or comorbid patients following unsuccessful non-antibiotic approaches may be appropriate. However, robust data on the choice, dosage, and duration of antibiotic prophylaxis in this population are lacking. Given concerns about antibiotic resistance, a cautious approach is warranted, particularly in light of polypharmacy and multimorbidity. For long-term antibiotic prophylaxis in frail women, trimethoprim, trimethoprim/sulfamethoxazole, or nitrofurantoin can be used at reduced doses, with careful attention to contraindications and monitoring for adverse drug reactions. Fluoroquinolones for prophylaxis should generally be avoided in this group [9,11].

6. Conclusions

Effective UTI management in frail or comorbid patients diverges from approaches for nongeriatric individuals and requires consideration of atypical symptoms and the common occurrence of ABU. Therapeutic and prophylactic decisions should take into account comorbidities, polypharmacy, and potential adverse events to optimize outcomes in this vulnerable population.

Conflicts of interest: The authors have nothing to disclose.

References

[1] Öztürk R, Murt A. Epidemiology of urological infections: a global burden. World J Urol 2020;38:2669–79. https://doi.org/10.1007/s00345-019-03071-4.

[2] Hooton TM, Scholes D, Hughes JP, et al. A prospective study of risk factors for symptomatic urinary tract infection in young women. N Engl J Med 1996;335:468–74. https://doi.org/10.1056/nejm199608153350703.

[3] Foxman B, Barlow R, D'Arcy H, Gillespie B, Sobel JD. Urinary tract infection self-reported incidence and associated costs. Ann Epidemiol 2000;10:509–15. https://doi.org/10.1016/s1047-2797(00)00072-7.

[4] Pawelec G. Immunity and ageing in man. Exp Gerontol 2006;41:1239–42. https://doi.org/10.1016/j.exger.2006.09.005.

[5] Chao CT, Lee SY, Wang J, Chien KL, Huang JW. Frailty increases the risk for developing urinary tract infection among 79,887 patients with diabetic mellitus and chronic kidney disease. BMC Geriatr 2021;21:349. https://doi.org/10.1186/s12877-021-02299-3.

[6] Bundesverband Geriatrie e.V.. Geriatrische Patientinnen und Patienten und ihre spzeifieschen Behandlugnsbedarfe. Weißbuch Geriatrie. Zukunftssicherheit der Geriatrie - Konzept und Bedarfszahlen volume 4. Stuttgrat, Germany: Hohlhammer Verlaf; 2023.

[7] Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. Lancet 2013;381:752–62. https://doi.org/10.1016/s0140-6736(12)62167-9.

[8] van Buul LW, Vreeken HL, Bradley SF, et al. The development of a decision tool for the empiric treatment of suspected urinary tract infection in frail older adults: a Delphi consensus procedure. J Am Méd Dir Assoc 2018;19:757–64. https://doi.org/10.1016/j.jamda.2018.05.001.

[9] Deutsche Gesellschaft für Urologie e.V. S3 Leitlinie: Epidemiologie, Diagnostik, Therapie, Prävention und Management unkomplizierter, bakterieller, ambulant erworbener Harnwegsinfektionen bei Erwachsenen – Aktualisierung 2024. https://register.awmf.org/assets/guidelines/043-044l_S3_KF2_Epidemiologie-Diagnostik-Therapie-Praevention-Management-Harnwegsinfektionen-Erwachsene_2024-05_1.pdf.

[10] Bonkat G, Bartoletti R, Bruyère F, et al. EAU guidelines on urological infections. Amsterdam, The Netherlands: European Association of Urology; 2024.

[11] Mann NK, Mathes T, Söhnnichsen A, Pieoer D, Klager E, Moussa M. Potenziell inadäquate Medikation für ältere Menschen: PRISCUS 2.0. Erste Aktualisierung der PRISCUS-Liste. Dtsch Arztebl Int 2023;120:3–10. https://doi.org/10.3238/arztebl.m2022.0377.

Please cite this article as: K. Bausch, F.P. Stangl, J. Prieto et al., Urinary Infection Management in Frail or Comorbid Older Individuals, Eur Urol Focus (2024), https://doi.org/10.1016/j.euf.2024.08.007