

## EDITORIAL

## Urinary Tract Infection in Elderly: To Treat or Not to Treat ?

Narinder Pal Singh<sup>1</sup>, Gurleen Kaur<sup>2</sup>

In the last census conducted in 2011, elderly population (60 years and above) constituted more than 100 million, of which 53 million were females and the rest males. A report released by the United Nations Population Fund and Help Age India suggests that the number of elderly persons is expected to grow to 173 million by 2026.<sup>1</sup> Aging of a population is an issue of great concern for the health care policy maker. A study carried out in southern India reported that the prevalence of morbidity is higher (31.2%) in the age group of 60 years and above.<sup>2</sup> The majority of diseases are chronic in nature such as cardiovascular diseases, arthritis, stroke, diabetes, cataract, deafness, cancer and chronic infections.

Urinary tract infection (UTI) is one of the most common infectious diseases among the geriatric population. Due to their anatomy and reproductive physiology, females are more susceptible.<sup>3</sup> Diagnosis and treatment of UTI in the elderly varies when compared to younger patients and is rather difficult due to the absence of specific symptoms and lack of clear clinical history.<sup>4</sup> This leads to under diagnosis and inadequate treatment.<sup>5</sup> Previous studies show that UTI is frequently erroneously diagnosed in around 40% of hospitalized elderly admissions, because of non-specific symptomatology. As per the Centers for Disease Control and Prevention-NHSN manual, UTI should be diagnosed using Symptomatic Urinary Tract Infection (SUTI) criteria, and Asymptomatic Bacteremic UTI (ABUTI) criteria (Figure 1).<sup>6</sup>

Bacteria are the most common causative agents causing UTI in humans. Occasionally viruses and fungi can also be responsible; hence these should not be ignored. Gram-negative bacilli (eg, *Escherichia coli*, *Enterobacter* spp, *Klebsiella* spp, *Proteus* spp) are the most common, but there is a noticeable increase in more resistant bacteria such as *Pseudomonas aeruginosa* and

Gram-positive organisms including enterococci (*E. faecalis* and *E. faecium*), coagulase-negative staphylococci, and group B *Streptococcus* (*Streptococcus agalactiae*), when compared to young adults.<sup>7,8</sup>

### Asymptomatic Bacteremic Urinary Tract Infections (ABUTI)

Asymptomatic bacteriuria (ASB) occurs in up to 6 to 16 percent of the women in the community and 25 to 54 percent of the women in nursing homes, with a frequency of about half of those figures in men.<sup>9</sup> A variety of complicating factors are more frequently found in elderly patients with ASB, such as hormonal factors (e.g. decrease in estrogen), immunological changes, anatomical factors (e.g. prostatomegaly), metabolic factors (e.g. diabetes mellitus), functional alteration in the urinary bladder and a higher rate of indwelling-catheter use.<sup>10</sup> The diagnosis of ASB is based on the result of a urine culture from a urine specimen with no contamination from a person without symptoms or signs referable to a UTI (fig 1). Pyuria in combination with bacteriuria is common in both younger and older adults. Large majority having only pyuria without any urinary tract specific symptoms. Thus, pyuria accompanying ASB is not an indication for antimicrobial treatment.<sup>11</sup>

For the elderly population, routine screening for and treatment of ASB is not recommended. Based on recommendations of the Infectious Diseases Society of America (IDSA), screening for and/or treatment of ASB are not recommended for the following: (1) diabetic women (2) older persons living in the community (3) persons with spinal cord injury (4) catheterized patients while the catheter remains in situ; (5) renal transplant or other solid organ transplant recipients.

Screening for and treatment of ASB in older persons is only recommended in the following two circumstances: (1) before transurethral resection of the prostate and (2) before urological procedures for which mucosal bleeding is anticipated.<sup>12</sup>

### Symptomatic Urinary Tract Infections (SUTI)

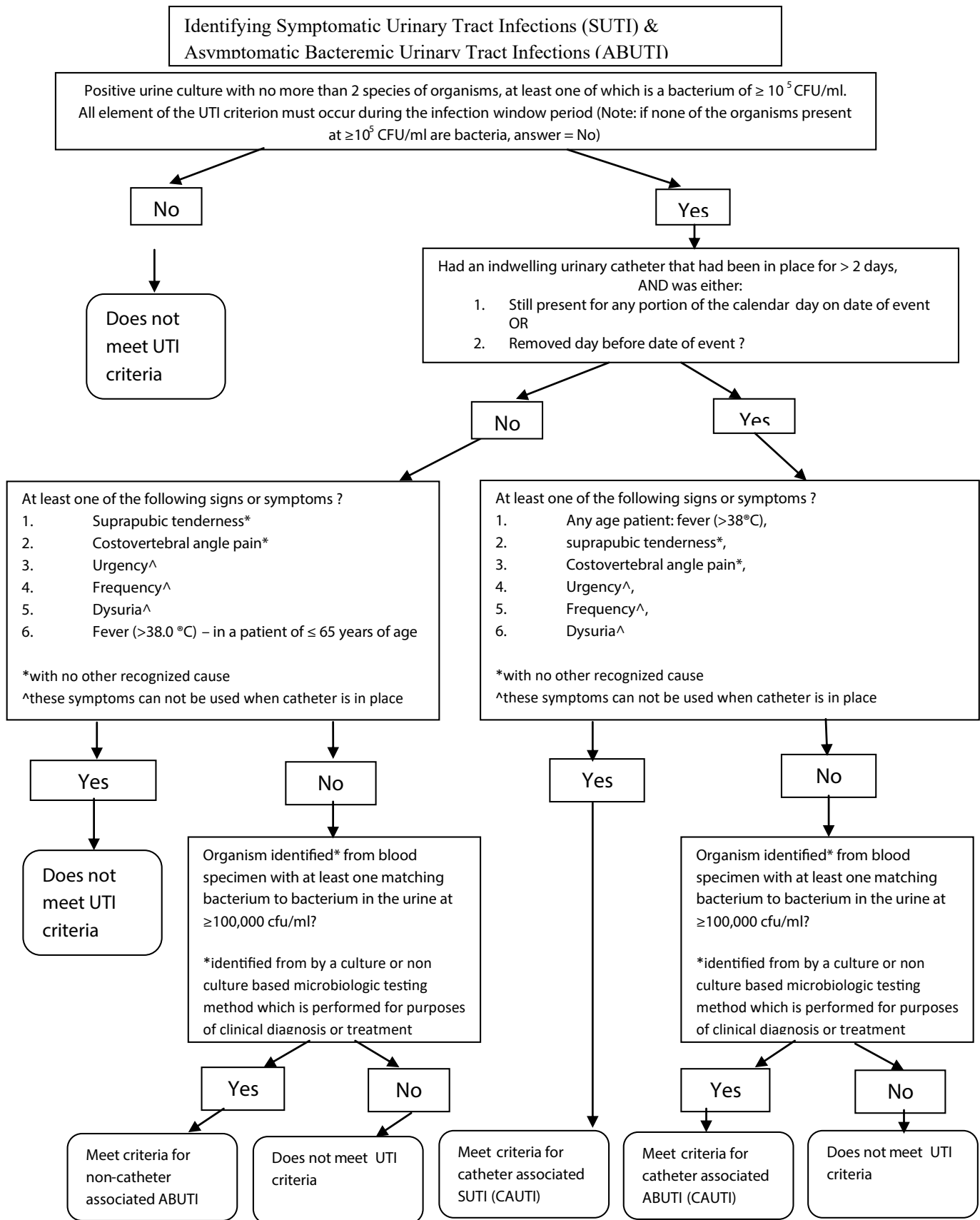
Like younger adults, the diagnosis of UTI in the elderly population also requires presence of significant bacteruria associated with genitourinary symptoms (Diagnostic criteria mentioned in fig. 1).

Several risk factors are associated with UTI in older adults such as urinary retention, significant postvoid residual (PVR) urine, history of prior UTI, presence of a urinary catheter and diabetes mellitus. Medical comorbidities, like stroke and dementia, that may predispose individuals to bowel and bladder incontinence, have been associated with symptomatic UTI and persistent asymptomatic bacteriuria in this population.<sup>8</sup>

For community-dwelling older adults presenting to an acute care hospital with presumed urosepsis, empiric single agent therapy with a third-generation cephalosporin is appropriate therapy until urine culture and susceptibility reports are available. For out-patient, oral agents - nitrofurantoin, trimethoprim-sulfamethoxazole, and fluoroquinolones are appropriate first-line drugs.

When the diagnosis of UTI is in doubt, a reasonable management strategy is to withhold antibiotics for a week and follow-up; because 25 to 40 percent of older women with symptoms suggestive of UTI will improve without therapy.<sup>13</sup> When true UTI is documented in an older woman, therapy should be based on the location of infection

<sup>1</sup>Medical Advisor and Senior Director, Medicine, Max Super Speciality Hospital, Vialshali, Ghaziabad, Uttar Pradesh; <sup>2</sup>Research Fellow-Nephrology, Emory University, Atlanta, Georgia, United States



**Fig. 1: Identifying Symptomatic Urinary Tract Infections and Asymptomatic Bacteremic Urinary Tract Infections (Source: adapted from CDC-NHSN Manual, 2018)**

(upper versus lower tract disease) and the likely causative agent. Lower tract UTI (cystitis), characterized by dysuria, frequency, and urgency (NOT fever which indicates upper tract disease) are often treated with a short course of antibiotics (three to six days).<sup>14</sup> Upper tract UTI (pyelonephritis) is typically characterized by fever, chills, nausea, and flank pain and is often accompanied by lower tract symptoms, although. As with all infections, presentation in older adults may be more subtle. Upper tract infection requires a longer course of therapy than lower tract infection.

Cranberry juice administration is an appealing modality for prevention of UTIs, although there is no conclusive evidence.<sup>15</sup> Pooled analysis of three trials demonstrated a significant benefit of antibiotic prophylaxis in reducing the risk of recurrent UTIs in older women when used upto 6 months.<sup>16</sup> Antimicrobial agents used for prophylaxis include trimethoprim-sulfamethoxazole, nitrofurantoin, and cefalexin. In catheterized patients, emphasis on prevention strategies, including aseptic insertion of urinary catheters, minimizing use of catheters and minimizing duration of catheter use, have led to a decrease in the incidence of infection.<sup>17</sup>

In the present issue, Kakde P et al. have assessed the clinical profile, predisposing factors and pathogen profile of UTI; and have attempted to identify associated factors responsible

for mortality among elderly patients in a tertiary care hospital. They observed a high mortality rate (17.89%) associated with UTI. Diabetes mellitus and dementia increased the risk of mortality in the elderly UTI patients. Gram negative organisms were found to be the primary etiological organisms, E.coli being the most common isolate in urine culture. This is a single center study with a relatively smaller sample size and for a small duration. Source of UTI whether community or hospital acquired has not been discussed in the study. Patients with partially treated UTI, those with symptoms of UTI but no growth on urine culture and urine cultures showing fungal growth were not included in the study. Further multicentric studies are required with a larger sample size, to explore the profile of UTI in the elderly.

In conclusion, UTI is an important problem in the older populations. Physicians need to understand the appropriate management of symptomatic infection; and that asymptomatic bacteriuria is common and need not be treated.

## References

1. Elderly in India 2016. Ministry of Statistics and Programme Implementation, Govt of India. <http://vikaspedia.in/social-welfare/senior-citizens-welfare/senior-citizens-status-in-india>
2. Yadav A, Prasad JB, Shekher C, Vishvakarma M. A study of morbidity pattern among elderly population in urban India. *J Soc Health Diabetes* 2017; 5:100-6.
3. Vasudevan R. Urinary tract infection: An overview of the

- infection and the associated risk factors. *J Microbiol Exp* 2014; 1:08.
4. Cove-Smith A, Almond MK. Management of urinary tract infections in the elderly. *Trends Urology, Gynecol. Sexual Health* 2007; 12:31-4.
5. Mahesh E, Medha Y, Indumathi VA, Prithvi SK, Mohammed WK, Punith K. Community acquired UTI in elderly. *Brit J Med Pract* 2011; 4:a406.
6. Centers for Disease Control and Prevention - NHSN Patient Safety Component Manual. 2018 <https://www.cdc.gov/nhsn/pdfs/pscmanual/7pscaticurrent.pdf>
7. <https://www.uptodate.com/contents/evaluation-of-infection-in-the-older-adult#H1498087>
8. Rowe T A, Mehta M J. Urinary tract infection in older adults. *Aging Health* 2013; 9.
9. Juthani Mehta M. Asymptomatic bacteriuria and urinary tract infection in older adults. *Clin Geriatr Med* 2007; 23:585.
10. Wagenlehner FM, Naber KG, Weidner W. Asymptomatic bacteriuria in elderly patients: significance and implications for treatment. *Drugs Aging* 2005; 22:801-7.
11. Nicolle LE. Asymptomatic bacteriuria: when to screen and when to treat. *Infect Dis Clin North Am* 2003; 17:367-94.
12. Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM, Infectious Diseases Society of America, American Society of Nephrology, American Geriatric Society. *Clin Infect Dis* 2005; 40:643.
13. Knottnerus BJ, Geerlings SE, Moll van Charante EP, Riet G. 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.
14. Lutters M, Vogt-Ferrier NB. Antibiotic duration for treating uncomplicated, symptomatic lower urinary tract infections in elderly women. *Cochrane Database Syst Rev* 2008.
15. Jepson RG, Williams G, Craig JC. Cranberries for preventing urinary tract infections. *Cochrane Database Syst Rev* 2012; 10:CD001321.
16. Ahmed H, Davies F, Francis N, Farewell D, Butler C, Paranjothy S. Long-term antibiotics for prevention of recurrent urinary tract infection in older adults: systematic review and metaanalysis of randomised trials. *BMJ Open* 2017; 7:e015233.
17. Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA. Healthcare Infection Control Practices Advisory C Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol* 2010; 31:319-326.

## 15<sup>TH</sup> INFECTIOUS DISEASE CERTIFICATE COURSE - IDCC 2018

17<sup>th</sup> September 2018 (Monday) to 21<sup>st</sup> September 2018 (Friday) • Organised by PD Hinduja Hospital & Medical Research Centre, Mumbai, INDIA • Venue : 4th Floor Auditorium (East Block), Hinduja Hospital • Timings : 08.30 hrs. to 16.30 hrs.

**Objective:** Diagnosis, Management & Prevention of Infectious Diseases • **Focus:** Infectious Diseases, Acute febrile illnesses, Tuberculosis, HIV, Infections in ICU / Immunocompromised and Organ Specific Infections • **Format:** Ward Rounds / Microbiology Rounds/ Archived Cases / Interactive Lectures • **Eligibility:** Post graduates in Medicine or Microbiology (Final year postgraduates may also be considered) • **Registration procedure:** Candidates to send short bio data with Demand Draft / Cheque of Rs.9000/- in favor of PD Hinduja Hospital and MRC, payable at Mumbai. • MMC CME credits will be given • **Candidates to make their own arrangement for accommodation** • **Last date for registration:** 30<sup>th</sup> July, 2018 • **Course Information:** [www.hindujahospital.com](http://www.hindujahospital.com) / IDCC2018 • **Inquiries:** 022-24447204/5, [marketing@hindujahospital.com](mailto:marketing@hindujahospital.com) • **Course Co-ordinators:** Dr. FD Dastur / Dr. Rajeev Soman / Dr. Camilla Rodrigues / Dr. Anjali Shetty / Dr. Ayesha Sunavala