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URINARY TRACT INFECTIONS IN THE ERA OF ANTIBIOTIC RESISTANCE: A HOMOEOPATHIC PERSPECTIVE

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ABSTRACT

Urinary tract infections (UTIs) are among the most common bacterial infections worldwide, with *Escherichia coli* being the predominant causative organism. The increasing prevalence of antibiotic-resistant uropathogens has become a major challenge in clinical practice, partly due to the overuse, misuse, and inappropriate prescribing of antibiotics. Repeated exposure to antimicrobial agents exerts selective pressure on bacterial populations, eliminating susceptible organisms while allowing resistant strains to survive and multiply. The mechanisms underlying antibiotic resistance include enzymatic inactivation of antibiotics, alteration of drug targets, reduced membrane permeability, activation of efflux pumps, and the acquisition of resistance genes through horizontal gene transfer. Additionally, biofilm formation may contribute to bacterial persistence and recurrent infections. These mechanisms can reduce treatment effectiveness and complicate the management of urinary tract infections. Remedy selection in homoeopathic practice traditionally considers the characteristic features of burning micturition, frequency, urgency, associated pain, modalities, and the overall symptom presentation of the individual. In the context of increasing antibiotic resistance, this article explores the principles of homoeopathic therapeutics and their theoretical application to urinary complaints.

KEYWORDS: Antibiotic resistance, urinary tract infection, homoeopathy, MDR, recurrent UTI.

INTRODUCTION

Urinary tract infections (UTIs) are difficult to define since there are many clinical and diagnostic factors to consider.[2] UTIs are frequent infections caused by bacteria that enter the urethra and infect the urinary system, usually from the skin or rectum.[3]

Cystitis, pyelonephritis, prostatitis, urosepsis, and catheter-associated UTI (CA-UTI) are only a few of the many clinical manifestations of urinary tract infection (UTI).[2]

Recurrent urinary tract infection (rUTI), is defined by the European Association of Urology (EAU) and the American Urological Association (AUA) as experiencing a minimum of two episodes of UTI within six months, or three episodes within a year.[4]

The presence of bacteria at any level of the urinary tract in the presence of certain symptoms is known as a urinary tract infection (UTI), which is a common pathology and a common reason to visit an ambulatory or emergency medical facility.[5]

Many of the antibiotics often used to treat UTIs have become ineffective due to antibiotic resistance, which occurs when bacteria develop resistant to the medications used to treat them. This has increased medical expenses and resulted in more severe sickness, hospitalizations, and fatality.[6]

Although antibiotic resistance is a natural phenomenon, it has been exacerbated by human and animal drug usage and abuse.[6]

EPIDEMIOLOGY

Millions of people worldwide suffer from urinary tract infections (UTIs), a common health problem. Women are disproportionately impacted; estimates show that 50–60% of women and only 12% of men will get a UTI at some point in their lives. The largest prevalence is seen in young women between the ages of 18 and 24, although older adults—especially those over 65—are also at considerable risk because of things like impaired immunity and urine retention.[9]

With an age-standardized incidence of roughly 5,531.88 per 100,000 people in 2021, urinary tract infections continue to be one of the most prevalent infections globally. Due to anatomical and hormonal variables, women are disproportionately affected by uUTIs, with an incidence that is about four times higher than that of men across most age groups. [10]

Recent research estimates that over 400 million people experience UTI each year worldwide, over 90% of whom are female. Up to 50% of females who experience a UTI are likely to experience a recurrent infection within a year.[4]

An estimated 1–5% of healthy premenopausal women get a UTI. UTIs rise to 4–19% in older, otherwise healthy men and women, 0.7–27% in diabetics, and 2–10% in expectant mothers. Depending on whether a risk factor is present or not, the spectrum of bacteria in UTIs is comparable to species found in simple or complex UTIs. Pregnancy-related UTIs are common (2–10%) and are associated with a higher risk of pyelonephritis and symptomatic UTIs. Nearly half of all women will get a UTI at least once in their lifetime. By the time they are 24 years old, about one in three women will have experienced at least one UTI episode.[11,12]

Recurrence is considerable; women between the ages of 16 and 35 are most likely to experience a second infection within a year, accounting for approximately 50% of cases.[10]

One of the most prevalent infections, UTIs are brought on by both Gram-positive and Gram-negative bacteria. In our investigation, K. pneumoniae and E. coli were the most common urinary tract pathogens in both genders. MDR is steadily rising globally, which is concerning because we are gradually running out of treatments for common bacterial illnesses. More than 92% of bacteria that cause UTIs are resistant to at least one common antibiotic, and almost 80% are resistant to at least two, according to a 2019 study.[7]

According to a 2022 study published in the Lancet, approximately 4.95 million deaths in 2019 were linked to AMR, and at least 1.27 million deaths were directly caused by antibiotic-resistant bacterial infections. According to the study, AMR was a major cause of death worldwide in 2019 and killed more people than HIV or malaria. The World Health Organization (WHO) listed antimicrobial resistance (AMR) as one of the top ten worldwide public health risks to humanity in 2021.[6]

CLASSIFICATION

According to the existence of particular clinical signs and symptoms, UTIs are classified as either localized or systemic under the new **European Association of Urology Classification.**[12]

1. Localized UTI: Cystitis in both sexes without any indications of a systemic infection.

2. Systemic UTI: A UTI in either sex that exhibits signs and symptoms of a systemic infection, with or without localized symptoms coming from any part of the urinary tract.

RISK FACTORS[13]

1) Bladder outflow obstruction
- Benign Prostatic enlargement
- Urethral stricture
- Prostate cancer.

2) Anatomical Abnormalities
- Vesico – ureteric reflux
- Uterine prolapsed
- Bladder Fistula.

3) Neurological Problems
- Multiple Sclerosis
- Spina Bifida
- Diabetic Neuropathy.

4) Foreign Bodies
- Urethral Suprapubic cantheter
- Ureteric stent
- Nephrostomy tube
- Urolithiasis.

5) Loss of Host defences
- Atropic urethritis and vaginitis in post – menopausal women
- Diabetes Mellitus.

Risk Phenotyping: Host risk variables are categorized using the **ORENUC system:**[14]

O: There are no recognized risk factors.

R: The possibility of recurring UTIs without serious consequences.

E:Extra- urogenital risk factors.

N: Nephropathic conditions that are pertinent.

U: Risk factors for urologic resolution (transient).

C: Unresolved urologic risk factors and a permanent external urinary catheter.

PATHOGENESIS

From the urethra to the kidneys, a continuous column of urine connects the urinary tract, which can be thought of as an anatomical entity. Most UTIs are caused by germs that rise from the urethra to the bladder. The majority of renal parenchymal infections proceed up the ureter to the kidney. However, a persistent and symptomatic infection is not always the result of bacteria entering the bladder. Whether tissue invasion and clinical infection will occur depends on how the host, pathogen, and environment interact.[11]

For instance, bacteria frequently enter the bladder following sexual activity, but these organisms are removed by the bladder's natural host defense systems and regular voiding. An inert surface for bacterial colonization is provided by any foreign object in the urinary tract, such as a stone or urinary catheter. Infection is encouraged by abnormal micturition and/or a large amount of leftover urine.[11]

To put it simply, everything that makes it more likely for bacteria to enter and remain in the bladder raises the risk of a urinary tract infection. Through the circulation, bacteria can enter the urinary tract. However, less than 2% of recorded UTIs are caused by hematogenous spread, which typically arises from bacteremia brought on by relatively aggressive organisms like Salmonella and S. aureus. In fact, looking for a bloodstream source is necessary if either of these infections are isolated from a patient who does not have a catheter or other equipment. Positive urine cultures and focal abscesses or regions of pyelonephritis within a kidney are possible outcomes of hematogenous infections. Because the hematogenous pathway is frequently used, the etiology of candiduria is unique. A non-instrumented immunocompetent patient's urine containing Candida suggests either vaginal contamination or possibly extensive visceral dissemination.[11]

MECHANISMS OF ANTIBIOTIC RESISTANCE IN URINARY TRACT INFECTIONS[1],[11]

The ability of some bacteria to flourish and proliferate in the presence of antibiotics is known as antibiotic resistance. Deoxyribonucleic acid (DNA) is encoded by antibiotic resistance (ABR) genes, which allow bacteria to survive in the presence of antibiotics. Through innate

or acquired resistance mechanisms, bacteria and their ABR genes have evolved over billions of years to become resistant to antibiotics. ABR genes can be altered by genetic changes or transmitted throughout bacteria via horizontal gene transfer and are fully transmissible.

INTRINSIC MECHANISMS OF ANTIBIOTIC RESISTANCE

DNA expressed in ABR genes enables bacteria to carry out specific intrinsic mechanisms, which eventually lead to phenotypic antibiotic resistance. Such mechanisms are divided into three categories.

1. Prevention of antibiotic access/entry into bacteria

Reduce bacterial cell wall permeability to prevent antibiotic access. Bacteria also have efflux pumps that allow them to transfer drugs out of their intracellular area, lowering intracellular antibiotic concentrations.

2. Modification of antibiotic target proteins/sites in bacteria

Bacteria can also alter the sites of antibiotic target proteins through mutations. When the sites of these target proteins experience mutational alterations, antibiotics are unable to bind to the bacteria effectively, resulting in a diminished or negligible bactericidal impact. In another scenario, target site protection may happen when bacteria modify the drug-binding site, thereby preventing the antibiotic from attaching to the bacteria in the first place.

3. Destruction of antibiotics via bacterial enzymatic-catalyzed hydrolysis

Bacteria can produce enzymes that break down antibiotics, thereby reducing their effectiveness and contributing to antibiotic resistance. These enzymes can also alter the chemical structure of antibiotics, preventing them from binding to their target proteins and consequently stopping them from exerting their bactericidal action.

CLINICAL FEATURES

Localized and systemic signs and symptoms of urinary tract infection classified by **EAU classification**[12]

Localized urinary tract infection	Systemic urinary tract infection
Dysuria (pain, burning, stinging)	Fever or hypothermia
Urgency	Rigors, shaking chills
Frequency	Delirium
Incontinence	Hypotension
Urethral purulence	Tachycardia
Pressure or cramping in the lower abdomen	Costovertebral angle pain/tenderness

INVESTIGATIONS

Investigation of patients with urinary tract infection[13]

1) All patients

- Dipstick estimation of nitrite, leucocyte esterase and glucose.
- Microscopy/cytometry of urine for white blood cells, organisms.
- Urine culture.

2) Infants, children, and anyone with fever or complicated infection

- Full blood count; urea, electrolytes, creatinine
- Blood cultures

3) **Pyelonephritis: men; children; women with recurrent infections**

- Renal tract ultrasound or CT
- Pelvic examination in women, rectal examination in men

4) Continuing haematuria or other suspicion of bladder lesion

- Cystoscopy.

CONVENTIONAL TREATMENT[13]

- Antibiotics are advised for all confirmed urinary tract infections (UTIs).
- For lower urinary tract infections, a typical treatment duration is 3 days to minimize bowel flora disruption.
- Trimethoprim and nitrofurantoin are the preferred first-line treatment options.
- Resistance to trimethoprim occurs in 10% to 40% of UTI-causing organisms, with lower rates in community settings.
- Trimethoprim and nitrofurantoin are contraindicated if estimated glomerular filtration rate (eGFR) is below 30 mL/min/1.73m² due to efficacy and toxicity concerns.
- Trimethoprim can elevate serum potassium and creatinine levels, resulting in temporary reductions in eGFR that resolve after discontinuation.
- Quinolone antibiotics (ciprofloxacin, norfloxacin) and cefalexin are typically effective.
- Co-amoxiclav and amoxicillin are not recommended as initial treatments due to resistance in approximately 30% of organisms; they may be used after confirming organism sensitivity.
- Penicillins and cephalosporins are safe during pregnancy; however, trimethoprim, sulphonamides, quinolones, and tetracyclines should be avoided.

REPERTORY OF THE URINARY ORGANS AND PROSTATE GLAND INCLUDING CONDYLMATA BY A.R. MORGAN[18]

1. URETHRA, BURNING IN, urinate with urging to. Agar., Cainc., Cann-ind., Cale-ph., Canth., Caps., Phos., Spig., Sudph**.**

2. URETHRA, **burning in, urinate, with frequent desire to.** Cann-ind., Canth. (constant), Phos. (the severity of burning arrests desire).

3. URETHRA, contraction of, sensation, contraction, spasmodic. See stricture of. Apis, Bell., Berb. (convulsive), Camph., Canth., Carb-v. (mornings), Cic., Clem. (long-lasting), Cop., Dios., Eucalyp., Gels., Indigo, Magn-ph., Nitr-ac., Mux-v., Op., Phos-ac., Plumd., Prun-s. (painful), Sec-c., Stram.

4. DESIRE TO URINATE, with ineff. urging, but involuntary flow while sitting. Caust. (dribbling).

5. EMISSION OF URINE, Freguent, backache, with. Tereb. (and burning urethra).

6. MICTURITION BEFORE, bladder, pain in. during desire to urinate. Hell., Puls., Rhod., Ruta., Sulph-ac.

7. MICTURITION, BEGINNING on, urethra, burning in. Apis (scalding), Avs. (anteriorly), Cazn-s. (beginning and end smarting), Clem. (with sensation of constriction, <.also during interruptions), Mancin., Merc-s. (and biting), Natr-ars., Prum-s., Teuc. (and long time after).

8. MICTURITION, DURING, durning, raw, asif. Colch., Merc-sol.

9. MICTURITION, AT CLOSE OF, last drops painful. Argt-nit. (and difficult), Aspar. (cries out with cardiac pain), Canm-s. (forced out by hand), C-veg. (thick and milky mucus, with tearing), Cazst. (delayed), Clem. (violent burning, pricking), Cub., Medorr., Merc-s., Nitr-ac., Puls., Sulph-ac. (preceded by cutting).

10. URINE CHARACTER OF, albuminous, blood containing. Ferr-s., Merc-cor., Rhus-t., Sec-cor., Tereb.

HOMOEOPATHIC THERAPEUTICS[15,16,17]

1. Asparagus Officinalis - Urine.--Frequent, with fine stitches in orifice of urethra; burning; of peculiar odor. Cystitis, with pus, mucus and tenesmus. Lithiasis.

2. Barosma Crenulatum - Marked specific effects on genito-urinary system; muco-purulent discharges. Irritable bladder, with vesical catarrh; prostatic disorders.

3. Brachyglottis Repens - Pressure in neck of bladder; urging to urinate. Sense of swashing in bladder. Soreness in urethra; feeling as if urine could not be retained. Urine contains mucous corpuscles and epithelium, albumen and casts.

4. Chimaphila Umbellata - Urging to urinate. Urine turbid, offensive, containing ropy or bloody mucus, and depositing a copious sediment. Burning and scalding during micturition, and straining afterwards. Must strain before flow comes. Scanty urine. Acute prostatitis, retention, and feeling of a ball in perineum. Fluttering in region of kidney. Sugar in urine. Unable to urinate without standing with feet wide apart and body inclined forward.

5. Copaiva Officinalis - Burning pressure; painful micturition by drops. Retention, with pain in bladder, anus, and rectum. Catarrh of bladder; dysuria. Swelling of orifice. Constant desire to urinate. Urine smells of violets. Greenish, turbid color; peculiar pungent odor.

6. Cubeba Officinalis - Frequent urination of a nervous origin. Urethritis, with much mucus, especially in women. Cutting after urination, with constriction. Hćmaturia. Prostatitis, with thick yellow discharge. Cystitis.

7. Epigea Repens - Chronic cystitis, with dysuria; tenesmus after micturition; muco-pus and uric-acid deposit, gravel, renal calculi. Fine sand in urine of a brown color. Burning in neck of bladder whilst urinating and tenesmus afterward. Pyelitis, incontinence of urine.

8. Equisetum Hyemale - Severe, dull pain and feeling of fullness in bladder, not relieved by urinating. Frequent urging with severe pain at the close of urination. Urine flows only drop by drop. Sharp, burning, cutting pain in urethra while urinating. Incontinence in children, with dreams or night-mares when passing urine. Incontinence in old women, also with involuntary stools. Retention and dysuria during pregnancy and after delivery. Much mucus in urine. Albuminuria. Involuntary urination.

9. Hedeoma Pulegioides - Red sand in urine. Pain along ureter. Frequent urging, cutting pains. Pain along left ureter. Dragging pain from kidney to bladder. Dull burning pain over left kidney. Burning irritation at neck of bladder causing frequent intense desire to urinate and inability to retain urine for more than few minutes, better urinating.

10. Juniperus Communis - Strangury; bloody, scanty urine, violet odor (Tereb). Weight in kidney region. Prostatic discharge. Renal hyperćmia.

11. Naphthalinum - Irresistible desire. Meatus red swollen, and śdema of prepuce. Black urine. Cutting pain down penis. Pain in bladder. Terribly offensive odor of decomposing ammoniacal urine.

12. Pareira Brava - Black, bloody, thick mucous urine. Constant urging; great straining; pain down thighs during efforts to urinate. Can emit urine only when he goes on his knees, pressing head firmly against the floor. Feeling of the bladder being distended and neuralgic pain in the anterior crural region. (Staph.) Dribbling after micturition. (Selen.) Violent pain in glans penis. Itching along urethra; urethritis, with prostatic trouble. Inflammation of urethra; becomes almost cartilaginous.

13. Petroselinum Sativum - Burning, tingling, from perineum throughout whole urethra; sudden urging, to urinate; frequent, voluptuous tickling in fossa navicularis. Gonorrhśa; sudden, irresistible desire to urinate; intense biting, itching, deep in urethra; milky discharge.

14. Prunus Spinosa - Tenesmus of bladder. Ineffectual effort to urinate. Hurriedly impelled to urinate; the urine seems to pass as far as glans, and then returns and causes pain in urethra. Neuralgic dysuria. Must press a long time before urine appears.

15. Pulex Irritans - Scanty with frequent urging, with pressure on bladder and burning in urethra. Flow stops suddenly followed by pain. Urine foul. Cannot retain urine; must attend to the call without delay. Irritable bladder before menses.

16. Rhus Aromatica - Pale, albuminous. Incontinence. Severe pain at beginning or before urination, causing great agony in children. Constant dribbling. Diabetes, large quantities of urine of low specific gravity.

17. Solidago Virgaurea - Scanty, reddish brown, thick sediment, dysuria, gravel. Difficult and scanty. Albumen, blood, and slime in urine. Pain in kidneys extend forward to abdomen and bladder (Berb). Clear and offensive urine. Sometimes makes the use of the catheter unnecessary.

18. Stigmata Maydis - Suppression and retention. Dysuria. Renal lithiasis; nephritic colic; blood and red sand in urine. Tenesmus after urinating. Vesical catarrh. Gonorrhśa. Cystitis.

19. Triticum Repens - Frequent, difficult, and painful urination (Pop). Gravelly deposits. Catarrhal and purulent discharges (Pareira). Strangury, pyelitis; enlarged prostate. Chronic cystic irritability. Incontinence; constant desire. Urine is dense and causes irritation of the mucous surfaces.

CONCLUSION

Urinary tract infections (UTIs) remain among the most common bacterial infections globally, heavily reliant on empirical antibiotic therapy. However, the escalating crisis of antimicrobial resistance (AMR)—driven by extended-spectrum beta-lactamase (ESBL)-producing uropathogens, multidrug-resistant Escherichia coli, and recurrent infection cycles—has severely compromised conventional treatment protocols. The frequent reliance on broad-spectrum antibiotics often results in a vicious cycle of dysbiosis, recurrent infections, and diminishing therapeutic efficacy.

Within this challenging clinical landscape, the homeopathic perspective offers a paradigm shift. Rather than focusing solely on pathogen eradication through microbicidal agents, homeopathy emphasizes host-response modification, restoration of the urogenital microbiome, and constitutional strengthening.

REFERENCES

1. Onbeat, Onbeat, Onbeat. Mechanisms of antibiotic resistance in Urinary Tract Infections: Why does Anti-Microbial Resistance Pose a Challenge? [Internet]. Clinical Conversations. 2023. Available from: https://www.thermofisher.com/blog/clinical-conversations/mechanisms-of-antibiotic-resistance-in-urinary-tract-infections-why-does-anti-microbial-resistance-pose-a-challenge/
2. Bilsen, M. P., Jongeneel, R. M. H., Schneeberger, C., Platteel, T. N., van Nieuwkoop, C., Mody, L., Caterino, J. M., Geerlings, S. E., Köves, B., Wagenlehner, F., Conroy, S. P., Visser, L. G., & Lambregts, M. M. C. Definitions of Urinary Tract Infection in Current Research: A Systematic Review. *Open forum infectious diseases*, 2023; *10*(7): ofad332. https://doi.org/10.1093/ofid/ofad332.
3. Centers for Disease Control and Prevention. **Urinary tract infection basics** [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2024 Jan 22 [cited 2026 Jul 28]. Available from: https://www.cdc.gov/uti/about/index.html (cdc.gov).

4. Uchiyama-Tanaka Y. Case study of homeopathic bowel nosode remedies for dysbiotic Japanese patients. The Journal of Alternative and Complementary Medicine: Paradigm, Practice, and Policy Advancing Integrative Health. 2018 Feb; 24(2): 187-92.
5. Mareș C, Petca RC, Popescu RI, Petca A, Mulțescu R, Bulai CA, et al. Update on Urinary Tract Infection Antibiotic Resistance—A Retrospective Study in Females in Conjunction with Clinical Data. Life [Internet]. 2024 Jan., 9; 14(1): 106. Available from: https://doi.org/10.3390/life14010106.
6. Seaton J. Antibiotic-Resistant UTIs are common, and other infections may soon be resistant, too. Scientific American [Internet]. 2024 Feb 20; Available from: https://www.scientificamerican.com/article/antibiotic-resistant-utis-are-common-and-other-infections-may-soon-be-resistant-too/.
7. Ahmed SS, Shariq A, Alsalloom AA, Babikir IH, Alhomoud BN. Uropathogens and their antimicrobial resistance patterns: Relationship with urinary tract infections [Internet]. 2019. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC6436442/#sec1-4.
8. Seaton J. Antibiotic-Resistant UTIs are common, and other infections may soon be resistant, too. Scientific American [Internet]. 2024 Feb 20; Available from: https://www.scientificamerican.com/article/antibiotic-resistant-utis-are-common-and-other-infections-may-soon-be-resistant-too/.
9. Urologyjournal. Urinary Tract Infections – Causes, Prevention, and the Science of Bacterial Invasion [Internet]. Urology Journal. Available from: https://www.urologyjournal.org/urinary-tract-infections.
10. Market CC. Uncomplicated Urinary Tract Infection Pipeline Insight 2026 [Internet]. Claight Corporation (Expert Market Research). Available from: https://www.expertmarketresearch.com/clinical-trials/uncomplicated-urinary-tract-infection-pipeline-insight.
11. Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, Loscalzo J. Harrisons Manual of Medicine, 20th Edition. McGraw Hill Professional; 2019.
12. Bonkat G, Wagenlehner F, Cai T, Geerlings S, Medina-Polo J, Köves B, et al. Classification of urinary tract Infections in 2025: Moving beyond Uncomplicated and complicated. European Urology Open Science [Internet]. 2025 Apr., 8; 75: 44–7. Available from: https://doi.org/10.1016/j.euros.2025.03.010.
13. Ralston SH, Penman ID, Strachan MWJ, Hobson R. Davidson's Principles and Practice of Medicine E-Book: Davidson's Principles and Practice of Medicine E-Book. Elsevier Health Sciences; 2018.

14. Kratimenos M. *Urinary tract infection: A common problem for women*. British Homeopathic Association. Available from: https://www.britishhomeopathic.org/charity/how-we-can-help/articles/conditions/u/a-common-problem-for-women/. Accessed April 23, 2019.
15. Boericke W. Pocket manual of homeopathic materia medica and repertory. B Jain Publishers Pvt. Limited; 2022.
16. Clarke JH. A Dictionary of practical materia medica. 1900.
17. Kent JT. Lectures on homoeopathic materia medica. 1923.
18. Morgan AR. Repertory of the urinary organs and prostate gland: Including Condylomata. 1899.