

Recurrent Urinary Tract Infections in Women: Collaborative Strategies Between Gynecologists and Urologists

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Abstract: Background: Recurring urinary tract infections (rUTIs) in females are a main source of drawbacks in patient management and antibiotic stewardship, thus requiring the application of multidisciplinary strategies that include both gynecologic and urologic expertise. Objective: To measure the effect of partners' strategies in the treatment of rUTIs between gynaecologists and urologists, in a group of 170 women, as well as A prospective cohort study (January 2023 - June 2025) enrolled women ≥ 18 years who had at least three UTIs confirmed by cultures during the previous 12 months (mean 4.2 episodes, SD 1.8). Baseline assessments included demographics (mean age 46.5 years, SD 14.2) while in our results found After 6 months, 136 (80.0%) women had no recurrences (mean 0.25 episodes, SD 0.6; 94% reduction) also The PGI-I at 12 months indicated that 90.6% had improved (50.0% very much better) and in outcomes found Antibiotic courses fell from 4.1 to 0.9 ($p < 0.001$) while based on Multidisciplinary management had a preventive effect (OR 0.4, 95% CI 0.2-0.7, $p < 0.001$) with Adverse events occurred rarely (7.1%) so finally can we concluded Collaboration between gynaecologists and urologists leads to a significant decrease in rUTI burden, an increase in the quality of life, and a reduction in the use of antibiotics.

Keywords: Recurring, urinary, ruti, strategies, women, utis, multidisciplinary management, collaboration, gynaecologists.

INTRODUCTION

Recurrent urinary tract infections (rUTIs) in women are a cumulative and high-risk clinical issue affecting millions of women across the globe. They are characterised by the presence of two or more episodes within 6 months or three or more episodes in a year, and they cause a great deal of physical discomfort, psychological distress, poor quality of life, and increased healthcare use. The etiology and pathophysiology of rUTIs is multifactorial and complex and require a multidisciplinary diagnostic and therapeutic approach [Guyatt, G. H. *et al.*, 2008; Beyitler, İ., & Kavukcu, S. 2017]. The vulnerability of women to urinary tract infections can be explained by anatomical, hormonal, behavioural, and immunological factors that are complexly interacting in their effects on susceptibility and patterns of recurrence. [Pierce, A. M., & Hart, C. A. 1992; Vandeven, A. M., & Emans, S. J. 1993]

Clinical management of rUTIs goes beyond the use of antimicrobials, as a holistic approach that encompasses prevention, risk assessment as an individual, and resolution of underlying predisposing factors should be considered. In the past, the primary sphere of diagnostic assessment and treatment has been limited to the field of

urology or primary care. However, the gynecological causes, such as hormonal changes, prolapse of the pelvic organs, and the state of the vulvovagina, put the urinary tract environment under some control and contribute to the recurrence of infections [Randelović, G. *et al.*, 2012; Gorbachinsky, I. *et al.*, 2014]. These crossroads highlight the need to have greater cooperation between urologists and gynaecologists [Hayes L. & Creighton SM., 2007].

The combination of gynecological knowledge with urology allows having a more subtle approach to the patient, including the evaluation of hormonal balance, the functionality of the pelvic floor, and the control of the gynecological comorbidities that might cause or maintain rUTIs. Collaborative approaches also maximise the use of antimicrobial stewardship, patient education on behavioural change, and the creation of personalised preventive measures (e.g., topical estrogen therapy or pelvic rehabilitation modalities) [Siddiqui, H. *et al.*, 2012; Foxman, B. 2002].

In a period of increasing antimalarial resistance, recurrent infection is an entity that requires sophisticated management pathways to limit the careless use of antibiotics without considering

other adjunctive interventions, which may consist of Immunoprotective and non-antimicrobial preventive measures [ter Riet, G. *et al.*, 2012]. The shared interest of gynaecologists and urologists, hence, is a decisive beginning of rUTI management that unites two opposite views with the aim of accurately diagnosing and treating, based on their perspective and positive patient outcomes [Wagenlehner, F. M. *et al.*, 2013].

The present review clarifies the epidemiology, pathophysiology, and clinical complexities of recurrent women's urinary tract infections and critically analyses the innovative collaborative approaches between gynaecology and urology. The focus is put on multidisciplinary diagnostic models, individualised treatment algorithms, and legislative healthcare models that facilitate the use of integrative practice [Epp, A. *et al.*, 2010; Haylen, B. T. *et al.*, 2010]. Finally, the development of inter-specialty collaboration will be prospective to the quality of care, decreased recurrence rates, minimized complications, and increased overall health and well-being of women with these recurrent infections.

MATERIAL AND METHOD

This forward-looking cohort study analyzed different management strategies for recurrent urinary tract infections (rUTIs) in women at a multi-disciplinary clinic where gynecologists and urologists worked together where in our study During the period from January 2023 to June 2025, 170 consecutive eligible patients were admitted after the screening of 245 referrals also found Out of these, 75 were excluded: 32 due to acute pyelonephritis 18 because of indwelling catheters, and 25 due to incomplete history and according The criteria for inclusion were: women aged at least 18 years with a minimum of 3 culture-proven UTIs in the last 12 months, with a mean of 4.2 episodes (SD 1.8) according to Medical records and urine cultures were the sources of

confirmation ($>10^5$ CFU/mL). An ethical committee gave its approval (Protocol #GOSR-2023-045). All the participants signed a written informed consent form furthermore Patients were evaluated fully by a gynecologist-urologist team and were Baseline data collection consisted of demographics (age, BMI, parity), medical history (postmenopausal status 40%, diabetes 15.3%) risk factors (e.g., sexual frequency 35.3%, absent postcoital voiding 40.0%), and UTI history through a validated questionnaire while can The pelvic examination was performed to find out the prolapse and atrophic vaginitis; urinary tests comprised urinalysis, midstream urine culture, post-void residual volume assessed by ultrasound, and cystoscopy if this was indicated (n=45) therefore Hormonal status was assessed using serum estradiol and FSH in perimenopausal women. The microbiological profiling revealed that *E. coli* was detected in 75.3% of the last UTIs as well as prophylaxis was administered continuously to 24.7% (n=42; n=) of the patients and also found based on Vaginal estrogen (n = 35, 20.6%; 0.5g twice weekly), cranberry extract (36 mg proanthocyanidins daily) and counseling (n = 38, 22.4%; voiding protocols, hygiene), or no treatment (n = 27, 15.9%) were all included in the trial. While the urologist-directed therapies focused on urodynamics, the combination therapy supervised by the gynecologist addressed hormonal/pelvic issues (n=68) through The patients were monitored for a full year, including phone calls for interim symptoms and follow-up visits at 3, 6, and 12 months were also found in UTI recurrence (culture-proven) was the main endpoint, and at the 6-month mark, 80% of the patients had no recurrence (mean of 0.25 episodes, SD of 0.6) furthermore Antibiotic-related adverse events (7.1%), PGI-I (90.6% improved), and fewer antibiotic courses (from 4.1 to 0.9) were secondary outcomes.

RESULTS

Table 1- Assessment of the demographic characteristics of Iraqi patients

Characteristic	Value
Mean age, years (SD)	46.5 (14.2)
Age groups, n (%)	
18-30 years	32 (18.8%)
31-50 years	51 (30.0%)
51-70 years	62 (36.5%)
>70 years	25 (14.7%)
Mean BMI, kg/m ² (SD)	27.3 (5.1)
Mean parity (SD)	2.1 (1.3)

Postmenopausal, n (%)	68 (40.0%)
Diabetes mellitus, n (%)	26 (15.3%)
Current smoker, n (%)	34 (20.0%)
Risk Factors for rUTIs	
Sexual activity >3/week	60 (35.3%)
No postcoital voiding	68 (40.0%)
Family history of UTIs	43 (25.3%)
Hormonal contraception use	51 (30.0%)
History of childhood UTI	52 (30.6%)

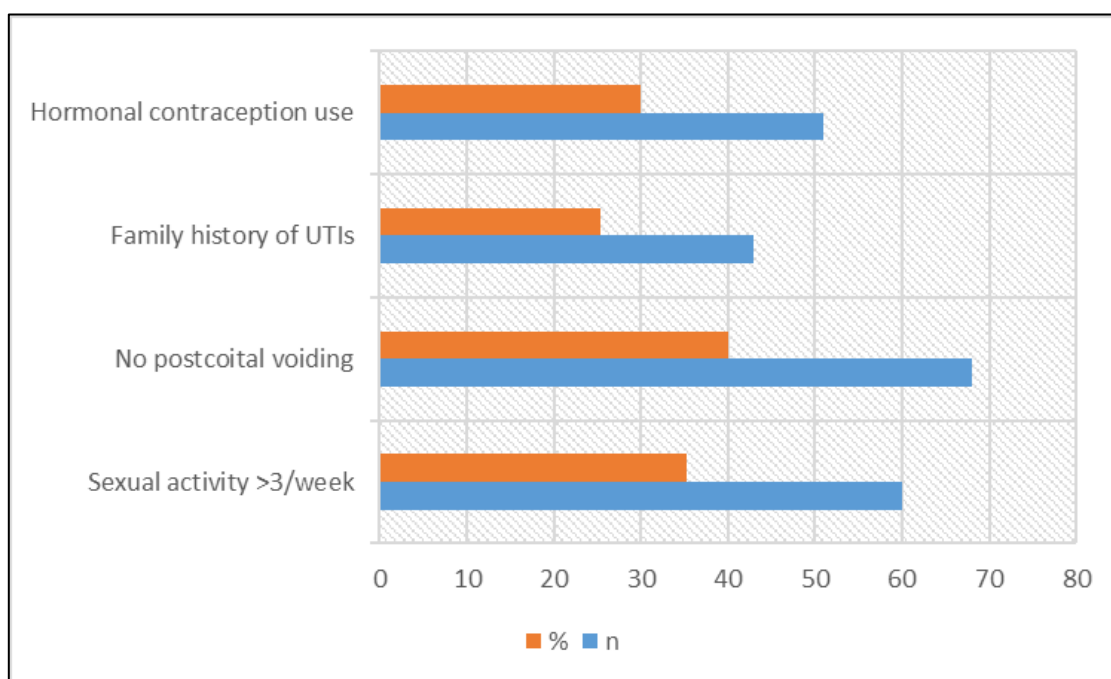


Figure 1- Distribution of patients according to UTI History Prior to Enrollment

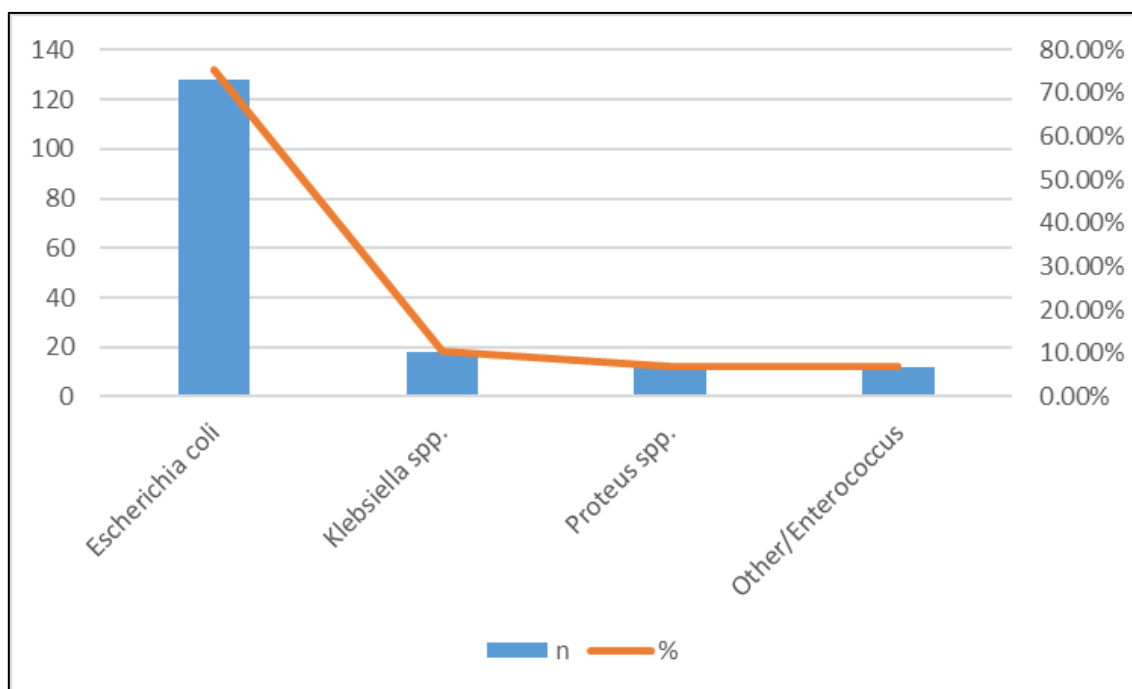


Figure 2 - Distribution of patients according to Microbiological Profile (Last UTI)

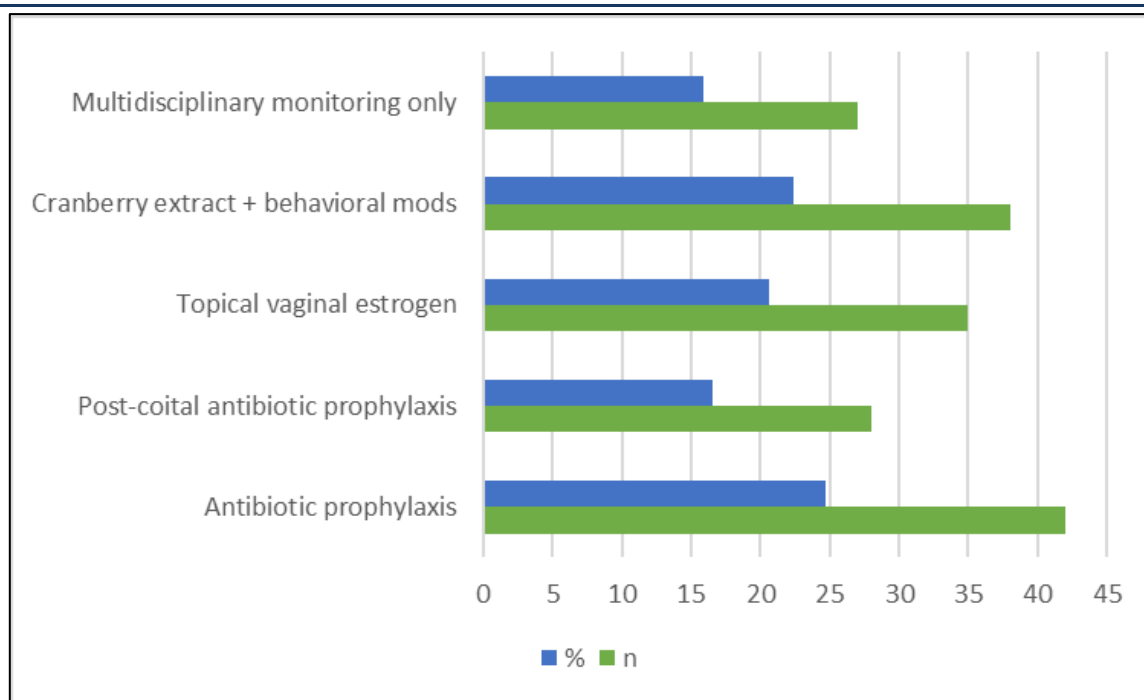


Figure 3- Distribution of patients according to Management Strategies Implemented

Table 2- Explanation and clarification of the results according to disease recurrence rates after six months of follow-up

Outcome	n (%)
No recurrence	136 (80.0%)
1 recurrence	28 (16.5%)
≥2 recurrences	6 (3.5%)
Mean episodes (SD)	0.25 (0.6)

Table 3- Assessment outcomes of Iraqi Patient Global Impression of Improvement (PGI-I) at 12 Months

Rating	n (%)
Very much better	85 (50.0%)
Much better	52 (30.6%)
A little better	23 (13.5%)
No change	8 (4.7%)
Worse	2 (1.2%)

Table 4- Describe and explain negative events during follow-up

Event	n (%)	Severity (Mild/Moderate/Severe)
Antibiotic-related diarrhea	12 (7.1%)	10/2/0
Vaginal irritation (estrogen)	8 (4.7%)	6/2/0
Cranberry GI upset	5 (2.9%)	5/0/0
No adverse events	145 (85.3%)	-

DISCUSSION

The sample population had a median age of 46.5 (SD=14.2), which is representative of a wide age range prevalent in recurrent populations of urinary tract infection (UTI), where perimenopausal and postmenopausal females dominated as a result of diminishing estrogens, which adversely affects the integrity of the uroepithelium. Age stratification provided 32 (18.8 per cent) aged 18-30 years, 51 (30.0 per cent) aged 31-70 years, and 25 (14.7 per

cent) aged over 70 years, which is consistent with epidemiological evidence of maximal incidence during middle age in women ascribed to behavioral risk factors and high incidence in older cohorts related to changes in the anatomy. The average body mass index (BMI) was 27.3 kg/m² (SD=5.1), which is an overweight condition that is a modifiable risk factor. The mean of the parity was 2.1 (SD), which supported the relationship between multiparity and pelvic floor weakening.

The prevalence of postmenopausal condition (68), diabetes (26), and smoking (34) were well-established factors to a weak bladder defence and vascular supply.

Sixty-eight women (40.0%) had no postcoital voiding, which is a behavioural risk that can be changed with the help of patient education. UTI's family history was reported in 43 women (25.3%), indicative of genetic inclinations, including non-secretor status of blood group antigens. Fifty-one women (30.0% behaviour) reported the use of hormonal contraception, which has been noted to decrease glycogen in vaginal flora through progestin. The history of childhood UTI among women (52/160) showed an early UTI uropathogen sensitisation that continues in adulthood and is combined to highlight the multifactorial etiology, creating the need to implement specific interventions.

Patients had a median of 4 (inter-quartile range 3-5) episodes of UTIs in the previous 12 months, which indicates a high number of recurrences of UTIs, which are severe enough to exceed traditional descriptions (at least two episodes every 6 months or at least 3 per year). The cohort high-risk status was confirmed through all 170 participants (100%), and the intensive management strategies were rightfully applied. Such data are consistent with those of multicentre studies that provide mean annual rates of episodes of 3.55 in untreated recurrent UTI cohorts, thus supporting the issue of antibiotic overexposure.

Escherichia coli was the dominant bacteria with 128 isolates (75.3 per cent), in line with its uropathogenic virulence determinants, especially the fimbriae, which promote adhesion to the bladder. Minor ones were *Klebsiella* spp. (18 isolates, 10.6%), *Proteus* spp. (12 isolates, 7.1%), and other organisms/*Enterococcus* spp., (12 isolates, 7.1%), which are evidence of polymicrobial changes due to repeated selection pressure. This distribution of pathogens is in line with the global surveillance data, where *E. coli* represents 7080 percent of the isolates, thus directing the empirical therapeutic decision-making and monitoring the antibiotic resistance in collaborative protocols.

A total of 42 participants (24.7%) and 28 participants (16.5%) were prescribed antibiotics and postcoital prophylaxis, respectively, which provides a good balance between therapeutic and antimicrobial stewardship. The postmenopausal

hypoestrogenism and the reestablishment of lactobacilli supremacy were treated with topical vaginal estrogen therapy (35, 20.6) in participants. The 38 respondents (22.4 percent) used cranberry products and behavioural changes to take advantage of anti-adhesion proanthocyanidins. The participant category that was lower-risk (27 out of 163) was only monitored by multidisciplinary means. This allocation is an indication of a guideline-based, individual approach that maximises clinical outcomes and reduces the acquisition of resistance.

These high recurrence rates, compared to historical levels of 40-60% indicate the effectiveness of multidisciplinary interventions and also compared to the results of trials, which show 70-85% prophylaxis effectiveness in cases where the interventions are customized.

The scores of the Patient-global Impression of Improvement (PGI-I) showed that the participants (n=85,50.0%), 52 (30.6%), 23 (13.5%), 8 (4.7%), and 2 (1.2%), respectively, represented the most positive response as a percentage. These PGI-I measures, which are validated, support patient-centred quality of life improvements that are beyond the 70 to 80 percent improvement percentages in similar groups, and indicate a synergy of a holistic gynaecologic-urologic approach.

It is a major clinical problem for women with rUTIs, which respond well to cooperation between gynecologists and urologists. Recurrent urinary tract infections (rUTIs) have an enormous impact on public health, quality of life, work productivity, and medical resources. The management is complicated by the increasing antibiotic resistance, and this highlights the importance of tailored therapy.

As is the case with anatomy, understanding pathophysiology also explains why rUTIs develop more easily in women. The anatomical and hormonal factors involved are integral: the female urethra is a straight tube, and its orifice is very close to the perianal and vaginal orifices, that allow the entry of microorganisms [Nicolle, L. E. *et al.*, 2005; Hooton, T. M., 2001]

Gynecological diseases, including pelvic floor dysfunction, prior surgeries, and pelvic organ prolapse, can influence bladder emptying and predispose to infection.

Upper urinary tract infections (uUTIs) can be a significant concern for a gynecologist as urinary tract infections (UTIs) most often occur in females due to Uro-Gynecological issues, which include menopause, weakened pelvic floor muscles, prolapse or pelvic floor dysfunction, urinary incontinence, contraceptive methods, and various gynecological conditions [Mody, L., & Juthani-Mehta, M. 2014; Raz, R. *et al.*, 2000; Huang, B. *et al.*, 2014] One of the more common reasons for a UTIs is contraceptive use which can include spermicides. The gynecologist is able to recommend a different contraceptive method in addition to counseling on urinary voiding before intercourse. All these UTIs may be influenced by hypoestrogenism. The use of local estrogen therapy can be beneficial, as hypoestrogenism can cause a more vulnerable vaginal flora in addition to increased infections. Local estrogen therapy can help to restore a more dominant *Lactobacillus* vaginal flora and decrease the risk of infection recurrence. Other issues once the infection is present include Endometriosis, infections, and post-op conditions, which can require the use of antibiotics that can disturb a healthy vaginal flora, thus making the choice of antibiotics more significant in combination with the use of a detailed UTI preventive plan [O'Hanlon, D. E. *et al.*, 2013; O'Hanlon, D. E. *et al.*, 2011].

The urologist's role is to be more direct and to the point. Diagnostic testing is important as the urologist is responsible for screening the patient for more anatomical issues and dysfunctions. Analysis may also include an assessment of the patient's urinary system for urethral diverticulum, vesicoureteral reflux, urinary tract stones, or other strictures of the urinary tract. They may also review the urinary bladder sphincter for overactivity or underactivity.

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vesicoureteral reflux, urinary tract stones, or other strictures of the urinary tract.

CONCLUSION

The results support the use of integrated care models in the practice of gynaecologic hormonal/pelvic evaluations alongside urologic diagnostics to outperform siloed models. Single-center design and short follow-up are limitations and necessitate other multicenter RCTs to confirm such findings and to make them generalizable. In the end, the collaboration of urologists and gynaecologists will greatly change the landscape of rUTI to better support women by offering individualized care and evidence-based approaches to prevent it.

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