

Actualització malalties infeccioses

Infeccions urinàries



CAMFiC
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- Actualització de Guies
- Essencial
- Cap a on anem ?



Urinary tract infections in adults

Quality standard

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www.nice.org.uk/guidance/qs90

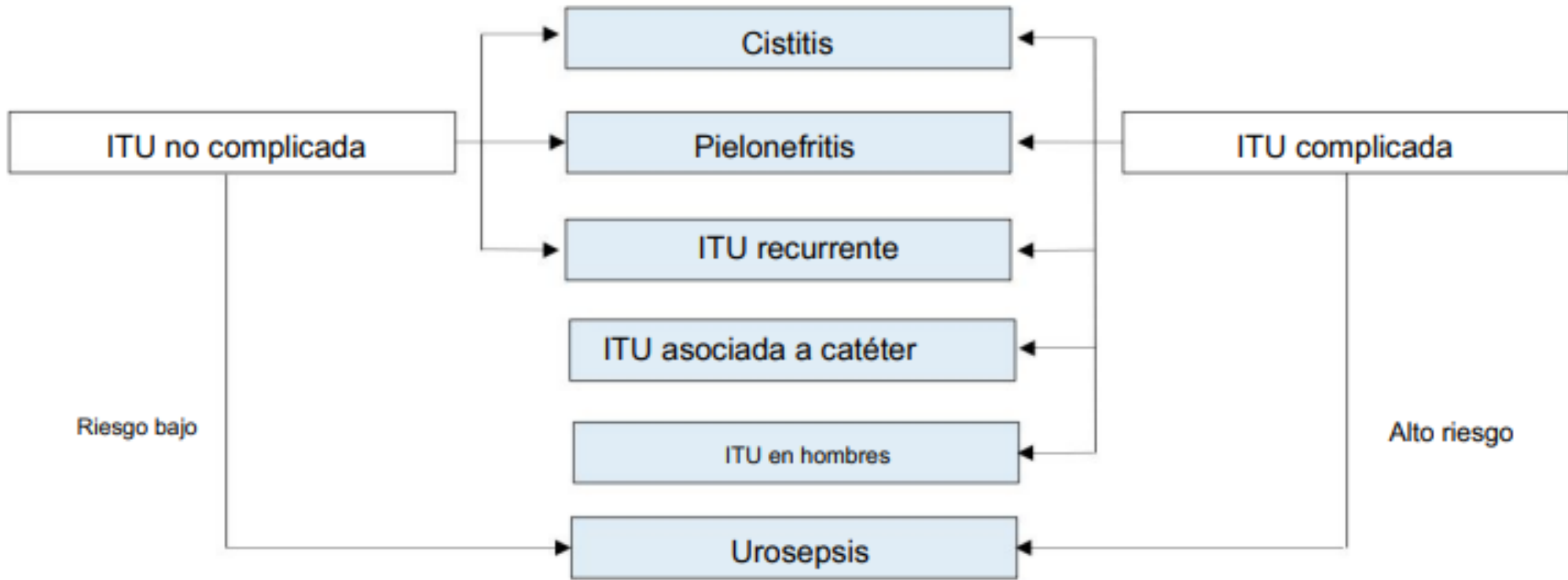
- Les dones <65a. Es diagnostiquen de cistitis si ≥ 2 símptomes clau (disúria, nictúria nova i orina tèrbola) i sense altres causes (vaginitis, uretritis...)
- Els adults portadors de sonda urinària no es poden diagnosticar de ITU per alteracions a la tira d'orina.
- La bacteriúria asimptomàtica no s'ha de tractar als homes ni a les dones no gestants.
- El tractament de la cistitis a la dona no gestant ha de ser de 3 dies i als homes i les dones gestants de 7 dies. *Persones trans
- Els homes amb ITU recurrent i dones amb cistitis recurrent sense causa clara o ITU de vies altes, s'ha de fer un estudi especialitzat (descartar causes tractables i carcinoma)

EAU Guidelines on Urological Infections

G. Bonkat (Chair), R. Bartoletti, F. Bruyère, T. Cai,
S.E. Geerlings, B. Köves, J. Kranz, S. Schubert,
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7 BACTERIÚRIA ASIMPTOMÀTICA

- No es recomana la detecció ni el tractament de la BA en pacient sense factors de risc
- Probablement s'ha de tractar la BA a la dona gestant, amb una pauta curta (no monodosi)
- No es recomana tractar la BA en pacients amb diabetis ben controlada
- No es recomana tractar la BA en pacients receptors de transplantament renal
- No es recomana el tractament de la BA en pacients amb alteracions anatòmiques del tracte urinari o cirurgia urològica
- No es recomana el tractament de la BA previ a la artroplàstia
- **SÍ** s'aconsella el tractament de la BA previ a cirurgia urològica endoscòpica que passi la mucosa

- 8
- El diagnòstic de cistitis no complicada pot realitzar-se per criteris clínics (disúria, polaquiúria, urgència), i absència de flux vaginal
 - La tira reactiva urinària pot ajudar en el diagnòstic amb simptomatologia no concloent
 - Urocultiu: homes. Dones amb pielonefritis, embaràs, símptomes atípics, recaigudes
 - En dones amb símptomes lleus es pot considerar tractament simptomàtic amb ibuprofè
 - Tractament d'elecció: fosfomicina trometamol 3g; pivmecilinam 5 dies; nitrofurantoïna 100mg/12h. 5 dies.
 - Amoxicilina clavulànic no es recomana pel tractament de les ITU
 - Fluorquinolones no s'han d'utilitzar pel tractament de les cistitis no complicades
 - La cistitis a l'embaràs es pot tractar amb una pauta curta.
 - Les cistitis a l'home es tractaran amb CTX o una fluorquinolona 7 dies
 - No està indicat l'urocultiu postractament en pacients asimptomàtics

9

- Tractament preventiu de les recurrències: modificacions d'hàbits, estrògens tòpics, profilaxi immunoactiva, probiòtics (baixa qualitat), nabius (baixa qualitat), d-manosa (baixa evidència), instil·lacions amb àcid hialurònic i condoitin (baixa evidència), hipurat de metanamina (no significativament menys eficaç que profilaxis antibiòtica), tractament antibiòtic continu o postcoital
- En pacients amb bon compliment es pot considerar l'autodiagnòstic i l'autotractament
- En pacients amb sonda urinària asimptomàtics no s'ha de fer urocultius de rutina
- En pacients amb sonda urinària no s'ha d'interpretar la piúria sola com a indicatiu d'ITU
- En pacients amb sonda urinària no s'ha d'interpretar la presència d'orina tèrbola o amb mala olor per diferenciar bacteriúria asimptomàtica o infecció urinària
- No s'aconsella l'ús antimicrobians ni previ al sondatge ni al finalitzar-ho
- ITU en pacient sondat: cultiu d'orina amb la nova sonda. Tractament 3-7 dies



Cochrane Database of Systematic Reviews

Cranberries for preventing urinary tract infections (Review)

Williams G, Hahn D, Stephens JH, Craig JC, Hodson EM

Williams G, Hahn D, Stephens JH, Craig JC, Hodson EM.
Cranberries for preventing urinary tract infections.
Cochrane Database of Systematic Reviews 2023, Issue 4. Art. No.: CD001321.
DOI: [10.1002/14651858.CD001321.pub6](https://doi.org/10.1002/14651858.CD001321.pub6).

www.cochranelibrary.com

Cranberries for preventing urinary tract infections (Review)
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WILEY

- Afegeixen 26 estudis nous. Total 50 (8857 pacients)
- Es va reduir el risc d'ITU (RR 0,70. IC 0,58-0,84)
- Probablement hi ha poc benefici en homes, dones grans institucionalitzades, gestants i adults amb bufeta neurògena
- Comparant nabius i antibiòtics no va haver diferència
- Comparant nabius i probiòtics no va haver diferència
- No van haver més efectes gastrointestinals amb el consum de nabius
- No està clar si l'eficàcia és diferent entre suc o comprimits, ni quina dosi és la millor

Actualitzada
desembre 2023

Publicada maig
2014

Antibiòtics i bacteriúria asimptomàtica

En les persones amb bacteriúria asimptomàtica, no es recomana la prescripció rutinària d'antibiòtics, excepte en dones embarassades i altres casos molt concrets.

Resum

- A la pràctica clínica molt sovint es realitzen urinocultius rutinaris sense que hi hagi una sospita clara d'infecció urinària.
- El tractament dels casos no recomanats pot provocar més problemes per al pacient que beneficis.
- Els estudis conclouen que no s'ha d'iniciar de manera sistemàtica a la població general el tractament de la bacteriúria asimptomàtica amb antibiòtics. Només en dones embarassades i altres casos concrets està indicat aquest tractament.

obligat ni substitueix el judici clínic del personal sanitari.

Recomanació **Essencial**

Afegint valor a la pràctica clínica






Fosfomicina trometamol en cistitis aguda no complicada en dones sanes

En dones sanes amb cistitis aguda no complicada no es recomanen múltiples dosis de 3 g de fosfomicina trometamol

Publicada juny 2018. Darrera actualització març 2024.

- La forma més freqüent d'infecció del tracte urinari és la cistitis aguda no complicada que es presenta en dones sanes no embarassades i es caracteritza per la presència de disúria d'inici agut, urgència miccional i pol·laciúria.
- La fosfomicina trometamol en una dosi única de 3 grams és el tractament empíric de primera línia de les cistitis agudes no complicades en dones.
- Prescriure dues dosis de fosfomicina trometamol pel tractament de la cistitis aguda no complicada, suposa administrar una dosi major a la necessària. Seleccionar curosament l'antibiòtic i la seva dosificació, és una mesura important en la lluita contra les resistències dels microorganismes als antibiòtics.

Antibiotic versus cranberry in the treatment of uncomplicated urinary infection: a randomized controlled trial

Oya Güven^{1*} , Samet Sayılan² , Özlem Tataroğlu³ , Nihat Müjdat Hökenek³ , Dilek Vural Keleş⁴ 

SUMMARY

OBJECTIVE: This study was designed to determine the effect of cranberry extract used in patients with single urinary tract infections.

METHODS: Patients with simple-type urinary tract infections were divided into two groups. Treatment with fosfomycin or cranberry tablet was started. On days 1, 3, and 7 of the treatment, whether there was a decrease in the complaints was evaluated with a Likert-type scale. The recovery status of urinary tract infections and the well-being of patients were compared via antibiotic and cranberry groups.

RESULTS: After the treatment, the leukocyte levels of the cranberry users were at the same level as those of the other group, and the rate of well-being and the portion of patients that reported to be "very well" on days 3 and 7 in the cranberry group was significantly higher compared with the fosfomycin group ($p < 0.05$).

CONCLUSION: Considering the results of this study, it was determined that the patient's complaints decreased from day 3 and their well-being increased with the use of cranberry only. Specifically, on day 7, the well-being of the cranberry group was higher than that of the fosfomycin group. For this reason, cranberry is a favorable alternative to antibiotics in uncomplicated and simple urinary tract infections.

KEYWORDS: Cranberry. Fosfomycin. Urinary tract infection.

- Estudi prospectiu, aleatoritzat
- 170 pacients (68% dones; edat mitja 53,4a. (85 nabius 1 comp/d x 7d; 85 fosfomicina 3gr. x2).
- Seguiment 3-7 dies
- Dia 3: Be fosfomicina 45%, nabius 55%; molt be fosfomicina 8%, nabius 18%
- Dia 7: Be fosfomicina 51%, nabius 30%; molt be fosfomicina 20%, nabius 41%

RESEARCH

Open Access



Association of SGLT-2 inhibitors with bacterial urinary tract infection in type 2 diabetes

Mustafa Tanrıverdi^{1*}, Mehmet Baştemir², Hadiye Demirbakan², Alperen Ünalın³, Merve Türkmen¹ and Gülşen Özkan Tanrıverdi⁴

Abstract

Objective We aimed to investigate the factors associated with UTI in patients with T2D whether being treated with SGLT-2i or not.

Methods Adult patients with T2D, whose urine culture results were available, were analyzed retrospectively. Urine culture was obtained from mid-flow urine. Antibacterial treatment was given to the patients with UTI, which was defined by positive urine cultures and/or clinical findings. We grouped the patients as follows: Group A, those treated with SGLT-2i; and Group B, those not treated with SGLT-2i.

Results A total of 101 patients were included. Median age was 56 (45–67), 56.4% (n = 57) of the patients were female. Urine culture was positive in 54.9% (n = 28) and 16% (n = 8) of Group A (n = 51) and Group B (n = 50), respectively. Of those for whom urine culture was positive, *Escherichia coli* was isolated in 83.3% (n = 30), and both *Escherichia coli* and *Klebsiella pneumoniae* (*K.pneumoniae*) were isolated in 16.7% (n = 6). *Klebsiella pneumoniae* was isolated only from Group A. The need for and duration of hospitalization were higher in Group A ($p < 0.001$). UTI was detected in 60 patients. ROC analysis showed that a HbA1c of $> 5.8\%$ was associated with UTI with good accuracy (AUC: 0.835, $p < 0.001$). In multiple logistic regression analysis, SGLT-2i use and glucosuria were positive predictors for UTI ($p = 0.004$, Odds Ratio: 1984.013; and $p = 0.028$, and Odds Ratio: 12.480, respectively).

Conclusion Besides the association of HbA1c and BMI with UTI, SGLT-2i use and glucosuria predicted UTI. Urine culture is important with respect to the choice of antibacterial treatment, especially in those patients under SGLT-2i treatment. The effect of SGLT-2i on the development of UTI is independent of baseline BMI score or HbA1c.

Keywords SGLT-2, Inhibitor, Diabetes, Type 2, Infection, Urinary

- Objectiu: investigar els factors associats a ITU en DM II, tractats o no amb iSGLT-2
- Estudi retrospectiu
- 101 pacients (51 tractats amb iSGLT-2 i 50 sense tractament), edat mitja 56a, 56,4% dones
- Es van relacionar amb augment del risc de tenir ITU: HbA1c>5,8, el tractament amb iSGLT-2 i la presència de glucosúria

Current Pyuria Cutoffs Promote Inappropriate Urinary Tract Infection Diagnosis in Older Women

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Background. Pre-existing lower urinary tract symptoms (LUTS), cognitive impairment, and the high prevalence of asymptomatic bacteriuria (ASB) complicate the diagnosis of urinary tract infection (UTI) in older women. The presence of pyuria remains the cornerstone of UTI diagnosis. However, >90% of ASB patients have pyuria, prompting unnecessary treatment. We quantified pyuria by automated microscopy and flowcytometry to determine the diagnostic accuracy for UTI and to derive pyuria thresholds for UTI in older women.

Methods. Women ≥ 65 years with ≥ 2 new-onset LUTS and 1 uropathogen $\geq 10^4$ colony-forming units (CFU)/mL were included in the UTI group. Controls were asymptomatic and classified as ASB (1 uropathogen $\geq 10^5$ CFU/mL), negative culture, or mixed flora. Patients with an indwelling catheter or antimicrobial pretreatment were excluded. Leukocyte medians were compared and sensitivity–specificity pairs were derived from a receiver operating characteristic curve.

Results. We included 164 participants. UTI patients had higher median urinary leukocytes compared with control patients (microscopy: 900 vs 26 leukocytes/ μ L; flowcytometry: 1575 vs 23 leukocytes/ μ L; $P < .001$). Area under the curve was 0.93 for both methods. At a cutoff of 264 leukocytes/ μ L, sensitivity and specificity of microscopy were 88% (positive and negative likelihood ratio: 7.2 and 0.1, respectively). The commonly used cutoff of 10 leukocytes/ μ L had a poor specificity (36%) and a sensitivity of 100%.

Conclusions. The degree of pyuria can help to distinguish UTI in older women from ASB and asymptomatic controls with pyuria. Current pyuria cutoffs are too low and promote inappropriate UTI diagnosis in older women.

Clinical Trials Registration. International Clinical Trials Registry Platform: NL9477 (<https://trialssearch.who.int/Trial2.aspx?TrialID=NL9477>)

Keywords. urinary tract infection; asymptomatic bacteriuria; pyuria; microscopy; urine flowcytometry.

- Estudi de casos i controls
- 5 hospitals, 3 CAP, 4 Centres de llarga estada i 14 residències
- 213 dones majors de 65a.
- Les pacients amb ITU van tenir més leucòcits a orina
- El punt de tall de 10 leucòcits/ μ l va tenir una especificitat 36% i una sensibilitat 100%
- El punt de tall actual és massa baix i promou un diagnòstic erroni d'ITU



HHS Public Access

Author manuscript

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Antibiotic Utilization and Symptom Improvement in a Retrospective Cohort of Women with Urinary Tract Infection Symptoms

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Abstract

Introduction and Hypothesis: Urinary tract infections (UTIs) are one of the most common bacterial infections in women. We hypothesized that over half of those treated empirically would receive inappropriate antibiotics, those treated expectantly would have lower symptom improvement without antibiotics, and that overall progression to sequelae would be uncommon.

Methods: In this retrospective cohort study of women with UTI symptoms, we quantified the proportion who received inappropriate antibiotics in those treated empirically, defined as those with a negative urine culture or antibiotics that were changed according to culture sensitivities, and identified factors associated with symptom improvement during expectant management. Secondly, we sought to determine the proportion of UTI sequelae in both groups. During the study time frame, a modified UTI Symptom Assessment (UTISA) questionnaire was administered at baseline and again, with a global rating for change instrument, when urine culture results were relayed.

- Estudi retrospectiu
- 152 dones amb símptomes d'ITU. Edat mitja 66,5a.
- 20% tractament empíric, 80% espera urocultiu
- Cap dona va desenvolupar PNA o sèpsia
- Tractament empíric: nitrofurantoïna, cefalexina, cefuroxima
- 30 tractament empíric: 14 urocultiu negatiu, 4 antibiòtic inapropiat



Article

Autovaccine-Based Immunotherapy: A Promising Approach for Male Recurrent Urinary Tract Infections

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Abstract: Background: Recurrent Urinary Tract Infections (UTIs) in men range from 0.9 to 2.4/1000 individuals in younger men to 7.7/1000 in those over 85, significantly impacting their quality of life. Preventive strategies include autovaccines, but limited evidence exists for males. Methods: A prospective monocentric, open-label observational study was conducted from August 2018 to August 2021, with follow-up until August 2023 including patients with recurrent UTIs treated with immunotherapy. We evaluated the incidence rate of UTIs per year, the incidence rate of episodes after two or three rounds of the autovaccine, and quality of life measured with the IPSS-QoL questionnaire. Results: A total of 49 patients fulfilled inclusion criteria. The mean age was 72 years (± 15), and the median 61. The evolution of UTIs number of episodes after the autovaccine rounds: -37.74% for the first round from 5.3 to 3.3; -33.33% for the second round from 3.3 to 2.2; -45.45% for the third round from 2.2 to 1.2. The mean IPSS score improved from 10.69 to 7.27 after the treatment (32%). The mean QoL subscore enhancement was from 4.22 to 1.92 (54%). With a mean follow-up of 3 years, only nine patients required retreatment. Conclusion: Autovaccine treatment significantly reduced the number of UTI episodes, with a cumulative effect observed after multiple rounds of treatment, demonstrating an enhancement in QoL and with sustained effectiveness and a low need for retreatment.

- Objectiu. Valorar l'eficàcia d'una autovacuna en homes amb ITU recurrents
- Estudi observacional prospectiu
- Es van excloure pacients amb patologies que poden donar símptomes semblant a ITU (litiasi vesical o renal, tuberculosi urinària, reflux vesicoureteral, tumor vesical)
- Hospital de Mollet
- Mostres d'orina i semen. Preparat d'autovacuna. Gotes sublinguals. 3 mesos. Possibilitat de fer 3 cicles si persistien símptomes
- 49 homes, edat mitja 72a. Avaluació als 9m. Seguiment 3a.
- 5,3 episodis ITU/any es va reduir a 1,2 ITU/any (5,3; 3,3; 2,2; 1,2). Una vegada resolt 9 pacients van recaure (seguiment 3a)
- 23 pacients (46,9%) van necessitar >1 cicle de tractament (>61 a. 1,53 cicles; <61a. 1,83 cicles). 11 mateixa bactèria
- Qualitat de vida mesurada per IPSS millora de 4,2 a 1,93 (més alta en més joves i amb volum de pròstata més baix)
- No efectes secundaris

Research Article

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Comparison of polymerase chain reaction and next-generation sequencing with conventional urine culture for the diagnosis of urinary tract infections: A meta-analysis

<https://doi.org/10.1515/med-2024-0921>

received September 20, 2023; accepted January 25, 2024

Abstract: The limitations of conventional urine culture methods can be avoided by using culture-independent approaches like polymerase chain reaction (PCR) and next-generation sequencing (NGS). However, the efficacy of these approaches in this setting is still subject to contention. PRISMA-compliant searches were performed on MEDLINE/PubMed, EMBASE, Web of Sciences, and the Cochrane Database until March 2023. The included articles compared PCR or NGS to conventional urine culture for the detection of urinary tract infections (UTIs). RevMan performed meta-analysis, and the Cochrane Risk of Bias Assessment Tool assessed study quality. A total of 10 selected studies that involved 1,291 individuals were included in this meta-analysis. The study found that PCR has a 99% sensitivity and a 94% specificity for diagnosing UTIs. Furthermore, NGS was shown to have a sensitivity of 90% for identifying UTIs and a specificity of 86%. The odds ratio (OR) for PCR to detect Gram-positive bacteria is 0.50 (95% confidence interval [CI] 0.41–0.61), while the OR for NGS to detect Gram-negative bacteria is 0.23 [95% CI 0.09–0.59]. UTIs are typically caused by Gram-negative bacteria like *Escherichia coli* and Gram-positive bacteria like *Staphylococci* and *Streptococci*. PCR and NGS are reliable, culture-free molecular diagnostic methods that, despite being expensive, are essential for UTI diagnosis and prevention due to their high sensitivity and specificity.

Keywords: urinary tract infections, polymerase chain reaction, next generation, sequencing, conventional urine culture, molecular diagnostic methods

1 Introduction

Urinary tract infection (UTI) is an infectious condition that is frequently encountered in the adult population. Usually, these infections appear in the bladder or urethra. However, in more severe instances, they might impact the kidney [1]. Women exhibit a greater vulnerability to UTIs in comparison to men. Around 50–60% of women are projected to experience at least one UTI during their lifetime [2].

Bacterial infections are responsible for the majority of UTIs, and the standard therapy usually involves the use of antibiotics [3,4]. The healthcare industry bears substantial expenses for the treatment and management of UTIs, totaling billions of dollars annually, across both outpatient and inpatient settings [5]. The application of molecular testing techniques, such as next-generation sequencing (NGS) and polymerase chain reaction (PCR), for the identification and diagnosis of UTIs, has experienced substantial progress in recent years. The increase in popularity can be ascribed to the discontentment associated with the traditional method of exclusively depending on urine culture [6,7]. The accuracy of traditional culture methods in identifying acute UTIs is approximately 60%. The traditional

- Revisió sistemàtica de bases de dades, 2000-2023
- Revisió 168 estudis. Final 10 articles, 1291 pacients
- PCR (reacció de polimerasa en cadena). Sensibilitat per ITU 0,99 (0,82-1); especificitat 0,94 (0,55-1)
- NGS (seqüenciació de segona generació). Sensibilitat per ITU 0,90 (0,45-1); especificitat 0,86 (0,35-1)
- PCR 1 dia, 5\$. NGS 4h. 200\$

PEARLS

An oldie but a goodie: Methenamine as a nonantibiotic solution to the prevention of recurrent urinary tract infections

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Competing interests: I have read the journal's policy and the authors of this manuscript have the following competing interests: A.L.A. receives grant funding from Medtronic, Inc. and MicrogenDx, and is an advisor for Abbvie and Watershed Medical. C. G. declares that no competing interests exist.

Introduction

Urinary tract infections (UTIs) are one of the most common adult bacterial infections. The global burden of UTIs has nearly doubled in the last 30 years with more than 400 million affected individuals in 2019 [1]. High UTI prevalence accounts for a significant proportion of outpatient and emergency visits, incurring billions in United States healthcare expenditures [2–4]. Rates of UTI recurrence within 6 to 12 months of the initial episode range from 25% to 44% [5,6]. Recurrent UTIs (rUTIs), defined as 2 or more symptomatic UTIs in 6 months or 3 or more episodes in a year, impose significant clinical challenges for clinicians and patients.

Despite the growing financial and societal burden of rUTIs, there has been little innovation in prevention or treatment over the past decade [7]. Both initial and recurrent UTIs are commonly managed with intermittent antibiotic treatment of individual episodes, making UTIs the second most common indication for antibiotic prescriptions and accounting for 15% of antibiotic prescriptions overall [4,8]. While multiple guidelines suggest alternative preventive regimens for rUTIs [9], the standard prophylactic regimen still involves daily antibiotics. With increasing antibiotic use and limited innovation, however, multidrug resistance (MDR) is now a global public health threat [10]. Nonantibiotic options for UTI management are needed to combat rising antimicrobial resistance and decrease rUTI burden.

Methenamine pharmacology

Methenamine is a urinary antiseptic first introduced in 1895 [11]. In an acidic environment, methenamine is converted to ammonia and formaldehyde (Fig 1), which inhibits prokaryotic cell division and denatures bacterial proteins and nucleic acids [12]. Despite over a century of use, there is no evidence of bacterial resistance to methenamine's bacteriostatic activity. Because of the known link between formaldehyde and cancer (specifically nasopharyngeal cancer or leukemia), there have been concerns about methenamine's carcinogenic potential. Although no studies have looked directly at the long-term effects, no case reports document cancer arising as a result of methenamine use. Also, animal models have shown no evidence of carcinogenicity or increase in neoplasm rates when given methenamine orally [13].

Methenamine is available in 2 salt forms—methenamine hippurate (MH) and methenamine mandelate. Methenamine mandelate salt tabs, which have an enteric coating, are dosed 4 times daily at 1 g. MH is only available without an enteric coating and is dosed at 1 g twice daily, although higher doses can be used. As a result of these dosing schedules, MH is the more commonly used formulation. Methenamine has excellent oral bioavailability with 70% to 90% being renally secreted [14] and is safe to use during pregnancy. The primary disadvantage of

- Antisèptic. 1895
- 2012 Revisió Cochrane
- No inferioritat front a antibiòtics per prevenir recurrències
- Menys taxa de resistències (72% vs 56%)
- No diferències en les taxes de reinfecció finalitzada la profilaxi
- Seguiment de tractament igual al de la profilaxi amb antibiòtics
- Preserva la microbiota vaginal
- No s'ha observat augment de resistències ni carcinogènesi
- Importància d'utilitzar alternatives a la profilaxi antibiòtica

Moltes
gràcies

