

GEBELİKTE ÜRİNER SİSTEM ENFEKSİYONLARI: Tanı, İzlem ve Tedavi

Konya Cihanbeyli Devlet Hastanesi

Dr. Elif Eşcan Yağcı

SUNUM PLANI

GEBELİKTE ÜRİNER SİSTEM ENFEKSİYONLARI NEDEN ÖNEMLİ?

ASEMPTOMATİK BAKTERİÜRİ (ASB)

SİSTİT

PYELONEFRİT

REKÜRREN ÜSİ

GEBELİKTE ÜRİNER SİSTEM ENFEKSİYONLARI NEDEN ÖNEMLİ?

NEDEN DAHA SIK?

%8

Gebeliklerin yaklaşık %8'inde görülür.



- Progesteron etkisi
- Üreter dilatasyonu
- Büyüyen uterusun basısı
- Üriner staz

Asendan enfeksiyon kolaylaşır

ANNE VE FETÜS İÇİN RİSKLER



OBSTETRİK SONUÇLAR

- Preterm doğum
- Düşük doğum ağırlığı

PİYELONEFRİT

- Sepsis ve septik şok
- Akut böbrek hasarı
- DİK
- ARDS

Asemptomatik bakteriüri → **Sistit** → **Piyelonefrit**

Gebelik, asemptomatik bakteriürinin taranıp tedavi edildiği özel hasta gruplarından biridir.

ACOG Clinical Consensus No. 4, 2023; IDSA Asymptomatic Bacteriuria Guideline, 2019.

Gebelikte Üriner Sistem Enfeksiyonları Spektrumu



Asemptomatik Bakteriüri (ASB)

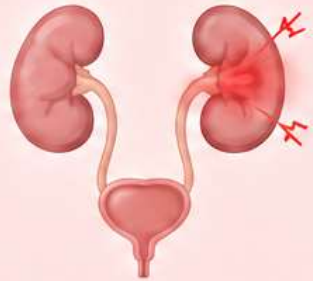


- Semptom yok
- İdrar kültüründe ≥10^5 CFU/mL

Sistit

- Dizüri
- Pollaküri
- Urgency
- Suprapubik rahatsızlık

Pyelonefrit



- ≥38°C ateş
- Yan ağrısı
- ± Bulantı-kusma
- KVAH pozitifliği

ASEMPTOMATİK BAKTERİÜRİ– TANI

ACOG

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ACOG CLINICAL CONSENSUS

NUMBER 4

AUGUST 2023

Urinary Tract Infections in Pregnant Individuals

Diagnosis

Clinicians should screen for ASB with a urine culture once at a visit early in prenatal care. There is insufficient evidence to recommend for or against repeat screening during pregnancy after a negative initial culture result.

?

IDSA 2019 Clinical Practice Guideline Update for the Management of Asymptomatic Bacteriuria

III. Should ASB be screened for and treated in pregnant women?

1. In pregnant women, we recommend screening for and treating ASB

ASEMPTOMATİK BAKTERİÜRİ– TANI

European Association of Urology

Based on the beneficial maternal and foetal effects of antibiotic treatment, pregnant women should be screened and treated for ABU. However, the panel would like to emphasise that most available studies have low methodological quality and are from the 1960s to 1980s. Diagnostic and treatment protocols and accessibility to medical services have dramatically changed since then. Therefore, the quality of evidence for this recommendation is low. In a newer study of higher methodological quality, the beneficial effects of antibiotic treatment are not as evident [44]. Therefore, it is advisable to consult national recommendations for pregnant women.

ASEMPTOMATİK BAKTERİÜRİ– TANI



GEBELİKTE BİRİNCİ İZLEM (İLK 14 HAFTA)

ASEMPTOMATİK BAKTERİÜRİ TARAMA VE TEDAVİSİ

İKİNCİ İZLEM (18-24. HAFTA)

ÖNCEKİ İZLEMDE KÜLTÜR ALINMAMIŞSA KÜLTÜR ALINIR VE ASB TESPİT EDİLİRSE TEDAVİ BAŞLANIR.

ÜÇÜNCÜ İZLEM (28-32. HAFTA)

ASEMPTOMATİK BAKTERİÜRİ TARAMA VE TEDAVİSİ

DÖRDÜNCÜ İZLEM (36-38.HAFTA)



- Gebeleri rutin taramak? Risk temelli taramak?
- ASB saptanan gebeyi tedavi etmek yararlı mı?

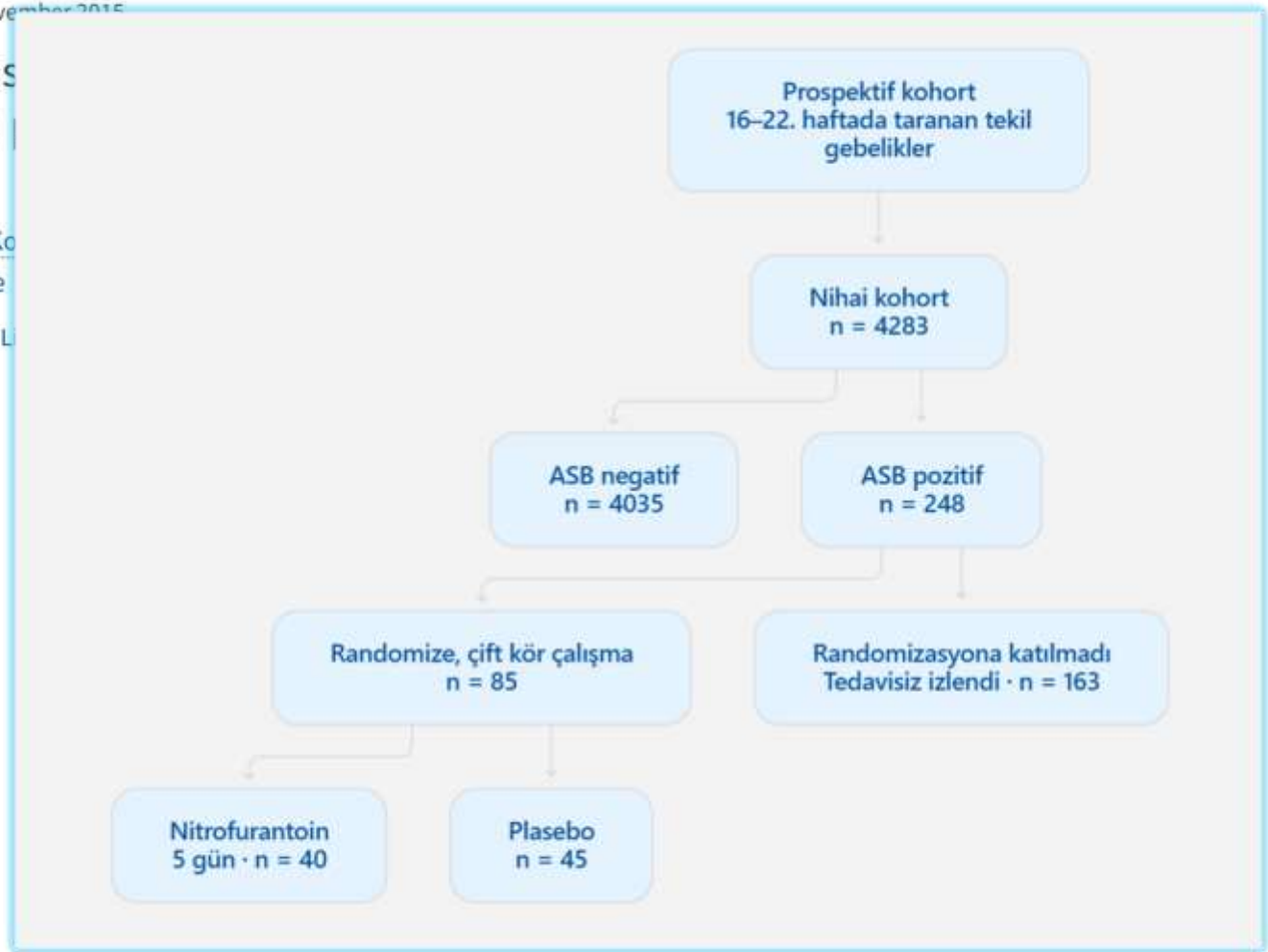
THE LANCET
Infectious Diseases

ARTICLES · Volume 15, Issue 11, P1324-1333, Nov

Maternal and neonatal cons
bacteriuria in pregnancy: a
controlled trial

Dr Brenda M Kazemier, MD · Fiona N Ko
Esteriek de Miranda, PhD · et al. Show more

Affiliations & Notes · Article Info · L



THE LANCET
Infectious Diseases

ARTICLES · Volume 15, Issue 11, P1324-1333, November 2015

Maternal and neonatal consequences of treated and untreated asymptomatic bacteriuria in pregnancy: a prospective cohort study with an embedded randomised controlled trial

Dr Brenda M Kazemier, MD · Fiona N Koningstein, BSc · Caroline Schneeberger, MD · Alewijn Ott, MD · Prof Patrick M Bossuyt, MD · Esteriek de Miranda, PhD · et al. Show more

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Birincil Sonlanım Noktası:
Piyelonefrit ve/veya 34 haftadan önce doğum

Piyelonefrit riski: ASB pozitif ve

Tedavi edilmemiş veya plasebo ile tedavi edilmiş ASB pozitif kadınlar & ASB negatif kadınlar
(6/208 [%2,9] vs 77/4035[%1,9]; [OR] 1,5, %95 CI 0,6-3,5)

Nitrofurantoin ile tedavi edilen ASB pozitif kadınlar & tedavi edilmemiş veya plasebo alanlar
(1/40[%2,5] vs 6/208 [%2,9]; risk farkı -0,4, %95 CI -3,6 ila 9,4)

5/208 (%2,4) ve **24/4035 (%0,6).** ASB pozitif grupta göreceli risk daha

Antibiotics for asymptomatic bacteriuria in pregnancy (Review)

Cochrane Library

Cochrane Database of Systematic Reviews

Summary of findings for the main comparison. Antibiotics compared to no treatment for asymptomatic bacteriuria in pregnancy

Antibiotics compared to no treatment for asymptomatic bacteriuria in pregnancy

Patient or population: pregnant women with asymptomatic bacteriuria

Setting: hospital-based clinics in North America, UK and Ireland, Australia; hospital and community midwifery practices in the Netherlands

Intervention: antibiotics

Comparison: no treatment

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no treatment	Risk with antibiotics				
Development of pyelonephritis	Study population		RR 0.24 (0.13 to 0.41)	2017 (12 RCTs)	⊕⊕⊖⊖ Low[a,b]	
	199 per 1000	48 per 1000 (26 to 82)				
Preterm birth < 37 weeks	Study population		RR 0.34 (0.13 to 0.88)	327 (3 RCTs)	⊕⊕⊖⊖ Low[c,d]	
	174 per 1000	59 per 1000 (23 to 153)				
Birthweight < 2500 g	Study population		RR 0.64 (0.45 to 0.93)	1437 (6 RCTs)	⊕⊕⊖⊖ Low[e,f]	
	136 per 1000	87 per 1000 (61 to 126)				

Antibiotics for asymptomatic bacteriuria in pregnancy (Review)

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Antibiotics compared to no treatment for asymptomatic bacteriuria in pregnancy					
Patient or population: pregnant women with asymptomatic bacteriuria					
Setting: hospital-based clinics in North America, UK and Ireland, Australia; hospital and community midwifery practices in the Netherlands					
Intervention: antibiotics					

Authors' conclusions

Antibiotic treatment may be effective in reducing the risk of pyelonephritis in pregnancy, but our confidence in the effect estimate is limited given the low certainty of the evidence. There may be a reduction in preterm birth and low birthweight with antibiotic treatment, consistent with theories about the role of infection in adverse pregnancy outcomes, but again, the confidence in the effect is limited given the low certainty of the evidence.

Research implications identified in this review include the need for an up-to-date cost-effectiveness evaluation of diagnostic algorithms, and more evidence to learn whether there is a low-risk group of women who are unlikely to benefit from treatment of asymptomatic bacteriuria.

		(23 to 153)			
Birthweight < 2500 g	Study population		RR 0.64 (0.45 to 0.93)	1437 (6 RCTs)	⊕⊕⊖⊖ Low[e,f]
	136 per 1000	87 per 1000 (61 to 126)			

NEJM Evidence

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TOMORROW'S TRIAL

Should Low-Risk Pregnant Patients Be Screened for Asymptomatic Bacteriuria?

Prachi Ray, M.Sc.,[1] Kellie E. Murphy, M.D., M.Sc.,[2,3] and Vanessa G. Allen, M.D., M.P.H.[4,5,6]



DIŞLAMA KRİTERLERİ

- ÜSİ ile uyumlu belirti veya bulgular
- Fetüste konjenital anomali
- Taramadan önceki 2 haftada antibiyotik kullanımı
- Önceki preterm doğum öyküsü
- Yakın zamanda doğum riski
- Diabetes mellitus
- İmmünsüpresif ilaç kullanımı
- Komplike ÜSİ için risk faktörleri

Journal of Global Antimicrobial Resistance 46 (2026) 79–86

Contents lists available at ScienceDirect

Journal of Global Antimicrobial Resistance

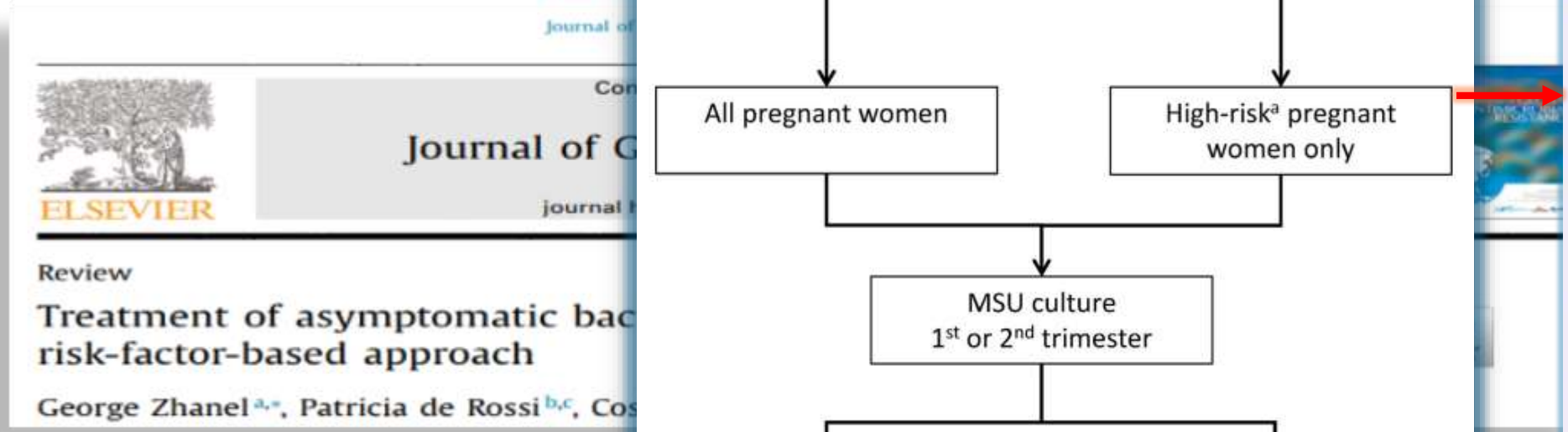
journal homepage: www.elsevier.com/locate/jgar



Review

Treatment of asymptomatic bacteriuria during pregnancy: A risk-factor-based approach

George Zhanel[a,*], Patricia de Rossi[b,c], Cosimo Oliva[d,e], Truls E. Bjerklund Johansen[f,g,h]



ELSEVIER

Review

Treatment of asymptomatic bac
risk-factor-based approach

George Zhanel[a,*], Patricia de Rossi[b,c], Cos

Universal ASB screening

or

Selective ASB screening (preferred)

All pregnant women

High-risk[a] pregnant women only

MSU culture
1st or 2nd trimester

ASB[b]

No ASB[b]

Option to repeat MSU culture to confirm ASB[c] within 2 weeks of first positive result

Option for regular screening in certain high-risk groups[d]

- Diabetes mellitus
- İmmünsüpresyon
- Üriner sistemde fonksiyonel veya yapısal anormallik
- Üriner sistem enfeksiyonu öyküsü
- Önceki preterm doğum öyküsü
- Önceki geç gebelik kaybı öyküsü

- Önceden piyelonefrit geçirmiş olmak
- Böbrekte yapısal anormallik

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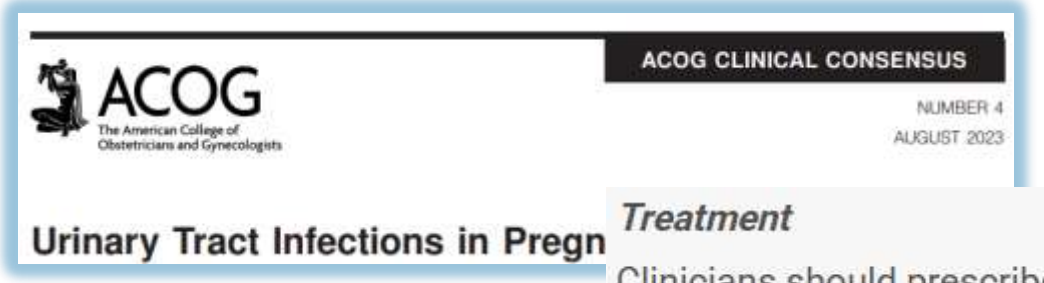
Review

Treatment of asymptomatic bacteriuria during pregnancy: A risk-factor-based approach

George Zhanel[a,*], Patricia de Rossi[b,c], Cosimo Oliva[d,e], Truls E. Bjerklund Johansen[f,g,h]

Clinical condition	Antibiotic treatment		
	Yes	Optional	No
ASB	High risk[a] with $\geq 10^5$ CFU/mL of $\geq$1 uropathogen[b] on MSU culture	Low risk[c] with $\geq 10^5$ CFU/mL of $\geq$1 uropathogen[b] on MSU culture	• Normal vulvovaginal flora[d] on MSU culture • $\leq 10^4$ CFU/mL of $\geq$ 1 uropathogen[b]

ASEMPTOMATİK BAKTERİÜRİ– TEDAVİ


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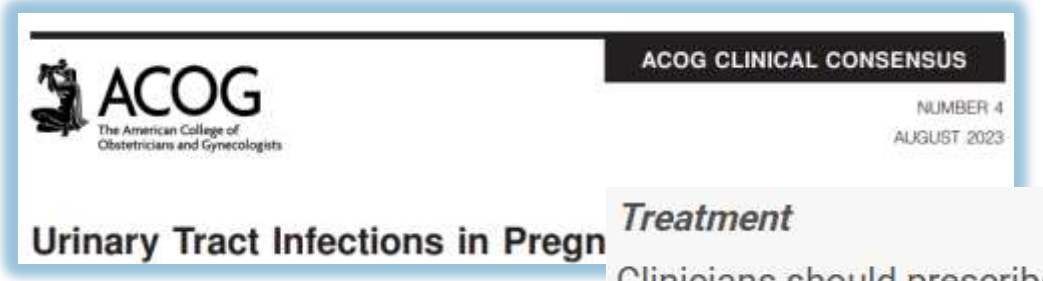
AUGUST 2023

Urinary Tract Infections in Pregn

Treatment

Clinicians should prescribe a 5–7-day course of targeted antibiotics to treat ASB with colony counts of 100,000 CFU/mL or higher. There is insufficient evidence to recommend for or against repeat screening after appropriate treatment of an initial episode of ASB.

ASEMPTOMATİK BAKTERİÜRİ– TEDAVİ


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IDSA 2019 Clinical Practice Guideline Update for the Management of Asymptomatic Bacteriuria

In pregnant women with ASB, we suggest 4–7 days of antimicrobial treatment rather than a shorter duration *(weak recommendation, low-quality evidence)*. **Remarks:** The optimal duration of therapy will vary depending on the antimicrobial given; the shortest effective course should be used.

ASEMPTOMATİK BAKTERİÜRİ– TEDAVİ

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NUMBER 4

AUGUST 2023

Urinary Tract Infecti

iotics to treat ASB

fficient evidence to

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European Association of Urology

short-course treatment or single-dose fosfomycin

IDSA 2019 C

Guideline Update for the Management of Asymptomatic Bacteriuria

In pregnant women with ASB, we suggest 4–7 days of antimicrobial treatment rather than a shorter duration *(weak recommendation, low-quality evidence)*. **Remarks:** The optimal duration of therapy will vary depending on the antimicrobial given; the shortest effective course should be used.

ASEMPTOMATİK BAKTERİÜRİ- ÖZETLE…



Eski çalışmalar
Metodolojik kalite düşük

Yeni çalışmalar
Kanıt düzeyinde değil

Daha fazla araştırmaya ihtiyaç var

ASB taramasının zamanlaması ne olmalı?

Hangi popülasyonlarda tekrarlayan ASB taraması daha uygun?
Tarama sıklığı ne olmalı?

ASB tedavisi tamamlandıktan sonra tekrar teste gerek var mı?

ASB tedavi süresi
5-7 günden kısa olabilir mi?

Gebelikte Üriner Sistem Enfeksiyonları Spektrumu



Asemptomatik Bakteriüri (A



- Semptom yok
- İdrar kültürün
  ≥10^5 CFU/mL

Sistit



- Dizüri
- Pollaküri
- Urgency
- Suprapubik rahatsızlık

Pyelonefrit



- ≥38°C ateş
- Yan ağrısı
- ± Bulantı-kusma
- KVAH pozitifliği

SİSTİT- TANI


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ACOG CLINICAL CONSENSUS

NUMBER 4
AUGUST 2023

Urinary Tract Infections in Pregnant Individuals

Diagnosis

Clinicians should evaluate patients with symptoms of acute cystitis with a urine culture. UTI should be suspected based on the presence of symptoms, may be supported by a positive urinalysis result, and is confirmed by urine culture showing 100,000 CFU/mL or more.

SİSTİT- TEDAVİ



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Urinary Tract Infections in Pregnant Individuals

Treatment

Clinicians should treat acute cystitis in pregnant individuals with a 5–7-day course of a targeted antibiotic. If empiric therapy is started before culture and sensitivity results are available, amoxicillin or ampicillin regimens should be avoided due to high rates of resistance in *Escherichia coli* to these antibiotics in most areas.

ASB ve SİSTİT- TEDAVİ

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Urinary Tract Infections in Pregnant

Table 1. Antibiotic Regimens for Treatment of Asymptomatic Bacteriuria and Acute Cystitis

Antimicrobial	Regimen	Considerations
Nitrofurantoin	100 mg orally every 12 h for 5–7 d	Reasonable to offer in the 1st trimester if no appropriate alternatives are available Avoid as treatment for pyelonephritis due to inability to reach therapeutic levels in the kidney
Cephalexin*	250–500 mg orally every 6 h for 5–7 d	
Sulfamethoxazole-trimethoprim	800/160 mg every 12 h for 5–7 d	Reasonable to offer in the 1st trimester if no appropriate alternatives are available In areas with more than 20% resistance to trimethoprim-sulfamethoxazole, avoid if initiating treatment before culture results are available
Fosfomycin	3 g orally once	Avoid as treatment for pyelonephritis due to inability to reach therapeutic levels in the kidney
Amoxicillin*	500 mg orally every 8 h for 5–7 d 875 mg orally every 12 h for 5–7 d	High degree of resistance; avoid if initiating treatment before culture results are available
Amoxicillin—clavulanate*	500 mg orally every 8 h for 5–7 d 875 mg orally every 12 h for 5–7 d	High degree of resistance; avoid if initiating treatment before culture results are available

ASB ve SİSTİT- TEDAVİ

European Association of Urology

Antimicrobial	Daily dose	Duration of therapy	Comments
First-line women			
Fosfomycin trometamol	3g SD	1 day	
Nitrofurantoin macrocrystal*	50-100mg four times a day	5 days	
Nitrofurantoin monohydrate/ macrocrystals*	100mg b.i.d	5 days	
Nitrofurantoin macrocrystal prolonged release*	100mg b.i.d	5 days	
Pivmecillinam	400mg t.i.d	3-5 days	
Nitroxoline	250mg t.i.d	5 days	
Alternatives			
Cefadroxil	500mg b.i.d	3 days	
Cefpodoxime	100mg b.i.d	3 days	
If the local resistance pattern for E. coli is < 20%			
Trimethoprim	200mg b.i.d	5 days	Not in the first trimester of pregnancy
Trimethoprim-sulfamethoxazole	160/800mg b.i.d	3 days	Not in the last trimester of pregnancy

SİSTİT- TAKİP


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Urinary Tract Infections in Pregnant Individuals

There is insufficient evidence to guide management after acute cystitis treatment in pregnancy. Clinicians may consider repeating a urine culture 1–2 weeks after completing treatment for acute cystitis or evaluating only if symptoms recur.

Gebelikte Üriner Sistem Enfeksiyonları Spektrumu



Asemptomatik Bakteriüri (ASB)



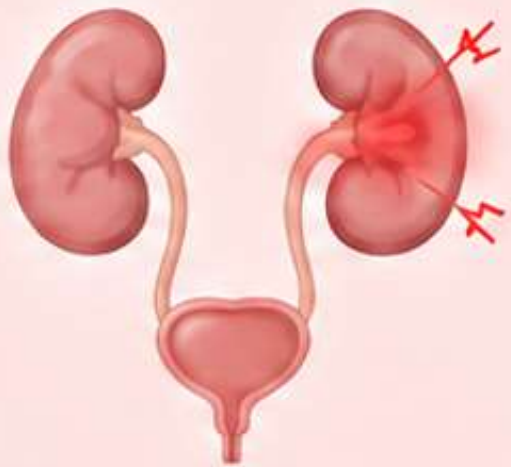
- Semptom yok
- İdrar kültüründe ≥10^5 CFU/mL

Sistit



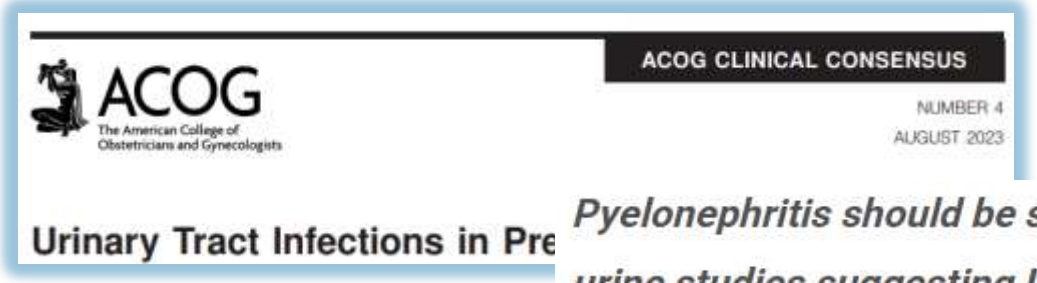
- Dizür
- Polla
- Urge
- Supra

Pyelonefrit



- ≥38°C ateş
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PYELONEFRİT- TANI


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Urinary Tract Infections in Pre

Pyelonephritis should be suspected in the presence of fever of 38.0° C or higher and urine studies suggesting UTI, with additional symptoms of upper genitourinary tract infection, such as flank pain or costovertebral angle tenderness, supporting the diagnosis.

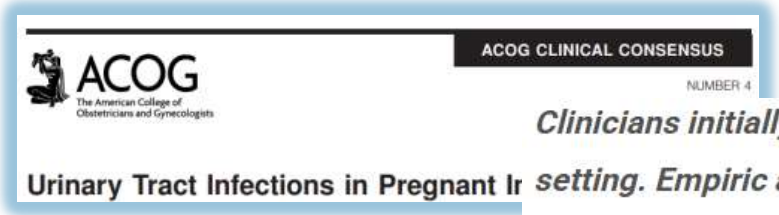
Pregnant patients suspected of having pyelonephritis should have a midstream or catheterized urine specimen collected for urinalysis, urine microscopy, and culture.

This specimen should be obtained before antibiotics are initiated, but treatment should not be delayed while awaiting culture results.

Blood cultures, although frequently obtained in these patients, may not be clinically useful.

The differential diagnosis of these symptoms in pregnancy can also include nephrolithiasis, renal abscess, and chorioamnionitis.

PYELONEFRİT- TEDAVİ



Clinicians initially should manage pyelonephritis in pregnancy in the inpatient setting. Empiric antibiotic therapy should have adequate renal tissue penetration and be targeted against the most likely pathogens. Antibiotic therapy should be adjusted as needed based on urine culture and sensitivity. Parenteral antibiotics should be continued until the patient is clinically improving. Patients should complete a total of 14 days of antibiotic therapy.



Pregnant women with pyelonephritis, outpatient management with appropriate parenteral antimicrobials may also be considered, provided symptoms are mild and close follow-up is feasible. In more severe cases of pyelonephritis, hospitalisation and supportive care are usually required.

After clinical improvement parenteral therapy can also be switched to oral therapy for a total treatment duration of 7 to 10 days.

PYELONEFRİT- TEDAVİ


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Urinary Tract Infections in Pregnant Individuals

Table 3. Antibiotic Regimens for Treatment of Pyelonephritis

Antimicrobial	Regimen
Ampicillin + gentamicin	2 g IV every 6 h 1.5 mg/kg IV every 8 h 5 mg/kg IV every 24 h
Ceftriaxone	1 g IV every 24 h
Cefepime	1 g IV every 12 h
Aztreonam (appropriate in patients with β-lactam allergy)	1 g IV every 8–12 h

PYELONEFRİT- TEDAVİ

Table 5: Suggested regimens for empirical oral antimicrobial therapy in pyelonephritis

Antimicrobial	Daily dose	Duration of therapy	Comments
Ciprofloxacin	500-750mg b.i.d	7 days	Fluoroquinolone resistance should be less than 10%.
Levofloxacin	Standard dosage: 500mg oral q.d	5 days	
Trimethoprim sulfamethoxazole			
Cefpodoxime			
Ceftibuten			

b.i.d = twice daily; q

Table 6: Suggested regimens for empirical parenteral antimicrobial therapy in pyelonephritis

Antimicrobials	Daily dose	Comments
First-line treatment		
Ciprofloxacin	400 mg b.i.d	
Levofloxacin	Standard dosage: 500mg oral q.d High dosage: 500mg oral b.i.d	
Cefotaxime	2 g t.i.d	Not studied as monotherapy in acute pyelonephritis.
Ceftriaxone	Standard dosage: 2g IV q.d High dosage: 2g IV b.i.d	Lower dose studied, but higher dose recommended.

Nitrofura
for pyelor

PYELONEFRİT- TAKİP


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Urinary Tract Infections in Pregnant Individuals

Patients not showing clinical improvement within 72 hours should be further evaluated to ensure bacterial resistance is not present and undergo imaging to rule out other urinary tract pathology.

After clinical improvement, patients should be transitioned to appropriate oral antibiotics based on culture sensitivity to complete a 14-day course of therapy.

Urine culture should be obtained after completion of antibiotics to ensure no residual infection.

PYELONEFRİT- TAKİP


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Urinary Tract Infections in Pre

There is insufficient evidence to guide management after treatment of pyelonephritis in pregnancy. Clinicians may consider suppressive therapy for the remainder of the pregnancy, as for recurrent UTI.

Nitrofurantoin 100 mg/gün

Sefaleksin 250–500 mg/gün

Orally every day for the remainder of pregnancy and continuing until 4–6 weeks postpartum is recommended

Additionally, routine monthly urine culture to screen for recurrence should be considered for the duration of the pregnancy.

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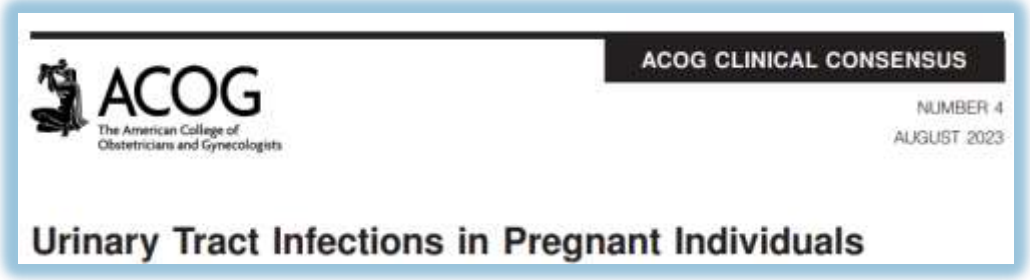
Urinary Tract Infections in Pregnant Individuals

There is insufficient evidence to guide management after recurrent UTI in pregnancy. After treating a recurrent acute infection, clinicians may consider initiating antimicrobial urinary suppression for the remainder of the pregnancy, preferably using a lower single daily dose of an antibacterial drug to which the bacterium isolated was susceptible.

Postkoital proflaksi

Sürekli proflaksi

REKÜRREN ÜSİ- TEDAVİ





Nitrofurantoin 100 mg/gün

Sefaleksin 250-500 mg/gün

Sefaleksin 125-250 mg/gün

Sefaklor 250 mg/gün

Optimal doz ???

REKÜRREN ÜSİ- TEDAVİ

European Association of Urology

Prophylaxis with Centaurii herba, Levistici radix and Rosmarini folium

An RCT involving 90 patients with cystitis compared antimicrobial therapy alone (control group) with antimicrobial therapy plus a combination of *Centaurii herba*, *Levistici radix* and *Rosmarini folium* for three months (two tablets, three times daily). The frequency rate of recurrent episodes of cystitis in the test group was always lower than in the control group with a statistically significant difference at six months (8.9% vs. 17.8%) and at 12 months (15.5% vs. 35.5%) [187]. This combination has also been tested in pregnant women, showing no teratogenic, embryotoxic effects or developmental defects in infants [188].

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AKILDA KALAN MESAJLAR

- Gebelik, yarattığı fizyolojik değişikliklerle ÜSİ riskini arttırmaktadır.
- ÜSİ, gebelerde erken doğum ve düşük doğum ağırlığı ile ilişkilendirilmiştir.
- ASB varlığında tarama, takip ve tedavi önerileri için güncel araştırmalara ihtiyaç vardır.
- Sistit ve pyelonefrit tedavisinde süreler ve antibiyotik dozları ile ilgili rehberlerin farklı önerileri







TEŞEKKÜRLER

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