ANTİBİYOTİK ETKİLEŞİMLERİNİN FARKINDA MIYIZ?

Uzm. Dr. Eyüp Arslan

Uzm. Dr. Güle Çınar

Uzm. Dr. Ceren Atasoy Tahtasakal

Prof. Dr. Arzu Onay Beşikci

KLİMİK

AGUH

PLAN

- İlaç etkileşimleri: greyfurt suyundan günümüze…
- «Ankara Üniversitesi Hastanelerinde Sistemik Antibiyotik Kullanan Hastalarda İlaç Etkileşimlerinin Araştırılması», Haziran 2018: 5 Olgu
- Polifarmasi kaçınılmazsa: hangi kaynakları kullanalım?

Bir ilaç tarafından diğer bir ilacın etkisi kalitatif veya kantitatif olarak değiştiriliyorsa bu iki ilaç arasında etkileşme vardır.

Etkileşme oluşması için iki ilacın vücutta veya etkileşme yerinde aynı zamanda bulunmaları gerekir.

İstenilen etkileşimler

İstenmeyen etkileşimler

Öngörülemeyen etkileşimler

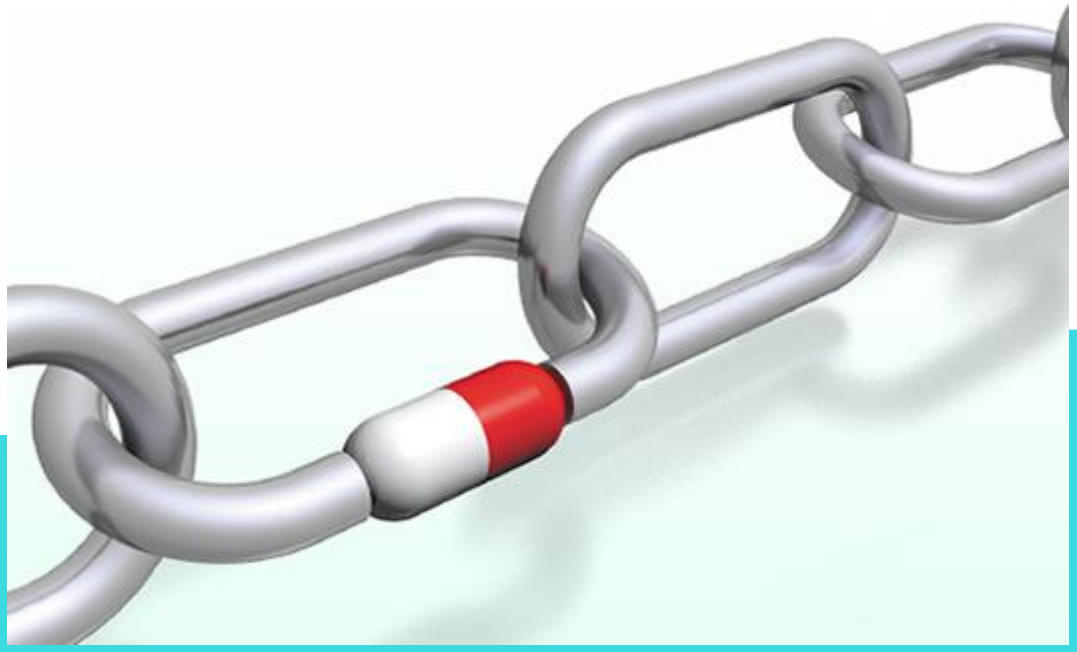
ALTTA YATAN MEKANİZMALARA GÖRE

Davranışsal ilaç-ilaç etkileşimleri; Uyunç değişimi

Farmasötik ilaç-ilaç etkileşimleri; Uygulama öncesinde vücut dışında

Farmakokinetik ilaç-ilaç etkileşimleri; Konsantrasyon değişimi

Farmakodinamik ilaç-ilaç etkileşimi; Etki değişimi



Drugs.com
Know more. Be sure.

Drugs A-Z | Pill Identifier | Interactions Checker | New Drugs | Pro Edition | More

Find Drugs & Conditions

Major

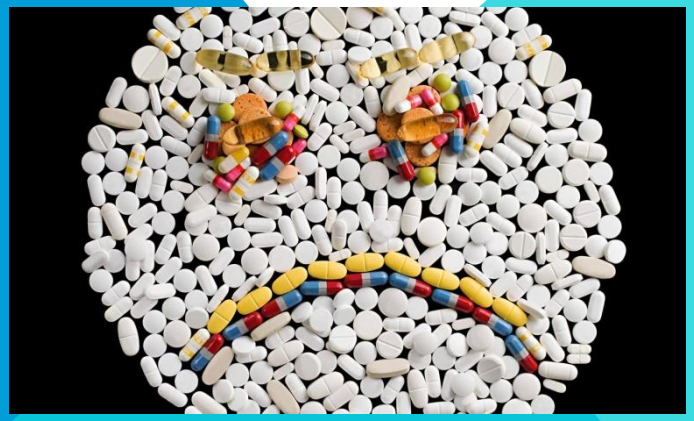
CONTRAINDICATED:

Major

MONITOR CLOSELY:

Moderate

Minor



EXPLORE

- Drugs, OTCs, & Herbals
- Diseases & Conditions
- Procedures
- Anatomy
- Cases, Quizzes, & Trends

TOOLS

- Drug Interaction Checker
- Pill Identifier
- Calculators
- Consult
- Health Directory

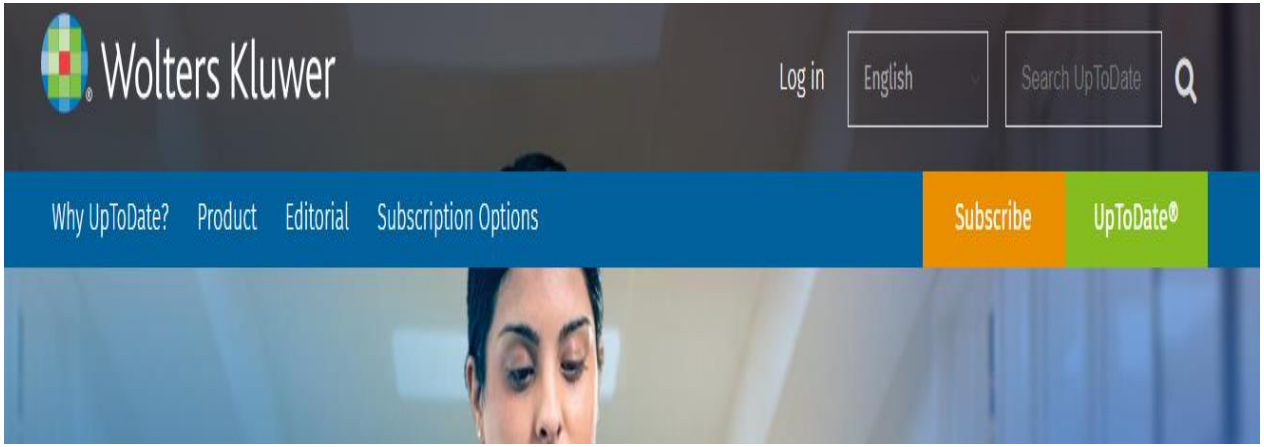
Contraindicated

Serious - Use Alternative

Monitor Closely

Minor

UPTODATE



X	Avoid combination	C	Monitor therapy	A	No known interaction
D	Consider therapy modification	B	No action needed	*More about Risk Ratings*	▼

MİCROMEDEX


IBM Micromedex® Web Applications Access
Product update and notifications: There are no current notifications.
Clinical Knowledge:
Medication, Disease and Toxicology Management
- Evidence based clinical resources to support informed diagnosis and treatment decisions.
- Unbiased, referenced Clinical Decision Support (CDS) for medication, toxicology, disease, and alternative medicine.
- Safely and reliably manage drug therapy for pediatric and neonatal patients with NeoFax and Pediatrics evidence-based drug information.
- RED BOOK for drug pricing, drug data, and manufacturer information.
Find information about additional Micromedex at www.micromedex.com/clinicalknowledge
Log in:
Username
Password
Log In
Remember Password
OpenAthens Login

Kişiler arasında büyük farklılıklar gösterirler. Aynı kişide de farklı zamanlarda etkileşimde farklılıklar olabilir.

İlaç etkileşimleri silik olabilir, kolay ölçülemez ve saptanamaz.

Potansiyel etkileşim, monitorizasyonu ve doz ayarlaması bilindiği sürece ilaç çiftlerinin kullanımı için kontrendikasyon oluşturmayabilir.

Çoğu ilaç etkileşimi doza ve etkileşim yerine bağlıdır. Etkileşimin sona ermesi günler veya haftaları bulabilir.

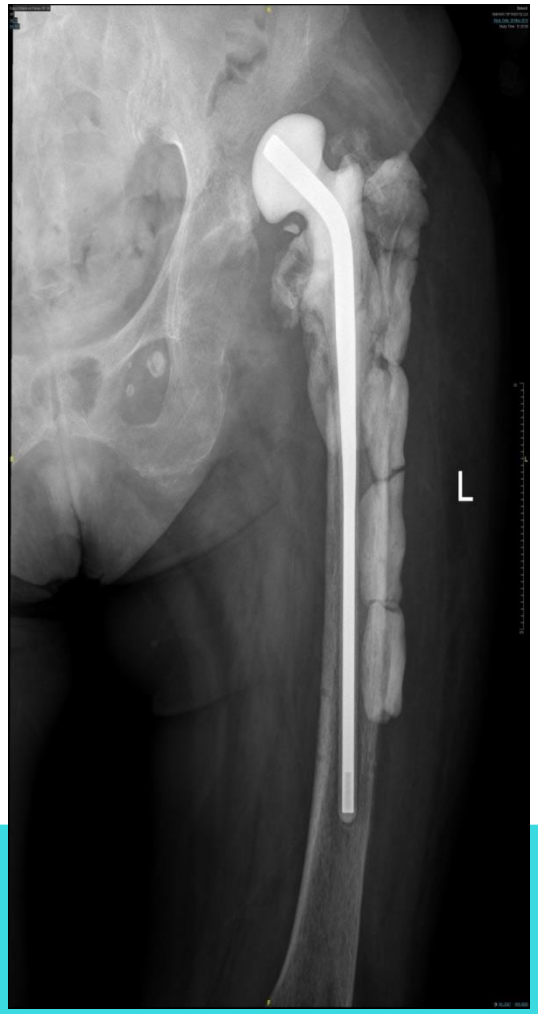
OLGU 1

66 yaş, kadın hasta

14 yıl önce intrakranial kanama→ Sol hemiplejik

Mart 2018 ; Sol femur başı kırığı → Kalça protezi

Mart 2018 ; Protez infeksiyonu → Revizyon kalça protezi operasyonu



Doku Kültürü: R: Dirençli S: Duyarlı I: Ara Değer

1) *Enterococcus faecalis;* Ampisilin R

Gentamisin 30 (Yüksek düzey) S

Teikoplanin S

Vankomisin S

2) *Staphylococcus aureus*(MRSA); Amoksisilin-Klavulanik Asit R

Klindamisin S

Penisilin R

Sefazolin R

Siprofloksasin S

Teikoplanin (MIC), mcg/mL S

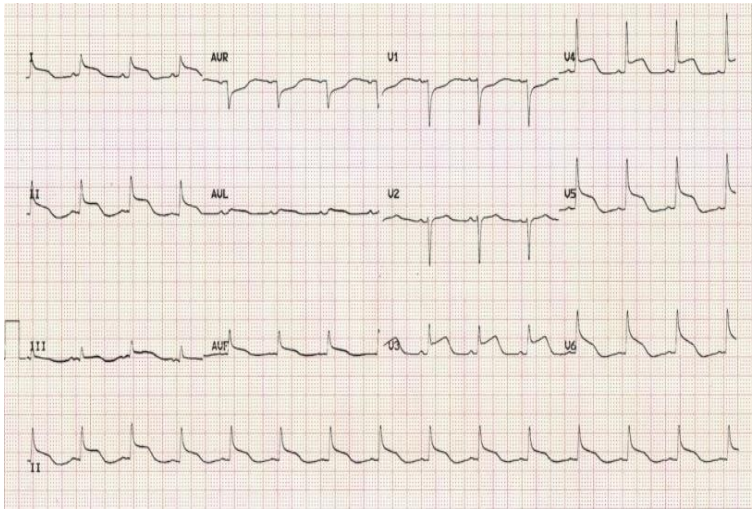
Vankomisin (MIC), mcg/mL S

İnfeksiyon Hastalıkları Konsültasyonu;

Teikoplanin 2x400 mg IV yükleme, 1x400 mg IV idame

Siprofloksasin 2x500 mg tablet

Göğüs ağrısı



EKG’de yaygın ST elevasyonu

Kardiyoloji konsültasyonu

Anjiografi → Masif pulmoner tromboemboli

Kardiyolojiye devir

Teikoplanin + Siprofloksasin tedavisinin 10. gününde

Antibiyotik infüzyonu sırasında kendini kötü hissetme, görmede bozulma, hipotansiyon (80 / 50 mmHg)

Eş zamanlı EKG'de yüksek ventrikül hızlı atriyal fibrilasyon (200 atım /dk)

İnfeksiyon Hastalıkları Konsültasyonu;

Teikoplanin ve siprofloksasinin kesilmesi

Daptomisin 1x6 mg/kg IV + Rifampisin 1x600

Hasta İlaç Tabelası

Enoksaparin (Clexane®)

Metoprolol (Beloc zok®)

Ramipril (Delix®)

Atorvastatin (Ator®)

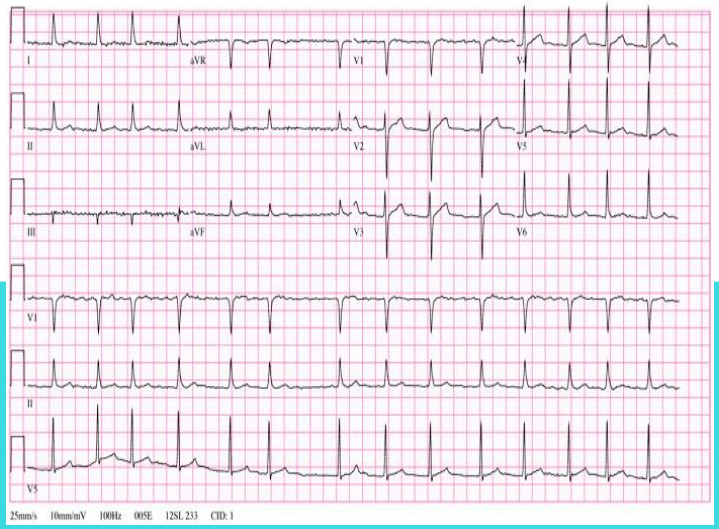
Pregabalin (Lyrica®)

Parasetamol/Tramadol (Zaldiar®)

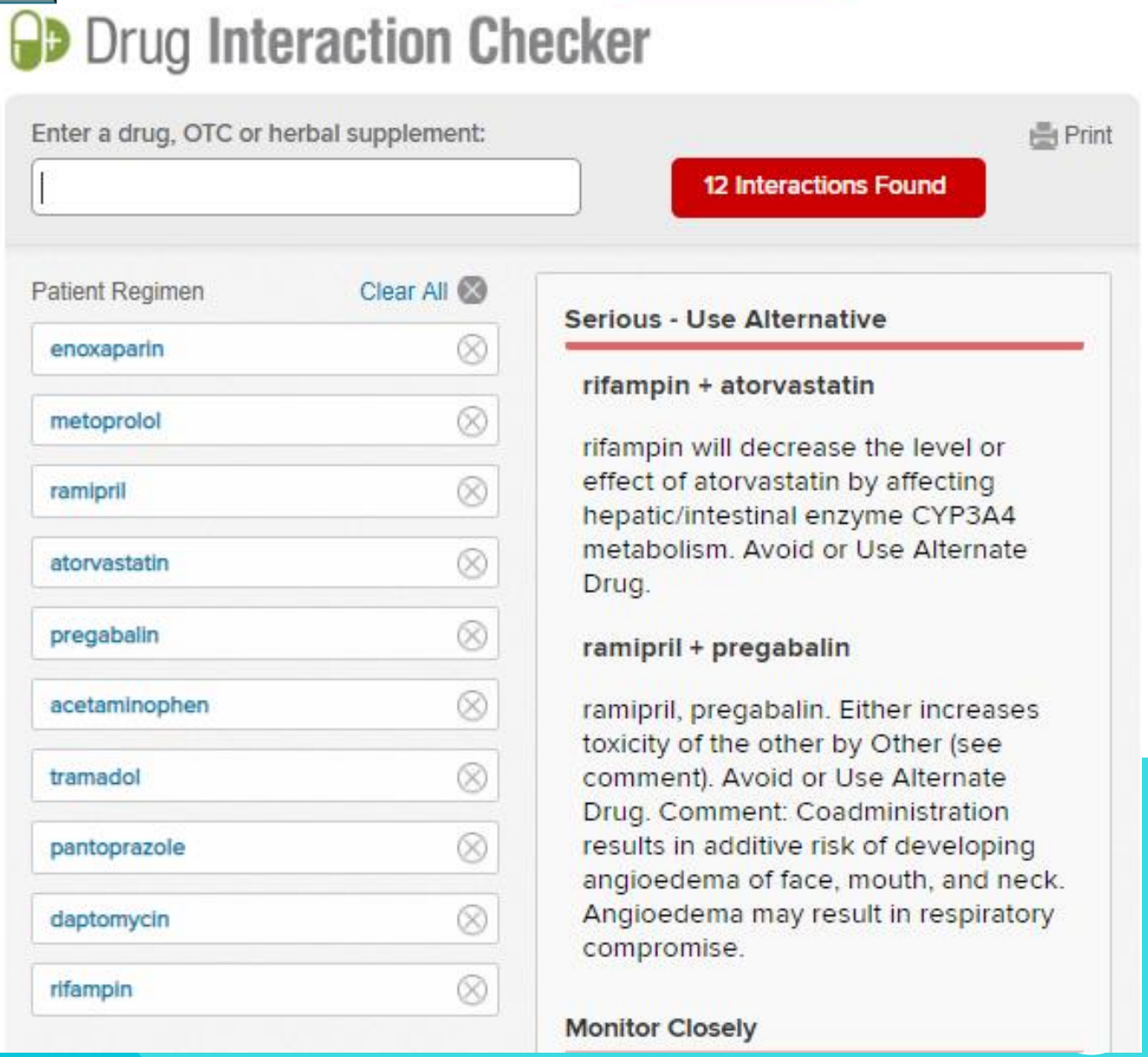
Pantoprazol (Protect®)

Daptomisin

Rifampin



MEDSCAPE


Drug Interaction Checker
Enter a drug, OTC or herbal supplement:
Print
12 Interactions Found
Patient Regimen
Clear All
enoxaparin
metoprolol
ramipril
atorvastatin
pregabalin
acetaminophen
tramadol
pantoprazole
daptomycin
rifampin
Serious - Use Alternative
rifampin + atorvastatin
rifampin will decrease the level or effect of atorvastatin by affecting hepatic/intestinal enzyme CYP3A4 metabolism. Avoid or Use Alternate Drug.
ramipril + pregabalin
ramipril, pregabalin. Either increases toxicity of the other by Other (see comment). Avoid or Use Alternate Drug. Comment: Coadministration results in additive risk of developing angioedema of face, mouth, and neck. Angioedema may result in respiratory compromise.
Monitor Closely

MEDSCAPE

Atorvastatin-**Rifampin**

Rifampin

Daptomisin

Atorvastatin

Enoksaparin

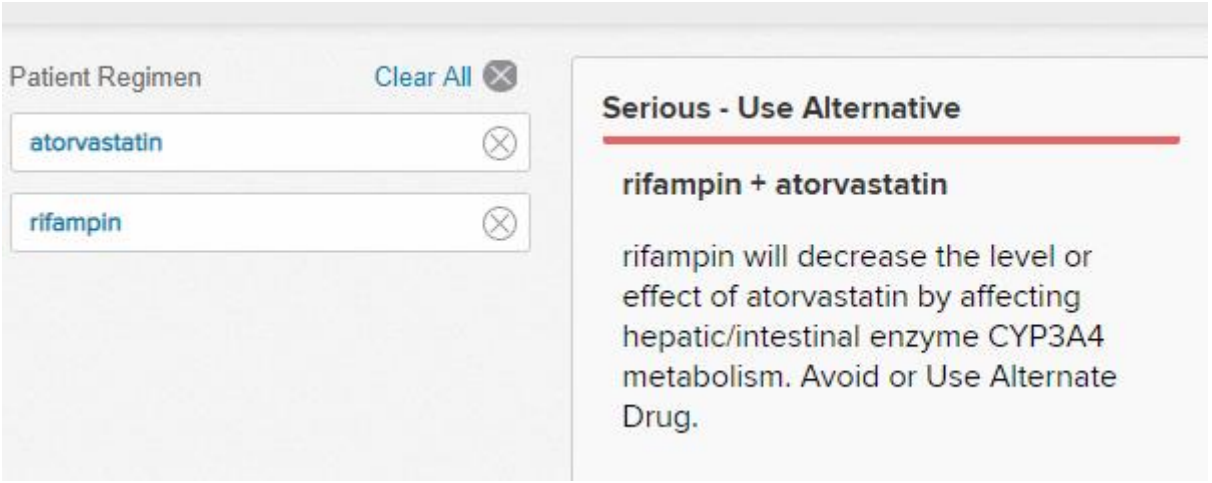
Metoprolol

Ramipril

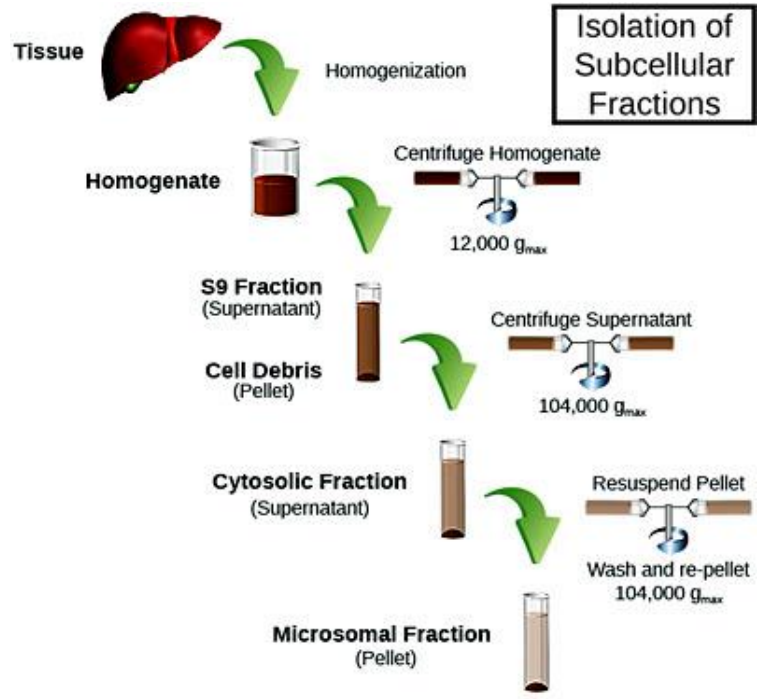
Pregabalin

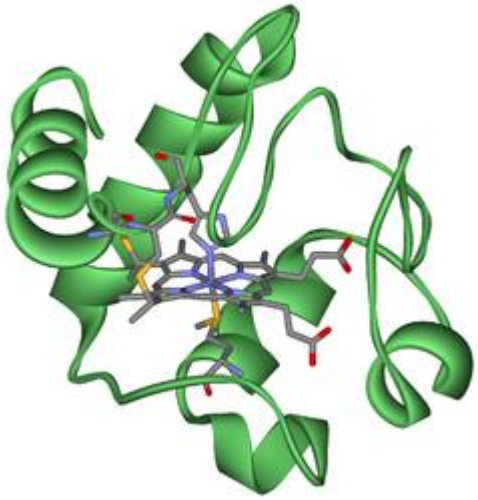
Parasetamol/Tramadol

Pantoprazol

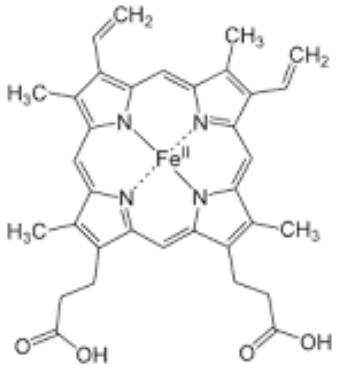


CYPs 1.0.1

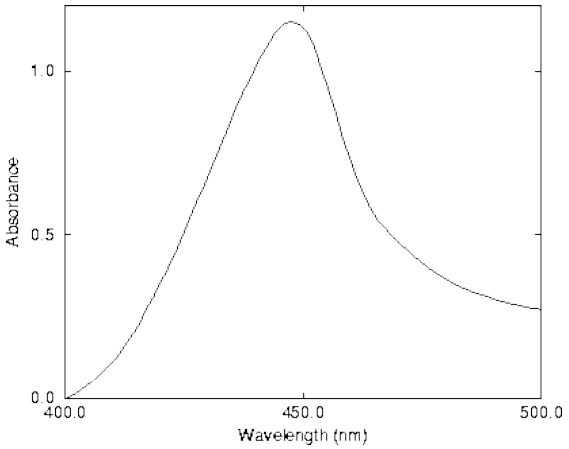


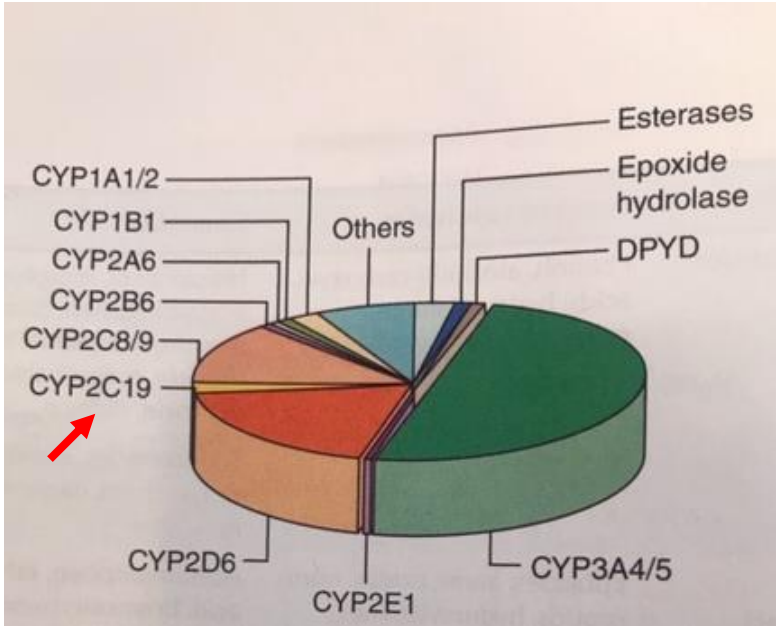


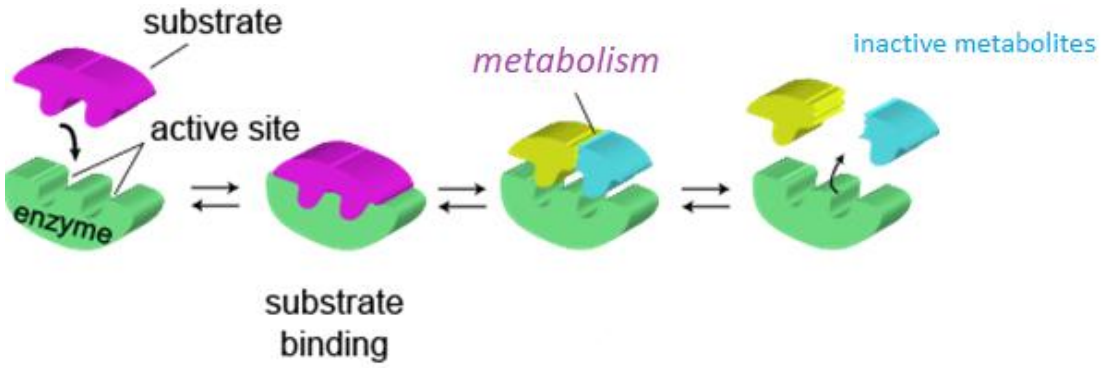
P for porphyrine



450 for absorbance max @ this wavelength

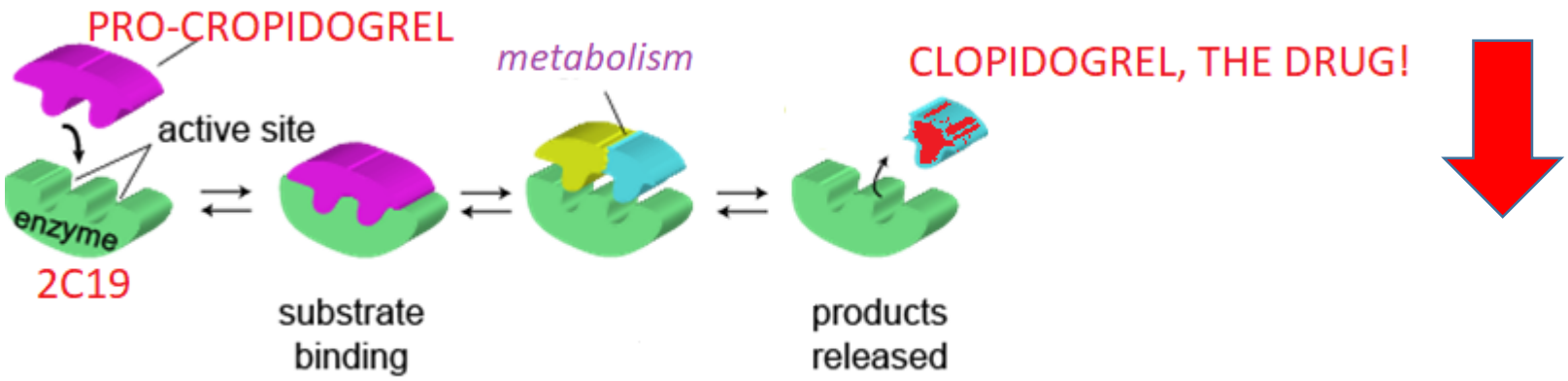






CYP	Substrate
2C19	• Naproxene • Omeprazole • Propranolol

Basic&Clinical Pharmacology 13th Ed., 2015, Katzung



CYP	Substrate
2C19	• Naproxene • Omeprazole • Propranolol • (PRO)CLOPIDOGREL

Basic&Clinical Pharmacology 13th Ed., 2015, Katzung

Atorvastatin yerine **rosuvastatin** kullanmalıydı

Parameter	Lovastatin	Simvastatin	Pravastatin	Fluvastatin	Atorvastatin	Rosuvastatin	Pitavastatin
Isoenzyme	3A4	3A4	None	2C9	3A4	2C9/2C19	UGT1A3
Lipophylic	Yes	Yes	No	Yes	Yes	No	Yes
Protein binding (%)	>95	95-98	˜50	>90	96	88	99
Active metabolites	Yes	Yes	No	No	Yes	Yes	No
Elimination half-life (h)	3	2	1.8	1.2	7-14	13-20	12

Pharmacotheraphy 13th Ed., 2018, DiPiro

OLGU 2

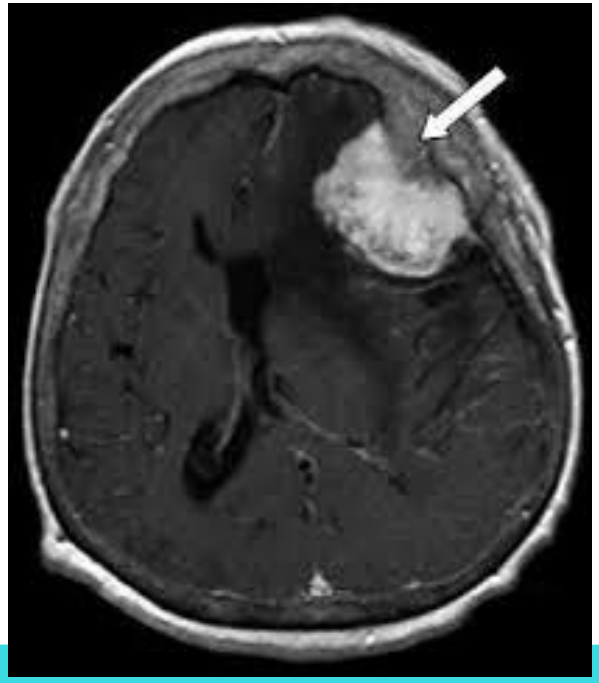
62 yaş, **erkek** hasta

4 aydır sol gözde görmede bulanıklık

Menenjiom

Nöroşirurji kliniğine yatış

Tümör rezeksiyonu



Profilaksi; Sefuroksim aksetil po

Hasta İlaç Tabelası

Levetirasetam (Lev-end®)

Deksametazon(Dekort®)

Diklofenak (Diclomec®)

Nimodipin (Nimotop®)

Enoksaparin (Oksapar®)

Domperidon (Motilium®)

Pantoprazol (Protect®)

Metoklopromid (Metpamid®)

Sefuroksim aksetil

Levetirasetam

Deksametazon

Diklofenak

Nimodipin

Enoksaparin

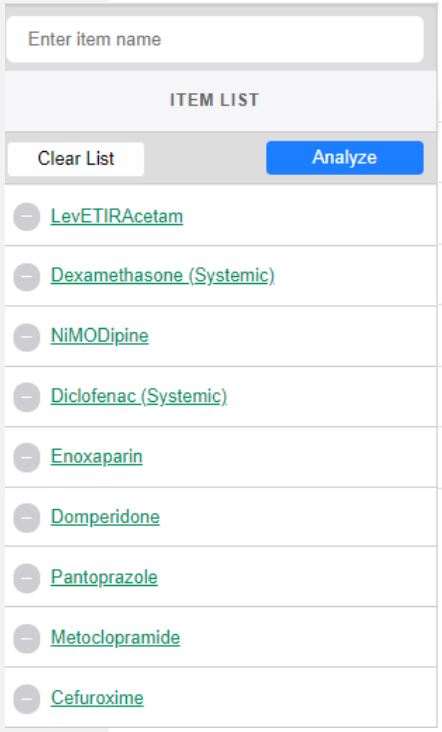
Domperidon

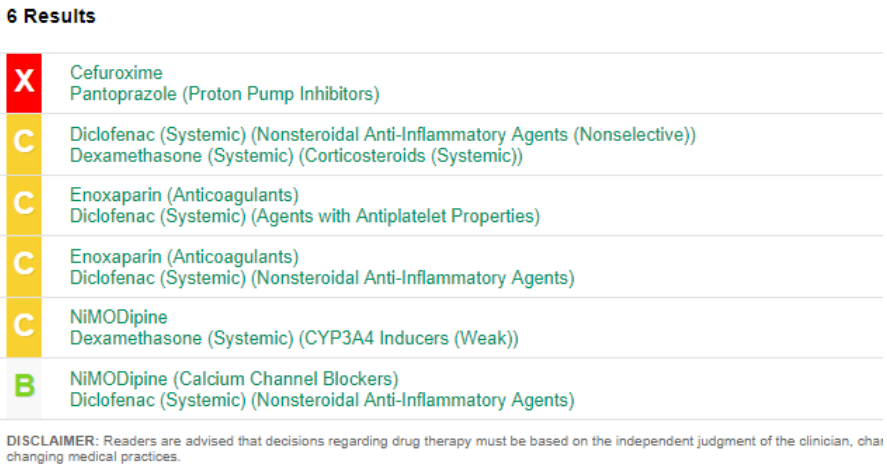
Pantoprazol

Metoklopromid

Sefuroksim aksetil

UpToDate





Pantoprazol-Sefuroksim	o-o	X	PPI, sefuroksim absorbsiyonunu azaltır	Lit-Label	Moderate	Sefuroksim absorbsiyonu ve etkinliği azalır	Lit	Etkileşim yok	Etkileşim yok

Cefuroxime axetil

Zinnat® Tablets

PRODUCT DESCRIPTION

Cefuroxime (as axetil) *(Zinnat®)* 250mg tablet:.
Each white, film-coated, capsule-shaped tablet engraved with 'GXES7' on one side tablet contains 250mg of Cefuroxime (as axetil).
Cefuroxime (as axetil) *(Zinnat®)* 500mg tablet:
Each white, film-coated, capsule-shaped tablet engraved with 'GXEG2' on one side tablet contains 500mg of Cefuroxime (as axetil).

Gastrik asiditenin azalması oral sefuroksimin absorbsiyonunu azaltır

Method of administration

250 mg, 500 mg film-coated tablets

Oral use
Zinnat tablets should be taken after food for optimum absorption.

Sefalosporinlerin HEPSİ antikoagülan özellikte

4.5 Interactions with other medicinal products and other forms of interaction

Drugs which reduce gastric acidity may result in a lower bioavailability of cefuroxime ax compared with that of the fasting state and tend to cancel the effect of enhanced absorptic after food.

Cefuroxime axetil may affect the gut flora, leading to lower oestrogen reabsorption and reduced efficacy of combined oral contraceptives.

Cefuroxime is excreted by glomerular filtration and tubular secretion. Concomitant use o probenicid is not recommended. Concurrent administration of probenecid significantly increases the peak concentration, area under the serum concentration time curve and elimination half-life of cefuroxime.

Concomitant use with oral anticoagulants may give rise to increased INR.

A. Gastrik asiditeyi değiştirecek ilaç kullanmasın

B. Sefuroksimi parenteral kullansın

https://gskpro.com/en-mt/products/zinnat/dosage-and-administration/

OLGU 3

69 yaş, **erkek** hasta

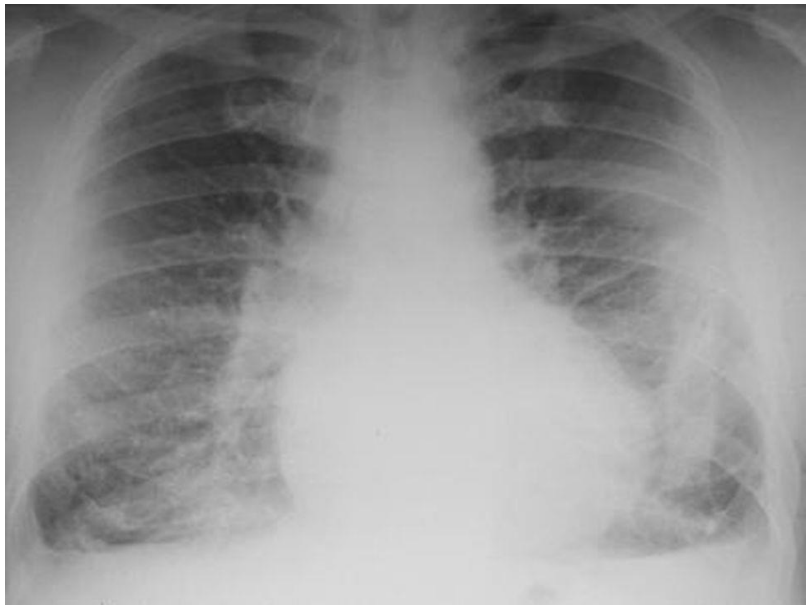
Myokard infarktüsü 2004

Kronik obstrüktif akciğer hastalığı

Nefrektomi

Dispne

Kardiyoloji kliniğine yatış



Hipervolemi ve solunum yetmezliği nedeniyle 2 kez solunum ve kardiyak arrest

Mekanik ventilatöre bağlanma ihtiyacı yok

Pnömoni ; Moksifloksasin 1x400 mg IV

Hasta İlaç Tabelası

Karvedilol (Carvexal®)

Furosemid (Lasix®)

Asetilsalisilik asit (Ecopirin®)

Teofilin (Bronkolin®)

Flutikazon/Vilanterol (Relvar Ellipta®)

Tiotropium (Spiriva®)

Salbutamol (Ventolin®)

Kalsiyum karbonat / Sodyum aljinat / Sodyum bikarbonat (Pronat Kombine®)

Pantoprazol

Moksifloksasin

Karvedilol ♥

Furosemid

Asetilsalisilik asit

Teofilin

Flutikazon/Vilanterol

Tiotropium

Salbutamol

Kalsiyum karbonat/Sodyum aljinat/Sodyum bikarbonat

Pantoprazol

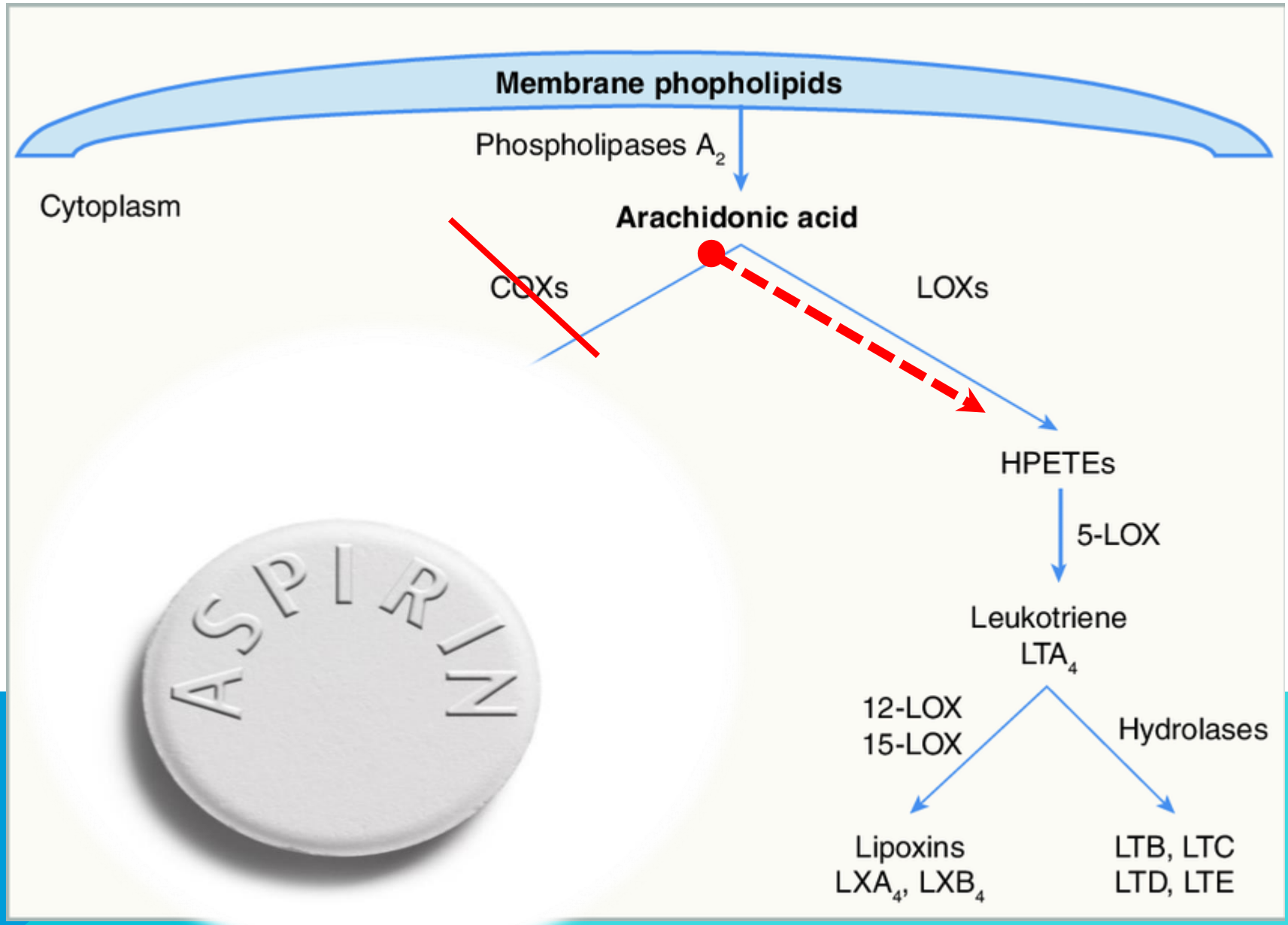
Moksifloksasin

Moksifloksasin oral kullanılmadığı için bu etkileşimleri beklemiyoruz

.....

Asetilsalisilik asit-Moksifloksasin	o-o	C	Şelasyon nedeniyle florokinolon konsantrasyonu azalır	Lit	Moderate	Asetilsalisilik asit florokinolonların santral toksik etkilerini artırır	Label	Yakın izle	Şelasyon nedeniyle florokinolon konsantrasyonu azalır
Kalsiyum karbonat-Moksifloksasin	o-o	D	Antasitler florokinolon absorbsiyonunu azaltır	Lit	Moderate	Antasitler florokinolon absorbsiyonunu azaltır	Lit, Label	Yakın izle	Antasitler florokinolon absorbsiyonunu azaltır
Moksifloksasin-Sodyum bikarbonat	o-o	D	HER İKİSİ DE ORAL alımda florokinolon absorbsiyonu azalır	Lit	Moderate	HER İKİSİ DE ORAL alımda florokinolon absorbsiyonu azalır	Lit	CİDDİ	HER İKİSİ DE ORAL alımda florokinolon absorbsiyonu azalır
İnsülin-Moksifloksasin	sc-o	C	Hipoglisemik etki artar	Lit	Moderate	Hipoglisemik etki artar	Lit	Etkileşim yok	Etkileşim yok

Aspirin


Membrane phopholipids
Phospholipases A_2
Cytoplasm
Arachidonic acid
COXs
LOXs
HPETEs
5-LOX
Leukotriene
LTA_4
12-LOX
15-LOX
Hydrolases
Lipoxins
LXA_4, LXB_4
LTB, LTC
LTD, LTE
ASPIRIN

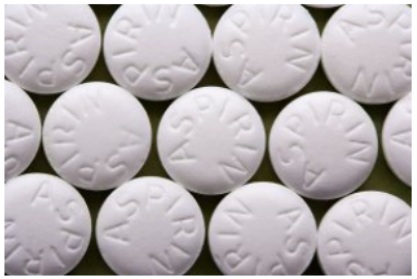
Aspirin-exacerbated respiratory disease

Authors: Tanya M Laidlaw, MD, Elliot Israel, MD

ASPIRIN-EXACERBATED RESPIRATORY DISEASE (AERD)

Overview

Aspirin-exacerbated respiratory disease (AERD), also known as Samter's Triad, is a chronic medical condition that consists of three clinical features: asthma, sinus disease with recurrent nasal polyps, and sensitivity to aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) that inhibit an enzyme called cyclooxygenase-1. This sensitivity usually manifests as respiratory reactions that occur upon ingesting or inhaling an NSAID, though the exact cause of the reactions is not known. Approximately 9% of all adults with asthma and 30% of patients with asthma and nasal polyps have AERD. In general, AERD develops quite suddenly in adulthood, usually between the ages of 20 and 50, and there is no clearly understood trigger that causes the disease.



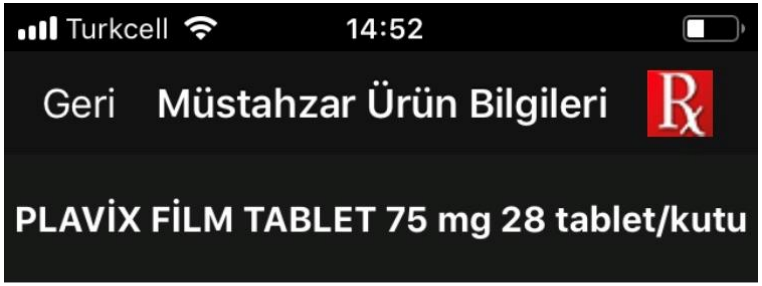
Symptoms

People with AERD usually have asthma, nasal congestion and recurrent nasal polyps, and their symptoms often do not respond to conventional treatments. Many have experienced chronic sinus infections and a loss of sense of smell is common.

The characteristic feature of AERD is that patients develop reactions to aspirin and other NSAIDs. These reactions classically involve both upper respiratory symptoms (increased nasal congestion, frontal headache or sinus pain, and sneezing) as well as lower respiratory symptoms (cough, wheezing, chest tightness), but they can also induce skin flushing, rash, abdominal pain and occasionally vomiting.

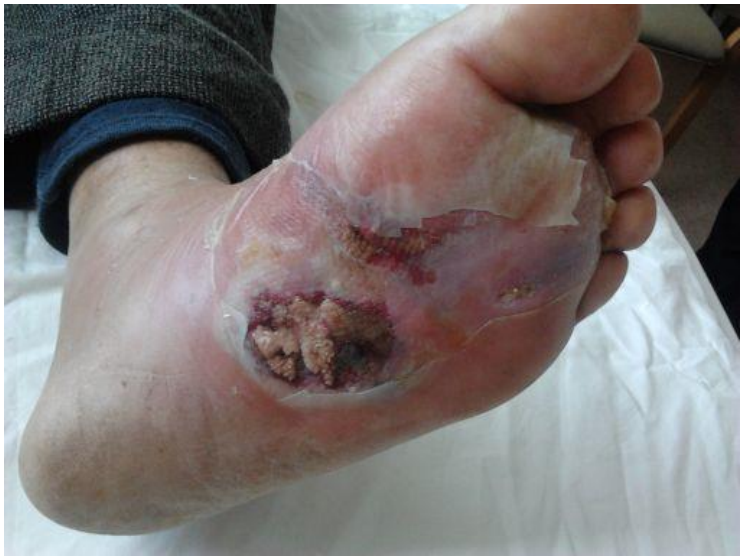
It has been noted that about 75% of all patients with AERD develop mild-to-moderate respiratory reactions when they drink alcohol. These reactions are not always specific to just one type of alcohol and often occur after consuming less than one glass of alcohol.

Barkod	8699514040019
Firma	ABDİ İBRAHİM
Reçete Türü	**Beyaz Reçete**
Ruhsat Veren	Sağlık Bakanlığı onaylıdır
Fiyat	**4.00**
Fiyat Tarihi	19-02-2019
Eşdeğer Grup	**E084C**
Kamu Fiyatı	**4.00**
Kamu Ödenen	**4.00**
Eczacı İndirimi	%1.00
İmalatçı İndirimi	%0.00
İmalatçı Fiyatı	2.72 +KDV
Depocu Fiyatı	2.96 +KDV
SGK Etkin Madde Kodu	**SGKERW**
Kamu No	A11404
J/O	JENERİK-YİRMİ YIL
KDV	%8.00
Ruhsat/İzin	23-12-1996-180/85
Raf Ömrü	24 Ay



Barkod	8699809097698
Firma	SANOFİ
Reçete Türü	**Beyaz Reçete**
Ruhsat Veren	Sağlık Bakanlığı onaylıdır
Fiyat	**49.67**
Fiyat Tarihi	19-02-2019
Eşdeğer Grup	**E274A**
Kamu Fiyatı	**35.76**
Kamu Ödenen	**29.91**
Fiyat Farkı	**5.85**
Eczacı İndirimi	%1.00
İmalatçı İndirimi	%28.00
İmalatçı Fiyatı	33.98 +KDV
Depocu Fiyatı	36.79 +KDV
SGK Etkin Madde Kodu	**SGKF98**
Kamu No	A06206
J/O	ORİJİNAL
KDV	%8.00
Ruhsat/İzin	23-05-2017-2017/333

OLGU 4



66 yaş, **erkek** hasta

Diabetes mellitus, kollojen vasküler hastalık

Diabetik ayak; sağ ayakta pürülan akıntılı doku defekti

Antibiyotik kullanım öyküsü yok

İnfeksiyon hastalıkları konsültasyonu; Ampisilin-sulbaktam 4x1,5 gr IV

Siprofloksasin 2x400 mg IV

Doku kültürü ve gram boyaması

Hasta İlaç Tabelası

Kalsiyum Karbonat/Sodyum Aljinat/Sodyum bikarbonat (Gaviscon®)
Metilprednizolon (Prednol®)
Metformin (Glucophage®)
İnsülin aspart/protamin (Novomix®)
Ramipril (Delix®)
Trimetazidin (Vastarel®)
Pantoprazol (Protect®)
İzosorbid mononitrat (Monoket Long®)
Metoprolol (Beloc zok®)

Metilprednizolon

Metformin

İnsülin aspart/protamin

Ramipril

Trimetazidin ♥

Pantoprazol

Kalsiyum karbonat/Sodyum aljinat/Sodyum bikarbonat

İzosorbid mononitrat

Metoprolol

Ampisilin+Sulbaktam

Siprofloksasin

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ITEM LİST

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- MethylPREDNISolone
- MetFORMIN
- Insulin Aspart Protamine and Insulin Aspart
- Ramipril
- Trimetazidine
- Pantoprazole
- Gaviscon Tablet [OTC]
- Isosorbide Mononitrate
- Metoprolol
- Ampicillin and Sulbactam

Display complete list of interactions for an individual item by clicking item name.

X	Avoid combination	C	Monitor therapy	A	No known interactio
D	Consider therapy modification	B	No action needed		*More about Risk Ratings*

13 Results

D	Ciprofloxacin (Systemic) (Quinolones) Gaviscon Tablet [OTC] (Antacids)
D	Ciprofloxacin (Systemic) (Quinolones) Gaviscon Tablet [OTC] (Magnesium Salts)
D	MethylPREDNISolone (Corticosteroids (Oral)) Gaviscon Tablet [OTC] (Antacids)
C	Ciprofloxacin (Systemic) (Quinolones) MethylPREDNISolone (Corticosteroids (Systemic))
C	Insulin Aspart Protamine and Insulin Aspart (Antidiabetic Agents) MethylPREDNISolone (Hyperglycemia-Associated Agents)
C	Insulin Aspart Protamine and Insulin Aspart (Blood Glucose Lowering Agents) Ciprofloxacin (Systemic) (Quinolones)
C	Insulin Aspart Protamine and Insulin Aspart (Hypoglycemia-Associated Agents) MetFORMIN (Antidiabetic Agents)
C	Insulin Aspart Protamine and Insulin Aspart (Insulins) Metoprolol (Beta-Blockers)
C	MetFORMIN Ramipril (Angiotensin-Converting Enzyme Inhibitors)
C	MetFORMIN (Antidiabetic Agents) MethylPREDNISolone (Hyperglycemia-Associated Agents)
C	MetFORMIN (Blood Glucose Lowering Agents) Ciprofloxacin (Systemic) (Quinolones)
B	Ciprofloxacin (Systemic) (Quinolones) Ramipril (Angiotensin-Converting Enzyme Inhibitors)
B	Insulin Aspart Protamine and Insulin Aspart (Blood Glucose Lowering Agents) Ramipril (Angiotensin-Converting Enzyme Inhibitors)

Metilprednizolon-Siprofloksasin

Print

Title Quinolones / Corticosteroids (Systemic)

Risk Rating C: Monitor therapy

Summary Corticosteroids (Systemic) may enhance the adverse/toxic effect of Quinolones. Specifically, the risk of tendonitis and tendon rupture may be increased. **Severity** Moderate **Reliability Rating** Good

Patient Management Monitor patients receiving quinolone antibiotics and systemic corticosteroids closely for new onset tendon or joint pain. The risk of tendonitis and tendon rupture may be further increased in older patients (usually those older than 60 years) and in recipients of heart, lung, and kidney transplants.

Corticosteroids (Systemic) Interacting Members Beclomethasone (Systemic), Betamethasone (Systemic), Corticotropin, Cortisone, Deflazacort, Dexamethasone (Systemic), Fludrocortisone, Hydrocortisone (Systemic), MethylPREDNISolone, PrednisoLONE (Systemic), PrediniSONE, Triamcinolone (Systemic)

Quinolones Interacting Members Ciprofloxacin (Systemic), Delafloxacin, Gemifloxacin, LevoFLOXacin (Oral Inhalation), LevoFLOXacin (Systemic), Lomefloxacin, Moxifloxacin (Systemic), Nalidixic Acid, Norfloxacin, Ofloxacin (Systemic), Pefloxacin, Pipemidic Acid, Sparfloxacin

Discussion US prescribing information for systemic quinolone antibiotics warns that patients receiving these agents are at an elevated risk of tendinitis and tendon rupture.[1,2,3,4,5,6,7,8,9] This risk is further elevated in patients receiving corticosteroids, in older patients (usually those older than 60 years), and in recipients of heart, lung, and kidney transplants. Several large database analyses support this reported increase in risk,[10,11,12,13,14] as do several published reports of patient cases.[15,16,17,18,19]

Footnotes

1. *Levaquin* (levofloxacin) [prescribing information]. Titusville, NJ: Janssen Pharmaceuticals, Inc; May 2014.

2. *Cipro* (ciprofloxacin) [prescribing information]. Wayne, NJ: Bayer HealthCare Pharmaceuticals Inc; August 2013.

3. *Factive* (gemifloxacin) [prescribing information]. Seoul, Korea: LG Life Sciences; August 2013.

4. *Maxaquin* (lomefloxacin) [prescribing information]. New York, NY: Pfizer Inc; March 2005.

5. *Avelox* (moxifloxacin) [prescribing information]. Whitehouse Station, NJ: Merck & Co, Inc; August 2013.

6. *NegGram* (nalidixic acid) [prescribing information]. Bridgewater, NJ: Sanofi-Aventis US LLC; November 2012.

7. *Noroxin* (norfloxacin) [prescribing information]. Whitehouse Station, NJ: Merck & Co., Inc; August 2013.

8. Ofloxacin [prescribing information]. Sellersville, PA: Teva Pharmaceuticals USA; April 2014.

9. Baxdela (delafloxacin) [prescribing information]. Lincolnshire, IL: Melinta Therapeutics Inc; June 2017.

10. van der Linden PD, Sturkenboom MC, Herings RM, Leufkens HM, Rowlands S, Stricker BH. Increased risk of achilles tendon rupture with quinolone antibacterial use, especially in elderly patients taking oral corticosteroids. *Arch Intern Med*. 2003;163 (15):1801-1807. [PubMed 12912715]

11. de La Red G, Mejia JC, Cervera R, Llado A, Mensa J, Font J. Bilateral Achilles tendinitis with spontaneous rupture induced by levofloxacin in a patient with systemic sclerosis. *Clin Rheumatol*. 2003;22(4-5):367-368. [PubMed 14579169]

12. Seeger JD, West WA, Fife D, Noel GJ, Johnson LN, Walker AM. Achilles tendon rupture and its association with fluoroquinolone antibiotics and other potential risk factors in a managed care population. *Pharmacoepidemiol Drug Saf*. 2006;15(11):784-792. [PubMed 16456878]

13. Corrao G, Zambon A, Bertu L, et al. Evidence of tendinitis provoked by fluoroquinolone treatment: a case-control study. *Drug Saf*. 2006;29(10):889-896. [PubMed 16970512]

14. Wise BL, Peloquin C, Choi H, Lane NE, Zhang Y. Impact of age, sex, obesity, and steroid use on quinolone-associated tendon disorders. *Am J Med*. 2012;125(12):1228.e23-1228.e28. [PubMed 23026288]

15. van der Linden PD, Sturkenboom MC, Herings RM, Leufkens HG, Stricker BH. Fluoroquinolones and risk of Achilles tendon disorders: case-control study. *BMJ*. 2002;324(7349):1306-1307. [PubMed 12039823]

16. Sugimoto T, Kaneko H, Deji N, Koya D. Levofloxacin-induced Achilles tendon rupture in a patient with systemic microscopic polyangiitis. *Mod Rheumatol*. 2005;15(3):217-219. [PubMed 17029067]

17. Basic-Jukic N, Juric I, Racki S, Kes P. Spontaneous tendon ruptures in patients with end-stage renal disease. *Kidney Blood Press Res*. 2009;32(1):32-36. [PubMed 19212123]

18. Lewis TG. A rare case of ciprofloxacin-induced bilateral rupture of the Achilles tendon [published online March 5, 2009]. *BMJ Case Rep*. [PubMed 21686678]

19. Khanzada Z, Rethnam U, Widdowson D, Mirza A. Bilateral spontaneous non-traumatic rupture of the Achilles tendon: a case report. *J Med Case Rep*. 2011;5:263. [PubMed 21718513]

Drugs

Major **ciprofloxacin <> methylPREDNISolone**

Applies to: ciprofloxacin, methylprednisolone

MONITOR CLOSELY: Concomitant administration of corticosteroids may potentiate the risk of tendinitis and tendon rupture associated with fluoroquinolone treatment. The mechanism is unknown. Tendinitis and tendon rupture have most frequently involved the Achilles tendon, although cases involving the rotator cuff (the shoulder), the hand, the biceps, and the thumb have also been reported. Some have required surgical repair or resulted in prolonged disability. Tendon rupture can occur during or up to several months after completion of fluoroquinolone therapy.

MANAGEMENT: Caution is recommended if fluoroquinolones are prescribed in combination with corticosteroids, particularly in patients with other concomitant risk factors (e.g., age over 60 years; recipient of kidney, heart, and/or lung transplant). Patients should be advised to stop taking the fluoroquinolone, avoid exercise and use of the affected area, and promptly contact their physician if they experience pain, swelling, or inflammation of a tendon. In general, fluoroquinolones should only be used to treat conditions that are proven or strongly suspected to be caused by bacteria and only if the benefits outweigh the risks.

References

1. Khaliq Y, Zhanel GG "Fluoroquinolone-Associated Tendinopathy: A Critical Review of the Literature." Clin Infect Dis 36 (2003): 1404-1410
2. FDA. U.S. Food and Drug Administration "Information for Healthcare Professionals. Fluoroquinolone Antimicrobial Drugs. FDA Alert [7/8/2008]. Available from: URL: http://www.fda.gov/cder/drug/InfoSheets/HCP/fluoroquinolonesHCP.htm." ([7/8/2008]):
3. "Product Information. Avelox (moxifloxacin)" Bayer, West Haven, CT.

Metilprednizolon-Siprofloksasin	iv-iv	C	Tendonit, tendon rüptürü riski artar	Lit-Label	MAJOR	Tendonit, tendon rüptürü riski artar	Lit-Label-FDA	Yakın izle	Tendon rüptürü riski artar

J Gen Intern Med. 2014 Nov; 29(11): 1559–1562.
PMCID: PMC4238198
Published online 2014 Jul 22. doi: 10.1007/s11606-014-2960-4

Ciprofloxacin-Induced Tendinopathy of the Gluteal Tendons

Kaumakaokalani Shimatsu, MD, Somasundaram Subramaniam, MD, Helen Sim, MD, and Paul Aronowitz, MD

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Abstract

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Fluoroquinolone-induced tendinopathy most commonly affects the Achilles tendon; however, involvement of several other tendons has been described. This is a case report of ciprofloxacin-induced tendinopathy of the gluteal tendons with MRI findings. An obese 25-year-old woman with no significant past medical history was diagnosed with acute pyelonephritis and was treated with intravenous ciprofloxacin. Shortly after her first dose of ciprofloxacin, she developed severe left hip pain and decreased range of motion. MRI of the hips showed bilateral tendinopathy of the gluteal muscle insertion. A diagnosis of ciprofloxacin-induced tendinopathy was made based on her MRI and a Naranjo score of 7. Ciprofloxacin was stopped and her pain quickly resolved. Fluoroquinolones cause tendinopathy in 0.14 % to 0.4 % of patients using these agents. Fluoroquinolone-associated tendinopathy is a serious adverse reaction that can affect many tendons and should be considered in any patient presenting with new musculoskeletal complaints and in whom there is a history of fluoroquinolone use within the preceding 6 months.

KEY WORDS: ciprofloxacin, fluoroquinolone, tendinopathy, tendon, gluteal

https://www.accessdata.fda.gov/drugsatfda_docs/appletter/2011/019537s075,019847s047,019857s054,020780s033,021473s028ltr.pdf

Title Blood Glucose Lowering Agents / Quinolones

Print

Risk Rating C: Monitor therapy

Summary Quinolones may enhance the hypoglycemic effect of Blood Glucose Lowering Agents. Quinolones may diminish the therapeutic effect of Blood Glucose Lowering Agents. Specifically, if an agent is being used to treat diabetes, loss of blood sugar control may occur with quinolone use. **Severity** Moderate **Reliability Rating** Fair

Patient Management Monitor for evidence of hypo- or hyperglycemia during concomitant administration of blood glucose lowering agents and quinolone antibiotics. Systemic gatifloxacin appears to pose the highest risk, but caution seems warranted with all quinolones. The risk of hypoglycemia appears greatest during the first few days of antibiotic therapy, while the risk of hyperglycemia is greater after several days of therapy.

Quinolones Interacting Members Ciprofloxacin (Systemic), Delafloxacin, Gemifloxacin, LevoFLOXacin (Oral Inhalation), LevoFLOXacin (Systemic), Lomefloxacin, Moxifloxacin (Systemic), Nalidixic Acid, Norfloxacin, Ofloxacin (Systemic), Pefloxacin, Pipemidic Acid, Sparfloxacin

Blood Glucose Lowering Agents Interacting Members Acarbose, Albiglutide, Alogliptin, Anagliptin, Bromocriptine, Canagliflozin, Chloroquine, ChlorproPAMIDE, Dapagliflozin, Disopyramide, Dulaglutide, Empagliflozin, Ertugliflozin, Evogliptin, Exenatide, Gemigliptin, Gliclazide, Glimepiride, GlipiZIDE, GlyBURIDE, Hydroxychloroquine, Insulin (Oral Inhalation), Insulin Aspart, Insulin Degludec, Insulin Detemir, Insulin Glargine, Insulin Glulisine, Insulin Lispro, Insulin NPH, Insulin Regular, Ipragliflozin, Lanreotide Linagliptin, Liraglutide, Lixisenatide, Lobeglitazone, Mecasermin, MetFORMIN, MiFEPRIStone, Miglitol, Mitiglinide, Nateglinide, Octreotide, Pasireotide, Pentamidine (Systemic), Perhexiline, Pioglitazone, Pramlintide, QuiNINE, Repaglinide, Rosiglitazone, SAXagliptin, Semaglutide, SITagliptin, Somatostatin Acetate, SulfADIAZINE, Sulfadoxine, Sulfamethoxazole, SulfiSOXAZOLE, SUNItinib, Teneligliptin, TOLAZamide, TOLBUTamide, Vildagliptin, Voglibose

Discussion Product labeling, case reports, and published studies have described an association between several quinolone antibiotics and glucose homeostasis abnormalities (i.e., hypo- and hyperglycemia) both independent of and in conjunction with other glucose-altering medications. Hyperglycemia associated with quinolones appears to be several-fold more common than hypoglycemia, accounting for 80-91% of all patients with any glucose abnormality in two retrospective studies.[1,2] The risk of abnormal glucose homeostasis does not appear to be equivalent among all quinolones, as systemic gatifloxacin appears to have a substantially greater risk than other quinolones,[1,3,4,5] though levofloxacin, ciprofloxacin, ofloxacin, and norfloxacin have also been implicated.[2,4,5,6,7,8,9,10]

Blood glucose lowering agents (alone and in combinations) have been associated with an increased risk of both hypoglycemia and hyperglycemia with concurrent quinolone antibiotics.[1,2,3,5] Of note, diabetes itself has also been identified as a risk factor for quinolone-associated glucose homeostasis abnormalities.[1,2,5]

Quinolones appear to have dual effects on pancreatic islet cells, initially stimulating insulin release but inhibiting insulin release after long-term exposure.[11,12,13,14] Data from studies showing that hypoglycemic effects usually occur within 1-2 days of initiating quinolone therapy while hyperglycemic effects tend to occur later in therapy lend support to this proposed mechanism.[1,3]

- Florokinolonlar, hipoglisemik ajanların etkilerini artırır
- Florokinolonlar, hipoglisemik ajanların etkilerini azaltır
- Pankreas hücrelerinde dual etkili: önce stimülasyon, sonra inhibisyon

FDA News Release

FDA updates warnings for fluoroquinolone antibiotics on risks of mental health and low blood sugar adverse reactions

For Immediate Release July 10, 2018

Release

The U.S. Food and Drug Administration today is requiring safety labeling changes for a class of antibiotics called fluoroquinolones to strengthen the warnings about the risks of mental health side effects and serious blood sugar disturbances, and make these warnings more consistent across the labeling for all fluoroquinolones taken by mouth or given by injection.

"The use of fluoroquinolones has a place in the treatment of serious bacterial infections — such as certain types of bacterial pneumonia — where the benefits of these drugs outweigh the risks, and they should remain available as a therapeutic option. The FDA remains committed to keeping the risk information about these products current and comprehensive to ensure that health care providers and patients consider the risks and benefits of fluoroquinolones and make an informed

Inquiries

Media

Theresa Eisenman
301-796-2969

Consumers

888-INFO-FDA

Related Information

- Fluoroquinolone Antimicrobial Drugs Information

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ITEM LİST

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- MethylPREDNISolone
- MetFORMIN
- Insulin Aspart Protamine and Insulin Aspart
- Ramipril
- Trimetazidine
- Pantoprazole
- Gaviscon Tablet [OTC]
- Isosorbide Mononitrate
- Metoprolol
- Ampicillin and Sulbactam

Display complete list of interactions for an individual item by clicking item name.

X	Avoid combination	C	Monitor therapy	A	No known interactio
D	Consider therapy modification	B	No action needed		*More about Risk Ratings*

13 Results

D	Ciprofloxacin (Systemic) (Quinolones) Gaviscon Tablet [OTC] (Antacids)
D	Ciprofloxacin (Systemic) (Quinolones) Gaviscon Tablet [OTC] (Magnesium Salts)
D	MethylPREDNISolone (Corticosteroids (Oral)) Gaviscon Tablet [OTC] (Antacids)
C	Ciprofloxacin (Systemic) (Quinolones) MethylPREDNISolone (Corticosteroids (Systemic))
C	Insulin Aspart Protamine and Insulin Aspart (Antidiabetic Agents) MethylPREDNISolone (Hyperglycemia-Associated Agents)
C	Insulin Aspart Protamine and Insulin Aspart (Blood Glucose Lowering Agents) Ciprofloxacin (Systemic) (Quinolones)
C	Insulin Aspart Protamine and Insulin Aspart (Hypoglycemia-Associated Agents) MetFORMIN (Antidiabetic Agents)
C	Insulin Aspart Protamine and Insulin Aspart (Insulins) Metoprolol (Beta-Blockers)
C	MetFORMIN Ramipril (Angiotensin-Converting Enzyme Inhibitors)
C	MetFORMIN (Antidiabetic Agents) MethylPREDNISolone (Hyperglycemia-Associated Agents)
C	MetFORMIN (Blood Glucose Lowering Agents) Ciprofloxacin (Systemic) (Quinolones)
B	Ciprofloxacin (Systemic) (Quinolones) Ramipril (Angiotensin-Converting Enzyme Inhibitors)
B	Insulin Aspart Protamine and Insulin Aspart (Blood Glucose Lowering Agents)

Metabolic Effects of Carvedilol♥ vs Metoprolol in Patients With Type 2 Diabetes Mellitus and Hypertension

Format: Abstract Send to

Lancet. 2003 Jul 5;362(9377):7-13.

Comparison of carvedilol and metoprolol on clinical outcomes in patients with chronic heart failure in the Carvedilol Or Metoprolol European Trial (COMET): randomised controlled trial.

Poole-Wilson PA[1], Swedberg K, Cleland JG, Di Lenarda A, Hanrath P, Komajda M, Lubsen J, Lutiger B, Metra M, Remme WJ, Torp-Pedersen C, Scherhag A, Skene A; Carvedilol Or Metoprolol European Trial Investigators.

Author information

Abstract

BACKGROUND: Beta blockers reduce mortality in patients who have chronic heart failure, systolic dysfunction, and are on background treatment with diuretics and angiotensin-converting enzyme inhibitors. We aimed to compare the effects of carvedilol and metoprolol on clinical outcome.

METHODS: In a multicentre, double-blind, and randomised parallel group trial, we assigned 1511 patients with chronic heart failure to treatment with carvedilol (target dose 25 mg twice daily) and 1518 to metoprolol (metoprolol tartrate, target dose 50 mg twice daily). Patients were required to have chronic heart failure (NYHA II-IV), previous admission for a cardiovascular reason, an ejection fraction of less than 0.35, and to have been treated optimally with diuretics and angiotensin-converting enzyme inhibitors unless not tolerated. The primary endpoints were all-cause mortality and the composite endpoint of all-cause mortality or all-cause admission. Analysis was done by intention to treat.

FINDINGS: The mean study duration was 58 months (SD 6). The mean ejection fraction was 0.26 (0.07) and the mean age 62 years (11). The all-cause mortality was 34% (512 of 1511) for carvedilol and 40% (600 of 1518) for metoprolol (hazard ratio 0.83 [95% CI 0.74-0.93], p=0.0017). The reduction of all-cause mortality was consistent across predefined subgroups. The composite endpoint of mortality or all-cause admission occurred in 1116 (74%) of 1511 on carvedilol and in 1160 (76%) of 1518 on metoprolol (0.94 [0.86-1.02], p=0.122). Incidence of side-effects and drug withdrawals did not differ by much between the two study groups.

INTERPRETATION: Our results suggest that carvedilol extends survival compared with metoprolol.

Comment in

hronic heart failure. [ACP J Club. 2004]
bout dose. [Lancet. 2003]
bout dose. [Lancet. 2003]
prolol in heart failure? [Expert Opin Pharmacother. 2004]
bout dose. [Lancet. 2003]
2003]
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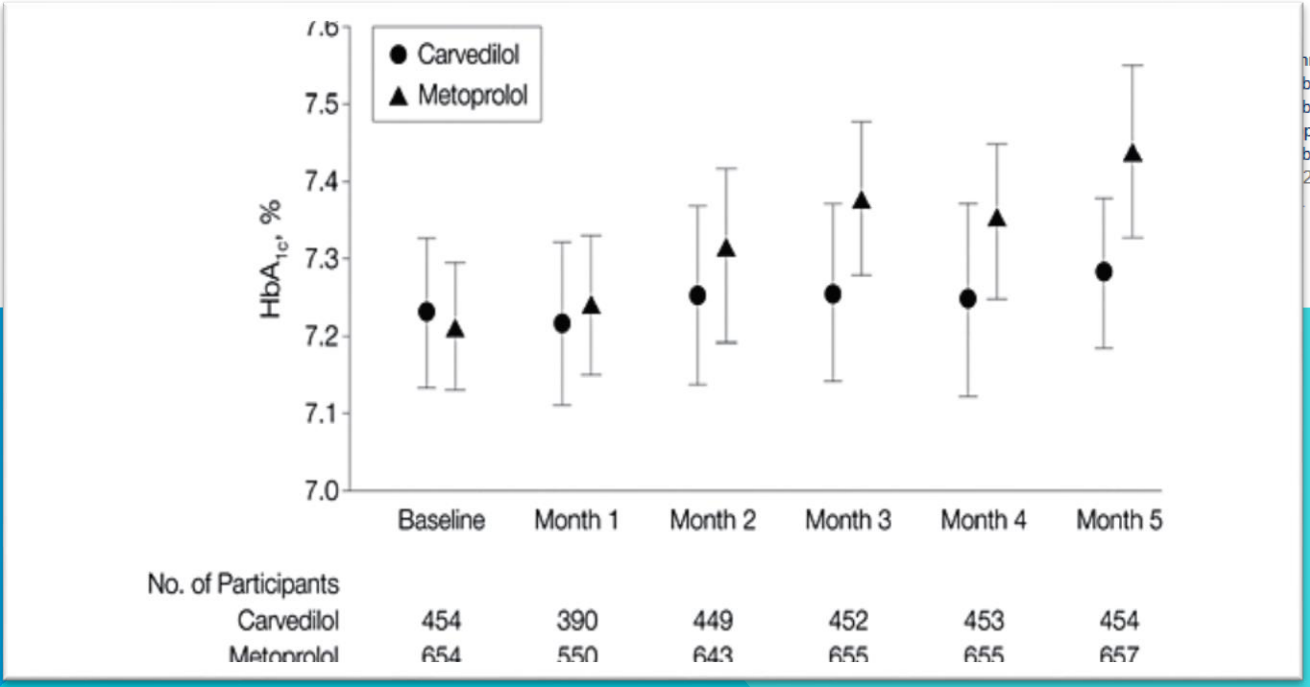

JAMA

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Risk Evaluation and Mitigation Strategies (REMS)

FDA warns about increased risk of ruptures or tears in the aorta blood vessel with fluoroquinolone antibiotics in certain patients

This information is an update to the FDA announcement issued on **May 10, 2017**

Safety Announcement

[12-20-2018] A U.S. Food and Drug Administration (FDA) review found that fluoroquinolone antibiotics can increase the occurrence of rare but serious events of ruptures or tears in the main artery of the body, called the aorta. These tears, called aortic dissections, or ruptures of an aortic aneurysm can lead to dangerous bleeding or even death. They can occur with fluoroquinolones for systemic use given by mouth or through an injection.

Fluoroquinolones should not be used in patients at increased risk unless there are no other treatment options available. People at increased risk include those with a history of blockages or aneurysms (abnormal bulges) of the aorta or other blood vessels, high blood pressure, certain genetic disorders that involve blood vessel changes, and the elderly. We are requiring that a new warning about this risk be added to the prescribing information and patient Medication Guide for all fluoroquinolones.

Fluoroquinolone antibiotics are approved to treat certain bacterial infections and have been used for more than 30 years. They work by killing or stopping the growth of bacteria that can cause illness. Without treatment, some infections can spread and lead to serious health problems (see List of Currently Available FDA-Approved Systemic Fluoroquinolones).

Health care professionals should avoid prescribing fluoroquinolone antibiotics to patients who have an aortic aneurysm or are at risk for an aortic aneurysm, such as patients with peripheral atherosclerotic vascular diseases, hypertension, certain genetic conditions such as Marfan syndrome and Ehlers-Danlos syndrome, and elderly patients. Prescribe fluoroquinolones to these patients only when no other treatment options are available. Advise all patients to seek immediate medical treatment for any symptoms associated with aortic aneurysm. Stop fluoroquinolone treatment immediately if a patient reports side effects suggestive of aortic aneurysm or dissection.

Patients should seek medical attention immediately by going to an emergency room or calling 911 if you

Çözüm önerisi:

Siprofloksasin kullanmasak olur mu?

OLGU 5

71 yaş, kadın hasta

Hipertansiyon

Diabetes mellitus

Aritmi

Multipl myelom

Mart 2017 → Otolog kemik iliği nakli

Üşüme-titreme ile yükselen 39^0 C ateş

İnfeksiyon Hastalıkları Konsültasyonu;

Ek şikayeti ve patolojik fizik muayene bulgusu yok

Nötropenik

Piperasilin-tazobaktam 4x4,5 gr IV

3. gün 38,7^{0} C, üşüme-titreme ile yükselen ateş

İnfeksiyon Hastalıkları Konsültasyonu;

Piperasilin-tazobaktam kesilmesi

Meropenem 3x2 gr IV başlanması

Bol sulu, kan ve mukus içermeyen ishal

Metronidazol 3x500 mg po

Hasta İlaç Tabelası

Amlodipin/Valsartan (Exforge®)

Valasiklovir (Valtrex®)

Trimetoprim-sulfametoksazol (Bactrim®)

Doksazosin (Cardura®)

Warfarin (Coumadin®)

Pantoprazol (Protect®)

Metoprolol (Saneloc®)

Metformin (Glukofen®)

İnsülin (Novomix®)

Amlodipin/Valsartan ♥

Valasiklovir

Trimetoprim-Sulfametoksazol

Doksazosin ♥

Warfarin

Metronidazol

Pantoprazol

Metoprolol

Metformin

İnsülin

Meropenem

MEDSCAPE

- Dahili kliniklerde en çok kullanılan antibiyotik: **meropenem(62/516)**

Drug Interaction Checker

Enter a drug, OTC or herbal supplement:

metroni

Print

21 Interactions Found

Patient Regimen — Clear All

- pantoprazole
- valsartan/amlodipine
- valacyclovir
- trimethoprim/sulfamethoxazole
- doxazosin
- warfarin
- metoprolol
- metformin
- insulin aspart protamine/insulin aspart
- meropenem
- metronidazole

Serious - Use Alternative

metronidazole + warfarin

metronidazole increases levels of warfarin by decreasing metabolism. Avoid or Use Alternate Drug.

sulfamethoxazole + warfarin

sulfamethoxazole increases effects of warfarin by decreasing metabolism. Avoid or Use Alternate Drug.

sulfamethoxazole + warfarin

sulfamethoxazole increases effects of warfarin by plasma protein binding competition. Avoid or Use Alternate Drug.

Monitor Closely

sulfamethoxazole + warfarin

sulfamethoxazole will increase the level or effect of warfarin by affecting hepatic enzyme CYP2C9/10

Warfarin etkisi artar

- Warfarin CYP2C9 (major) ve CYP3A4 ile metabolize oluyor; metronidazol CYP2C9 inhibitörü
- Sulfametoksazol, warfarini bağlanma yerinden ayırıyor, hem de metabolizmasını azaltıyor

TABLE 2

Antimicrobials likely to increase INR when used with warfarin[9]

Azithromycin
Ciprofloxacin
Clarithromycin
Fluconazole and other azole antifungals
Levofloxacin
Metronidazole*
Trimethoprim/sulfamethoxazole*

INR, international normalized ratio.

*Preemptive warfarin dose reduction recommended.

Glisemi kontrolü zorlaşır

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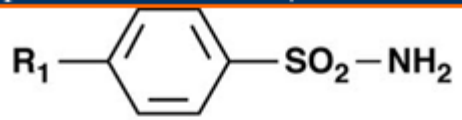
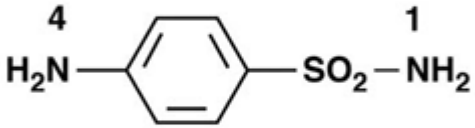
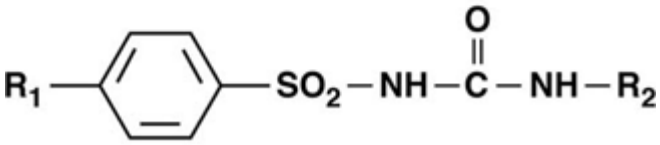


para-substituted arylsulfonamide backbone



general antibacterial sulfonamide structure



general sulfonylurea structure

American Diabetes Association. Diabetes Care

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Original Research

Valsartan Improves β-Cell Function and Insulin Sensitivity in Subjects With Impaired Glucose Metabolism

A randomized controlled trial

Nynke J. van der Zijl, MD[1], Chantalle C.M. Moors, MSC[2], Gijs H. Goossens, PHD[2], Marc M.H. Hermans, MD, PHD[2], Ellen E. Blaak, PHD[2] **and** Michaela Diamant, MD, PHD[1]

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N.J.v.d.Z. and C.C.M.M. contributed equally to this work.

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https://doi.org/10.2337/dc10-2224

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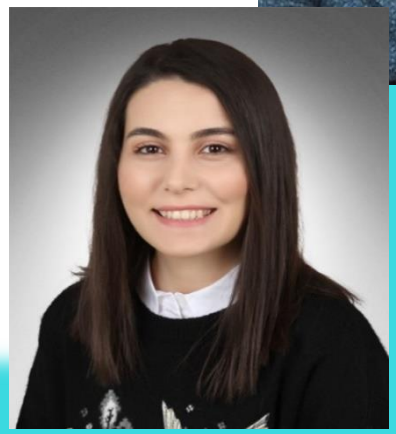


Ankara Üniversitesi Hastanelerinde Sistemik Antibiyotik Kullanan Hastalarda İlaç Etkileşimlerinin Araştırılması

- En çok kullanılan molekül

pantoprazol

GASTROENTEROLOGY

Overuse of Proton Pump Inhibitors in the Hospitalized Patient

Mia N. Barnes, PharmD, BCPS
Clinical Pharmacist Specialist-Infectious Diseases
The George Washington University Hospital
Washington, DC

US Pharm. 2015;40(12):HS22-HS25.

ABSTRACT: *Stress ulcer prophylaxis (SUP) has been a significant component in the management of critically ill patients. Antisecretory therapy, particularly proton pump inhibitors (PPIs), has been one of the most commonly utilized medications for SUP in hospital settings. However, several research studies have demonstrated that the overutilization of these agents has led to significant increases in hospital-related expenditures and adverse effects. Pharmacists play a unique role in improving the appropriate use and management of PPI therapy within the hospital setting.*

Fracture risk. Some studies have shown an association between PPIs and the risk of fracture — particularly hip fracture — while others have not. The FDA decided in 2010 that there was enough evidence of fracture risk to warrant a warning about it. Calcium is absorbed in the small intestine, not the stomach. But low stomach acid levels can have downstream effects, especially in the duodenum, and some research shows that one of them could be reduced absorption of calcium, which could lead to osteoporosis, weaker bones, and, consequently, a greater chance of breaking a bone. The fracture risk is probably pretty small, but it's another reason for not taking a PPI unless necessary.

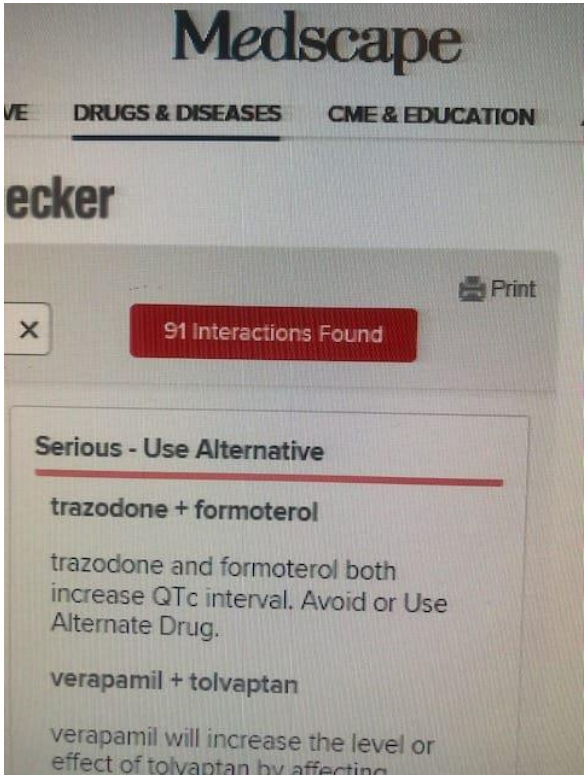
Pneumonia risk. Several studies have shown that people taking PPIs seem to be more likely to get pneumonia than those who aren't. The association has been documented among people living in the community and hospital patients alike. Normally, stomach acid creates a fairly inhospitable environment for bacteria, but if acid levels are reduced by PPIs, the bacteria count can go up. The thinking is that in people with GERD who take PPIs, bacteria-laden stomach contents may travel up the esophagus and then get inhaled into the windpipe and lungs, where the bacteria cause pneumonia.

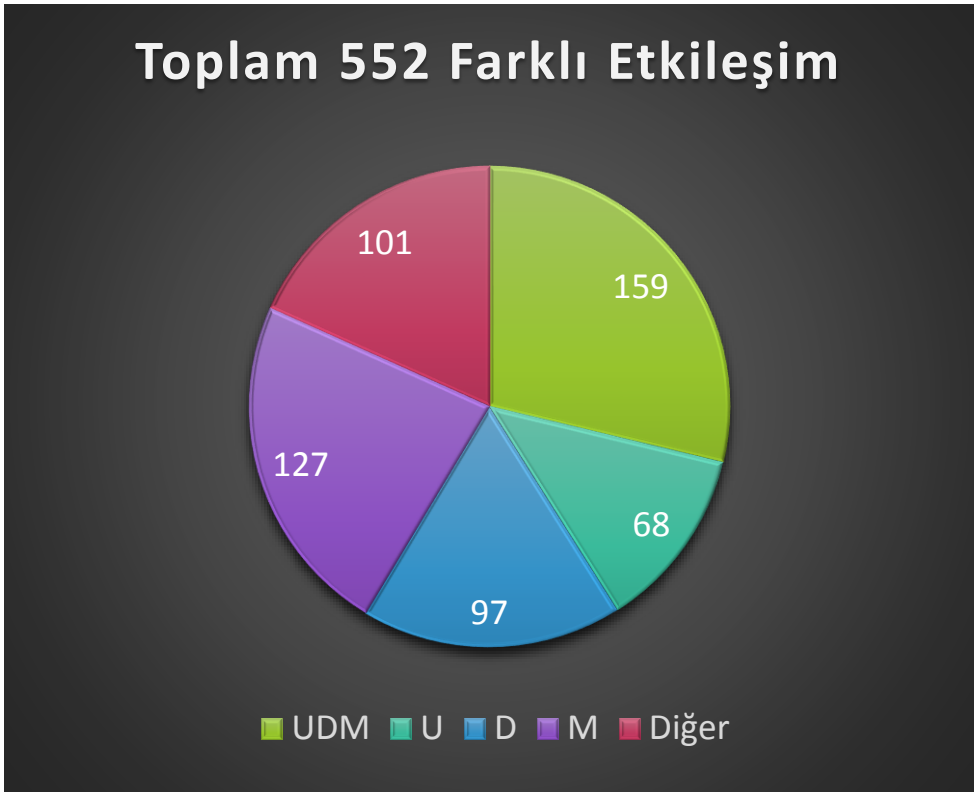
C. difficile *risk.* People typically develop *Clostridium difficile* infections in the hospital after taking antibiotics that have disrupted the natural bacterial ecology of the large intestine. The infections cause diarrhea but can also become a lot more serious, even life-threatening. Studies have shown a fairly strong statistical correlation between PPI use and *C. difficile* infection, although it's still just a correlation and not proof of direct cause and effect. Some experimental evidence suggests that PPIs may change conditions in the gut to be more favorable to *C. difficile* bacteria.

https://www.health.harvard.edu/diseases-and-conditions/proton-pump-inhibitors

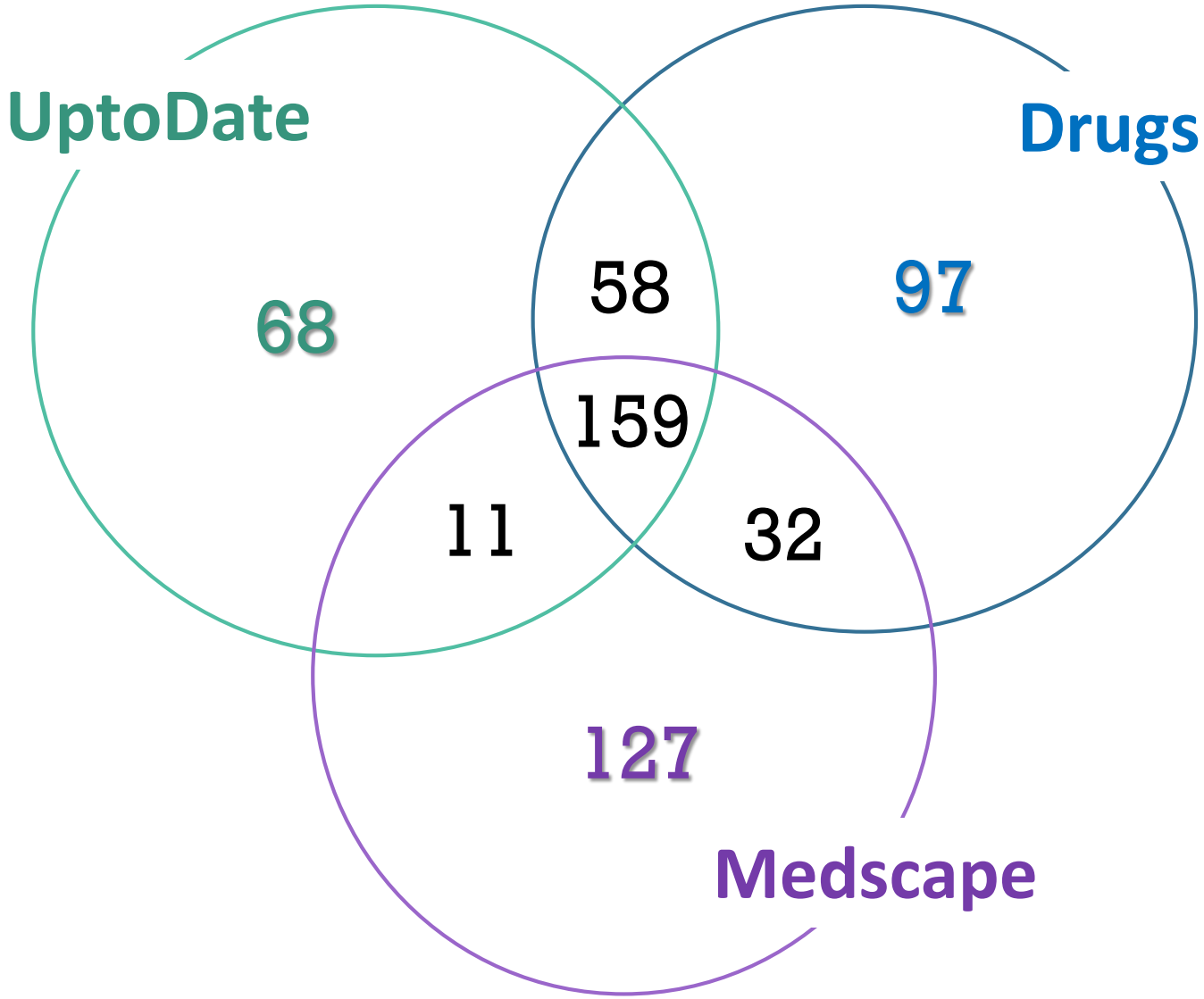
XXX YB; 42 yaşında; Kadın

1. Kolistimetat
2. Meropenem
3. Sodyum bikarbonat
4. Sevelamer
5. Albumin
6. Metronidazol
7. Lerkanidipin
8. Salbutamol
9. Furosemit
10. Kondroitin
11. Fusidik asit (top)
12. Doksazosin
13. Karvedilol
14. Valsartan
15. Deksametazon
16. Pantoprazol
17. Metoklopramit
18. Domperidon
19. Gentamisin
20. Kloramfenikol (top)
21. Hidroksiklorokin
22. Fenitoin
23. Elektrolit çözeltisi
24. Triticum vulgare
25. Dekstran 70/Hidroksipropil metilselüloz) (oft)
26. Karbomer
27. Lidokain (top)
28. Budesonit
29. Flukonazol
30. İpratropium





Toplam 552 farklı etkileşimden 159'unu her 3 veri tabanı da verirken,
127 etkileşimi yalnızca Medscape,
101 etkileşimi herhangi 2 veri tabanı (UD, UM ya da DM) bildirmiş
…


UptoDate
Drugs
Medscape
68
58
97
159
11
32
127

1. Tüm etkileşimlerden ORTAK olanları ne oranda buldu?

2. Tüm veri tabanlarının MAJOR olarak bildirdiklerini ne oranda buldu?

UptoDate hem –diğer veri tabanlarının da bulduğu- etkileşmeleri bulmak hem de majör etkileşimleri bulmak açılarından Drugs ve Medscape'e a kıyasla daha güvenilir

29th ECCMID EUROPEAN CONGRESS OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES

Amsterdam, Netherlands
13 – 16 April 2019

Basel, 21 February 2019

Abstract No: **2321**

Title: *Systemic antibiotic-related drug interactions in a university hospital: a point prevalence study*

Session name: **Safety of antibacterial agents in the clinic**

Session type: **Paper Poster Session**

Session time: **13:30h - 14:30h**

Session date: **15/04/2019**

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Seattle, WA

GREY'S ANATOMY

Dr. Derek Shepherd

Dr. Callie Torres

County General Hospital in Chicago, IL

ockhart

Dr. Doug Ross

- Veri tabanları vs **EFEKTİF** farmakoloji bilgisi

- Plan B: PPI azaltmayı düşünebiliriz

- Antibiyotiklerle ilişkili etkileşimlere zaten aşinalık var…