HASTANEDE ANTiMiKROBiYAL TÜKETiMiN ÖLÇÜLMESi

Uzm.Ecz.Aslı Özyıldırım

Koç Sağlık Grubu Eczane Direktörü

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Koc Healthcare Chief of Pharmacy

ATC (*Anatomical Therapeutic Chemical*)

- Aktif maddeler farklı gruplara ayrılır:
  - Etki ettikleri organ / sistem
  - Terapötik özellikler
  - Farmakolojik özellikler
  - Kimyasal özellikler

ATC (*1.Seviye*)

14 Ana Grup
(Anatomik&Farmakolojik)
5 seviye

Code	*Contents*
A	Alimentary tract and metabolism
B	Blood and blood forming organs
C	Cardiovascular system
D	Dermatologicals
G	Genito-urinary system and sex hormones
H	Systemic hormonal preparations, excluding sex hormones and insulins
J	Antiinfectives for systemic use
L	Antineoplastic and immunomodulating agents
M	Musculo-skeletal system
N	Nervous system
P	Antiparasitic products, insecticides and repellents
R	Respiratory system
S	Sensory organs
V	Various

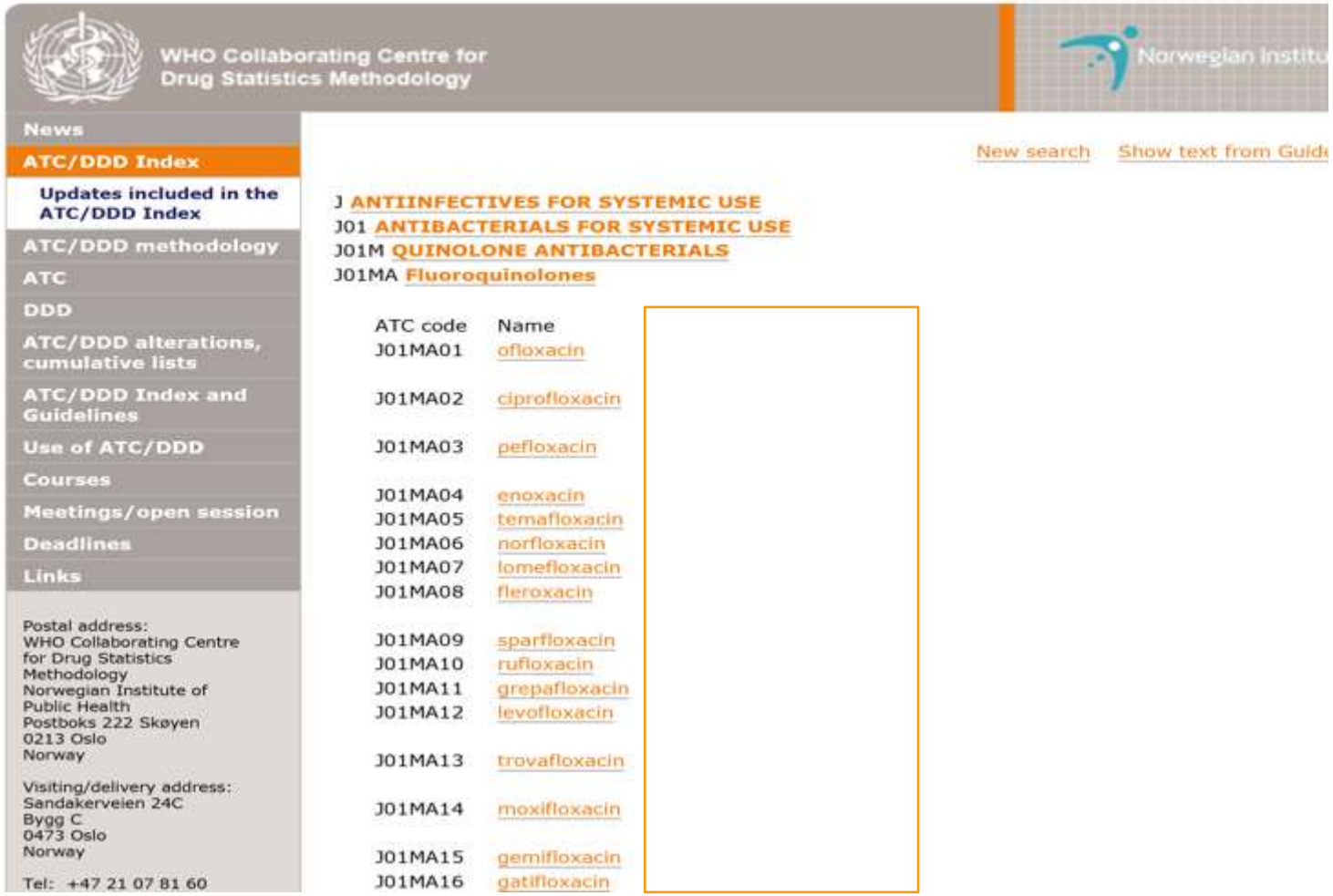
ATC (*2.Seviye*)

Farmasötik ve Terapötik gruplar

ATC (*3. ve 4.Seviye*)

Kimyasal, Farmasötik
ve Terapötik alt gruplar

ATC (*5.Seviye*)



Etken madde

ATC (*Anatomical Therapeutic Chemical*)

- İki veya daha fazla dozda veya açıkça farklı terapötik kullanımlara sahip uygulama yollarında mevcutsa, bir tıbbi maddeye birden fazla ATC kodu verilebilir
  - Finasterid:
    - Erkek tipi kellik tedavisi için düşük mukavemetli bir tablet D11AX - Diğer dermatolojikler altında sınıflandırılmıştır.
    - Benign prostat hipertrofisinin (BPH) tedavisinde kullanılan yüksek mukavemetli bir tablet, G04C - BPH'de kullanılan İlaçlar altında sınıflandırılmıştır

ATC (*Anatomical Therapeutic Chemical*)

- Tek bileşenli ürünlerde Prednisolone, farklı terapötik kullanım ve farklı formülasyonlar nedeniyle birkaç ATC kodu verilir.

  - A07EA01 Intestinal antiinflammatory agents (enemas and foams)
  - C05AA04 Antihemorrhoidals for topical use (suppositories)
  - D07AA03 Dermatological preparations (creams, ointments and lotions)
  - H02AB06 Corticosteroids for systemic use (tablets, injections)
  - R01AD02 Nasal decongestants (nasal sprays/drops)
  - S01BA04 Ophthalmologicals (eye drops)
  - S02BA03 Otologicals (ear drops)

ATC (*Anatomical Therapeutic Chemical*)

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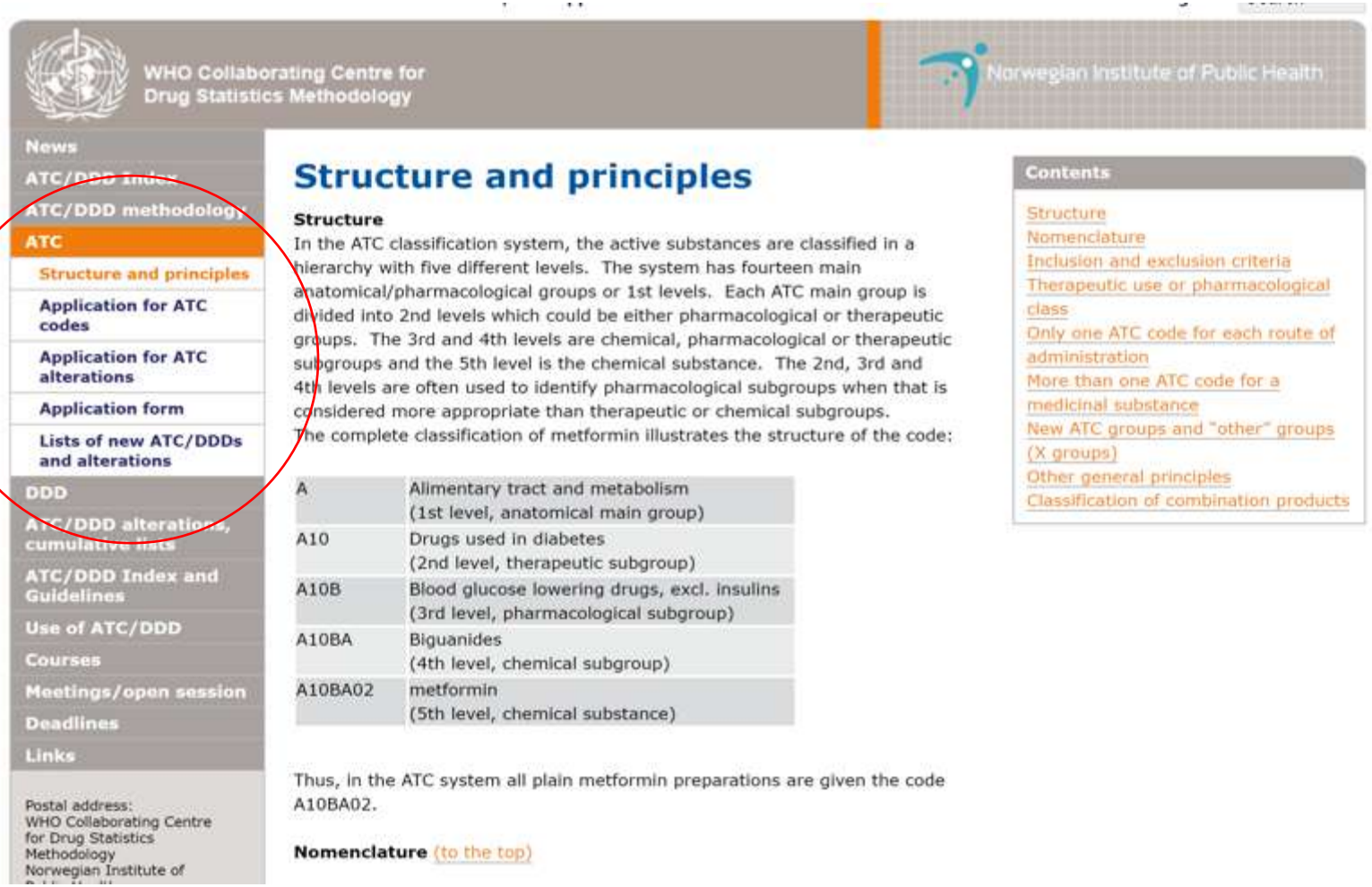
M MUSCULO-SKELETAL SYSTEM
M01 ANTIINFLAMMATORY AND ANTIRHEUMATIC PRODUCTS
M01A ANTIINFLAMMATORY AND ANTIRHEUMATIC PRODUCTS, NON-STEROIDS
M01AE Propionic acid derivatives

ATC code	Name	DDD	U	Adm.R	Note
M01AE02	naproxen	0.5	g	O	
		0.5	g	R	

List of abbreviations

Last updated: 2018-12-13

ATC (*Anatomical Therapeutic Chemical*)



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Structure and principles

Structure

In the ATC classification system, the active substances are classified in a hierarchy with five different levels. The system has fourteen main anatomical/pharmacological groups or 1st levels. Each ATC main group is divided into 2nd levels which could be either pharmacological or therapeutic groups. The 3rd and 4th levels are chemical, pharmacological or therapeutic subgroups and the 5th level is the chemical substance. The 2nd, 3rd and 4th levels are often used to identify pharmacological subgroups when that is considered more appropriate than therapeutic or chemical subgroups. The complete classification of metformin illustrates the structure of the code:

A	Alimentary tract and metabolism (1st level, anatomical main group)
A10	Drugs used in diabetes (2nd level, therapeutic subgroup)
A10B	Blood glucose lowering drugs, excl. insulins (3rd level, pharmacological subgroup)
A10BA	Biguanides (4th level, chemical subgroup)
A10BA02	metformin (5th level, chemical substance)

Thus, in the ATC system all plain metformin preparations are given the code A10BA02.

Nomenclature (to the top)

Contents

Structure
Nomenclature
Inclusion and exclusion criteria
Therapeutic use or pharmacological class
Only one ATC code for each route of administration
More than one ATC code for a medicinal substance
New ATC groups and "other" groups (X groups)
Other general principles
Classification of combination products

DDD (*Defined Daily Dose-Tanımlanmış Günlük Doz*)

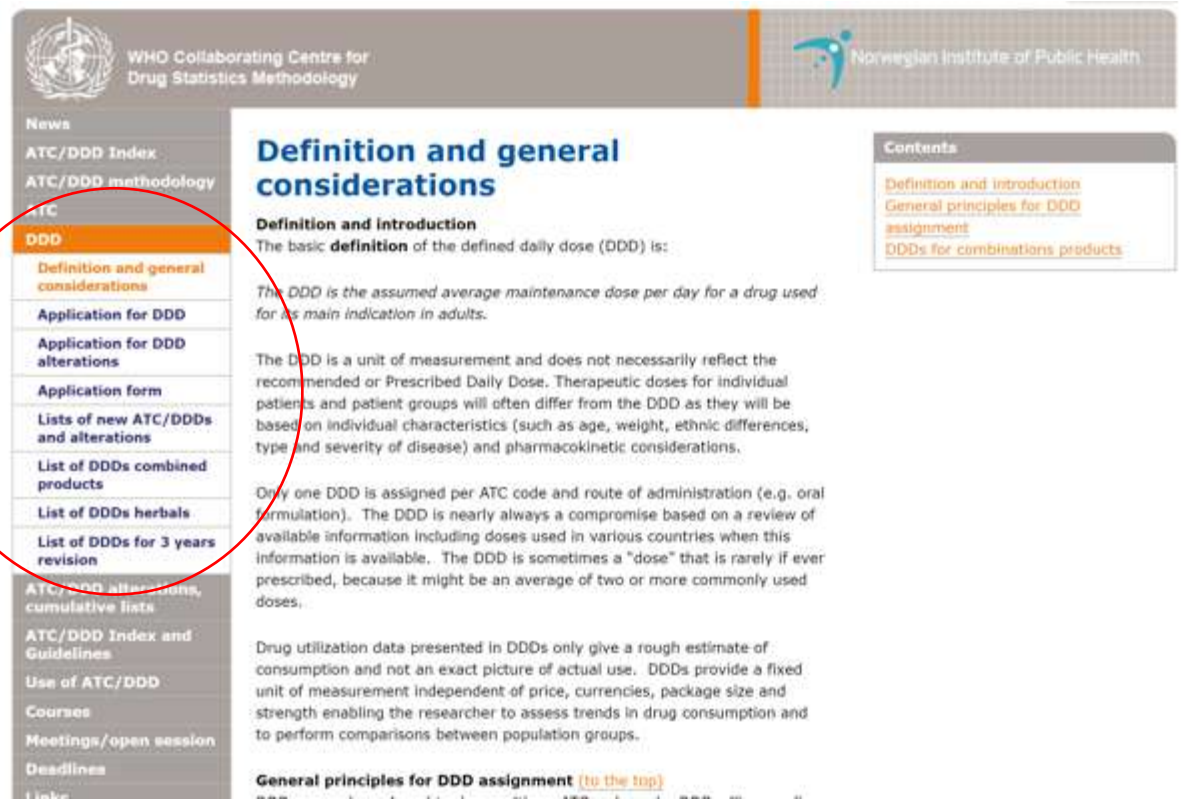
- Yetişkinlerde ana endikasyonda kullanılan bir ilaç için günlük ortalama bakım dozu
- DDD bir ölçüm birimidir, önerilen ya da reçete edilen dozu yansıtmaz
- Hastaların bireysel farklılıklarından (yaş, ağırlık, etnik köken, cinsiyet..) bağımsızdır
- İlaç tüketimin kabaca hesaplanması esasına dayanır
- İlacın satış fiyatı ya da ambalaj içeriğinden bağımsız bir değerdir

DDD (*Defined Daily Dose-Tanımlanmış Günlük Doz*)

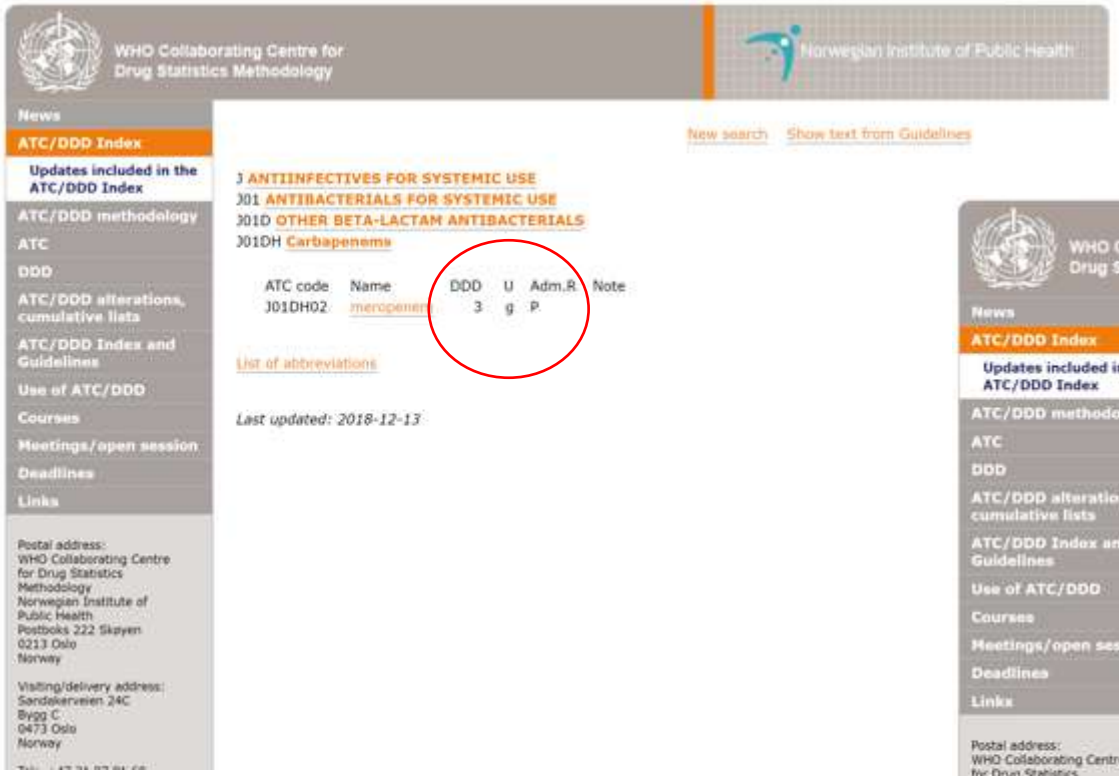
- Ortak payda da buluşmayı sağlayan karşılaştırma ölçütüdür
- İstisnai durumlar
  - Nadir hastalıklar
  - Yüksek derecede bireysel dozlar
  - Topikal preparatlar
  - Aşılar
  - Kemoterapi ajanları
  - Lokal anestezikler
  - Allerjenler

DDD (*Defined Daily Dose-Tanımlanmış Günlük Doz*)

- Çoklu etken maddeler**
- Parenteral dozlar** (Aynı DDD)



ATC/DDD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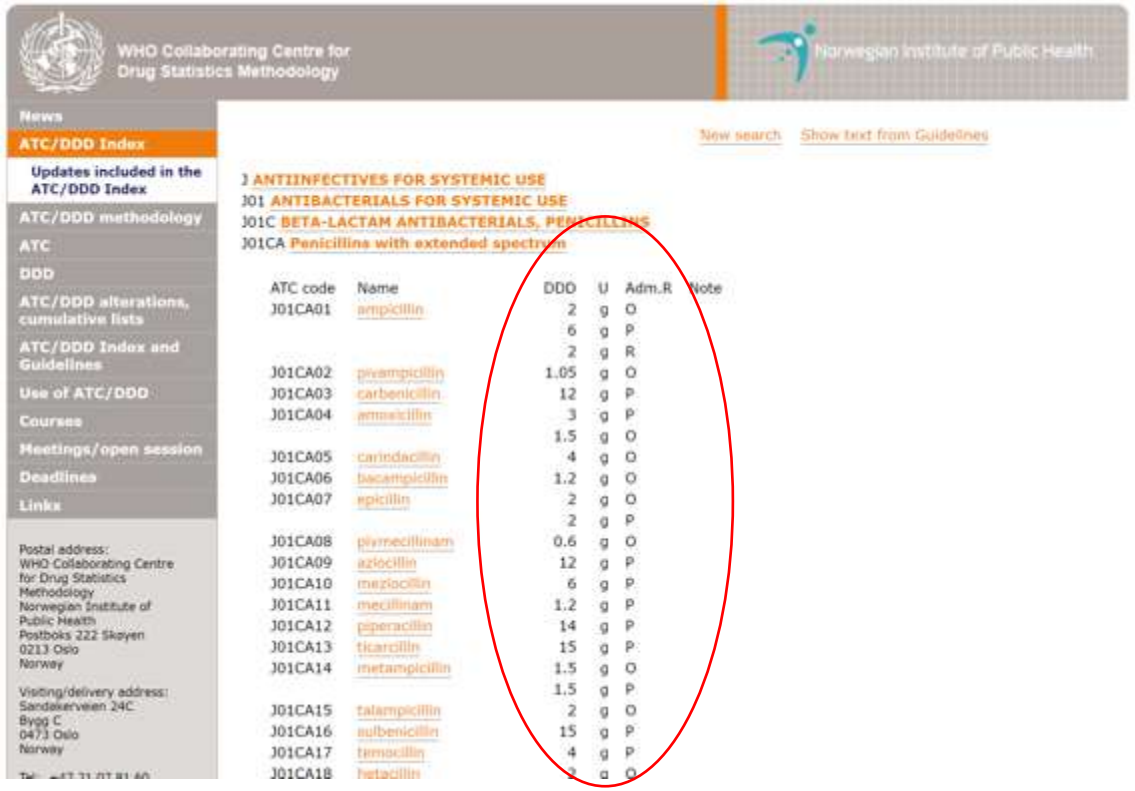
J ANTIINFECTIVES FOR SYSTEMIC USE
J01 ANTIBACTERIALS FOR SYSTEMIC USE
J01D OTHER BETA-LACTAM ANTIBACTERIALS
J01DH Carbapenems
ATC code
Name
DDD
U
Adm.R
Note
J01DH02
meropenem
3
g
P
List of abbreviations
Last updated: 2018-12-13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J ANTIINFECTIVES FOR SYSTEMIC USE
J01 ANTIBACTERIALS FOR SYSTEMIC USE
J01C BETA-LACTAM ANTIBACTERIALS, PENICILLINS
J01CA Penicillins with extended spectrum
ATC code
Name
DDD
U
Adm.R
Note
J01CA01 ampicillin 2 g O
6 g P
2 g R
J01CA02 pivampicillin 1.05 g O
J01CA03 carbenicillin 12 g P
J01CA04 amoxicillin 3 g P
1.5 g O
J01CA05 carindacillin 4 g O
J01CA06 bacampicillin 1.2 g O
J01CA07 epicillin 2 g O
2 g P
J01CA08 pivmecillinam 0.6 g O
J01CA09 azlocillin 12 g P
J01CA10 mezlocillin 6 g P
J01CA11 mecillinam 1.2 g P
J01CA12 piperacillin 14 g P
J01CA13 ticarcillin 15 g P
J01CA14 metampicillin 1.5 g O
1.5 g P
J01CA15 talampicillin 2 g O
J01CA16 sulbenicillin 15 g P
J01CA17 temocillin 4 g P
J01CA18 hetacillin 2 g O

AT (*Antibiyotik Tüketim İndeksi*)

$$DDD = \frac{\text{Number of Units} \times \text{Amount of drug per unit}}{DDD \text{ of the drug}}$$

in general we express hospital consumption as a use density :

$$DDD/100 \text{ hospital-days} = \frac{\text{number of daily doses} \times 100}{\text{number of care days}}$$

as only use density allows comparisons

AT (*Antibiyotik Tüketim İndeksi*)

- Meropenem
  - DDD: 3 (WHO)
  - Aylık Tüketim (Ocak): 2530 kutu
  - Hasta yatış gün sayısı (Ocak): 5954
  - 1000 hasta gününde kullanılan meropenem kutu miktarı:

    (Aylık Tüketim x 1000) / Hasta yatış gün sayısı

    (2530 X 1000) / 5954 = 425
  - AT:

    (1000 hasta gününde kullanılan meropenem kutu miktarı / DDD)

    425 / 3 = <u>142</u>

AT (*Antibiyotik Tüketim İndeksi*)

- Seftriakson
  - DDD: 2 (WHO)
  - Aylık Tüketim (Ocak): 910 kutu
  - Hasta yatış gün sayısı (Ocak): 5954
  - 1000 hasta gününde kullanılan seftriakson kutu miktarı:

    (Aylık Tüketim X 1000) / Hasta yatış gün sayısı

    (910 X 1000) / 5954 = 153
  - AT:

    (1000 hasta gününde kullanılan seftriakson kutu miktarı / DDD)

    153 / 2 = <u>76</u>

RDD vs PDD

Multiple definitions and indicators

- DDD (Defined Daily Dose) : Assumed average maintenance dose per day for a drug used for its main indication in adults. (`www.whocc.no`). *Unrealistic (overestimation) but useful for international comparisons.*
- PDD (Prescribed Daily dose) : *Preferable!!!*
- RDD (Recommended Daily Dose) (`www.antiinfektiva-surveillance.de`) : *The German touch : Realistic but very "local".*

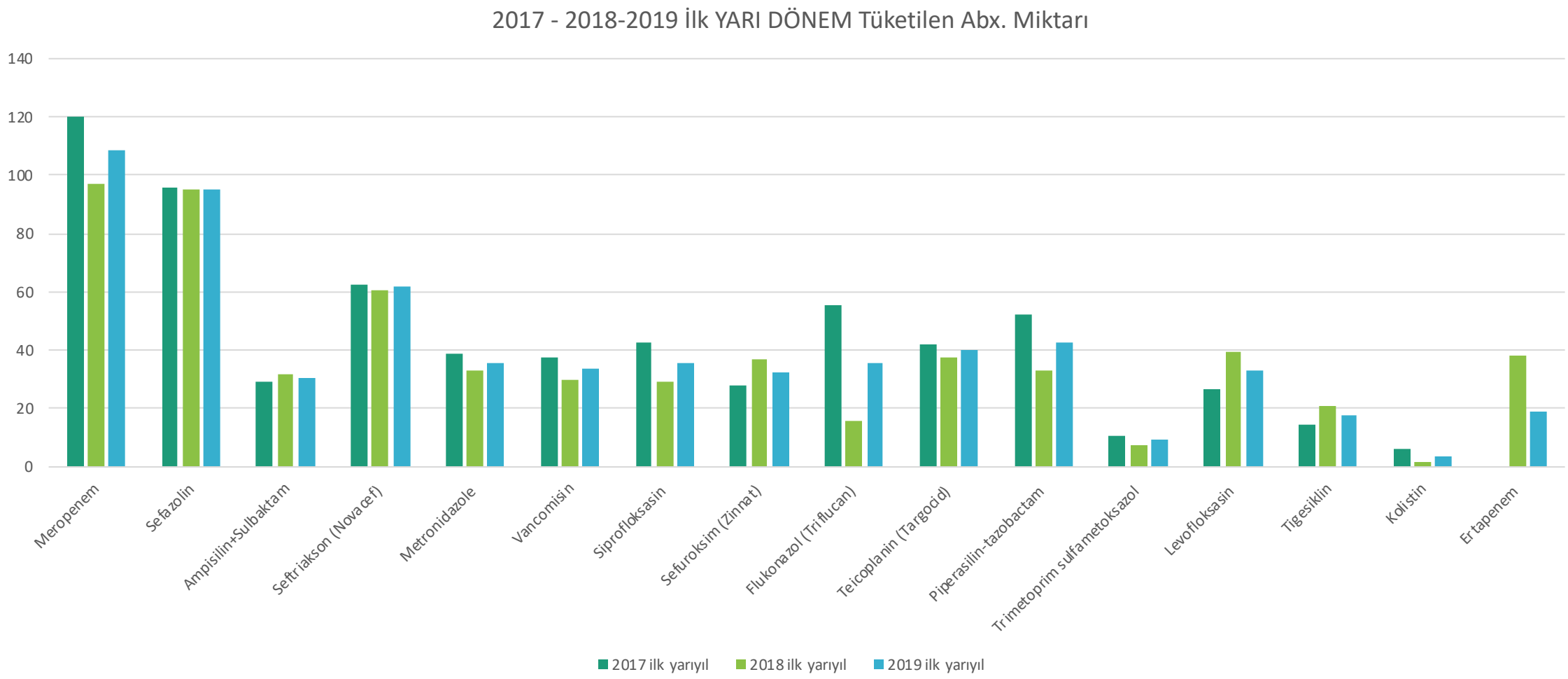
	Günlük Uygulama Dozu	Günde Kaç Kutu Abx. Kullanılıyor	Ocak N:Tüketilen Antibiyotik Kutu Sayısı	Bir ay içinde 1000 hasta gününde Kullanılan anb. Kutu sayısı Miktarı	Ocak Ayı DDD
Meropenem	3x1 gr	3	2530	425	142
Sefazolin	3x1 gr	3	1530	257	86
Ampisilin+Sulbaktam	4x1 gr	4	460	77	19
Seftriakson	2x1 gr	2	910	153	76
Metronidazole	3x0,5 gr	3	430	72	24
Vancomisin	2x1 gr	2	326	55	27
Siprofloksasin	2x 0,2 gr	2	296	50	25
Sefuroksim	3x0,75 gr	3	582	98	33
Flukonazol	1x50 ml	1	78	13	13
Teicoplanin	1x 0,4 gr	1	322	54	54
Piperasilin-tazobactam	3x4.5 gr	1	333	56	56
Trimetoprim sulfametoksazol	2x80 mg	2	15	3	1
Levofloksasin	1 x 0,5 gr	1	218	37	37
Tigesiklin	1 x 0,1 gr	1	181	30	30
Kolistin	2 x 0,15gr	2	22	4	2
Ertapenem	2x1 gr	1	211	35	35
Toplam Yatan Hasta Sayısı			1688		
Toplam Hasta Yatış Günü			5954		

..... Hasta yatış gününde ..... Kutu Antibiyotik kullandı ise 1000 hasta gününde .....x.... kutu antibiyotik kullanmıştır?

x kutu antibiyotik / DDD = y (gün sayısı kadar antibiyotik kullanılmıştır)

1000 hasta gününde y gün sayısı kadar antibiyotik kullanılmıştır.

Antibiyotik Tüketimi (AT)



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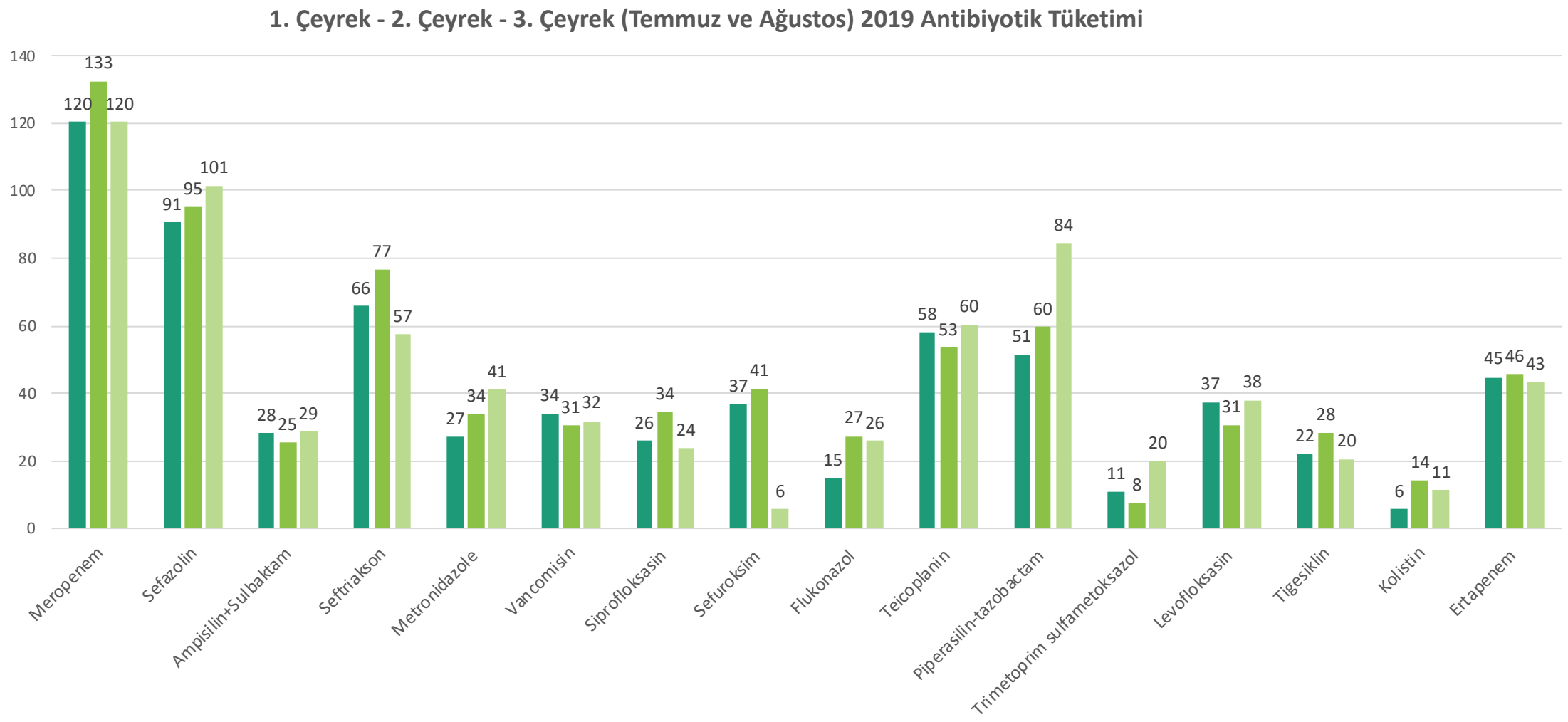
Antibiyotik Tüketimi (AT)



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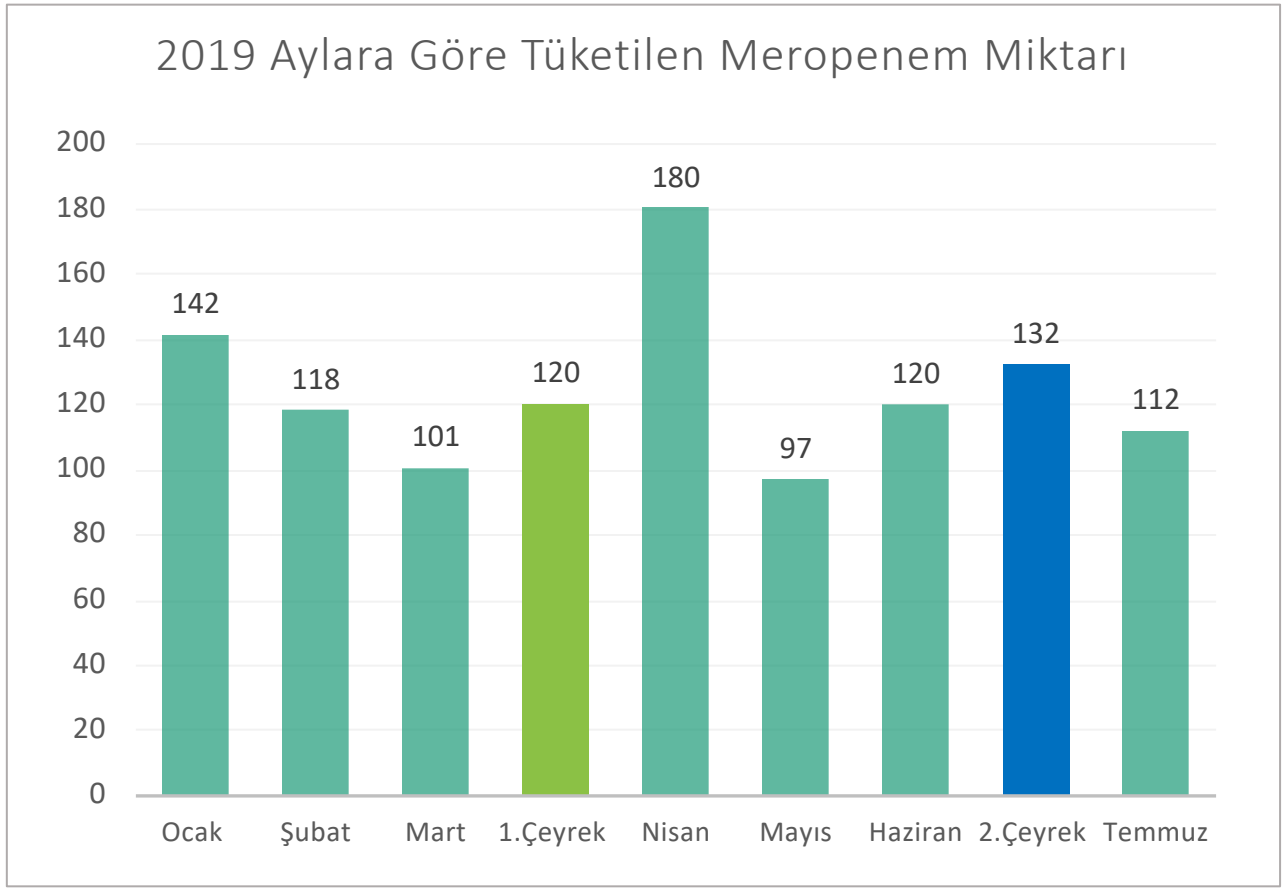
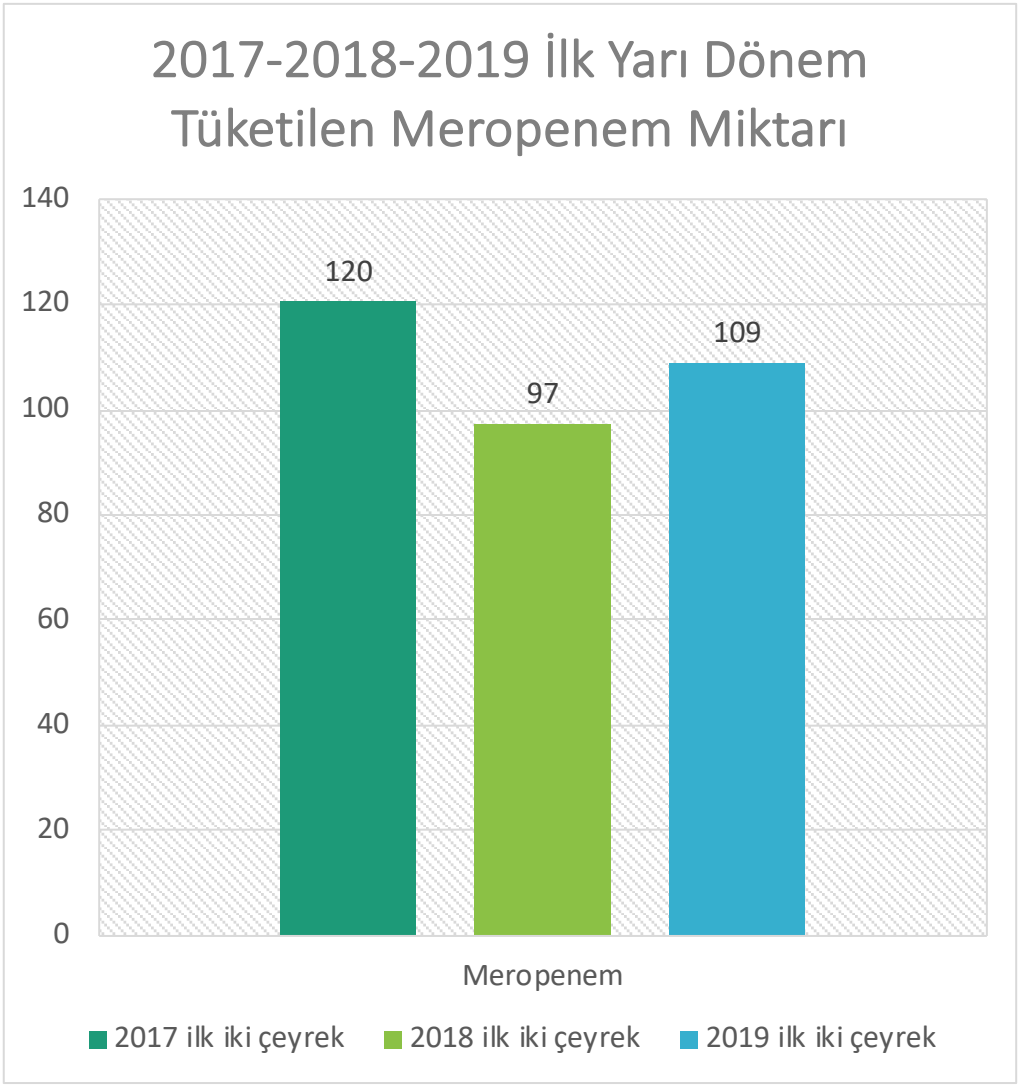
Meropenem AT Sonuçları





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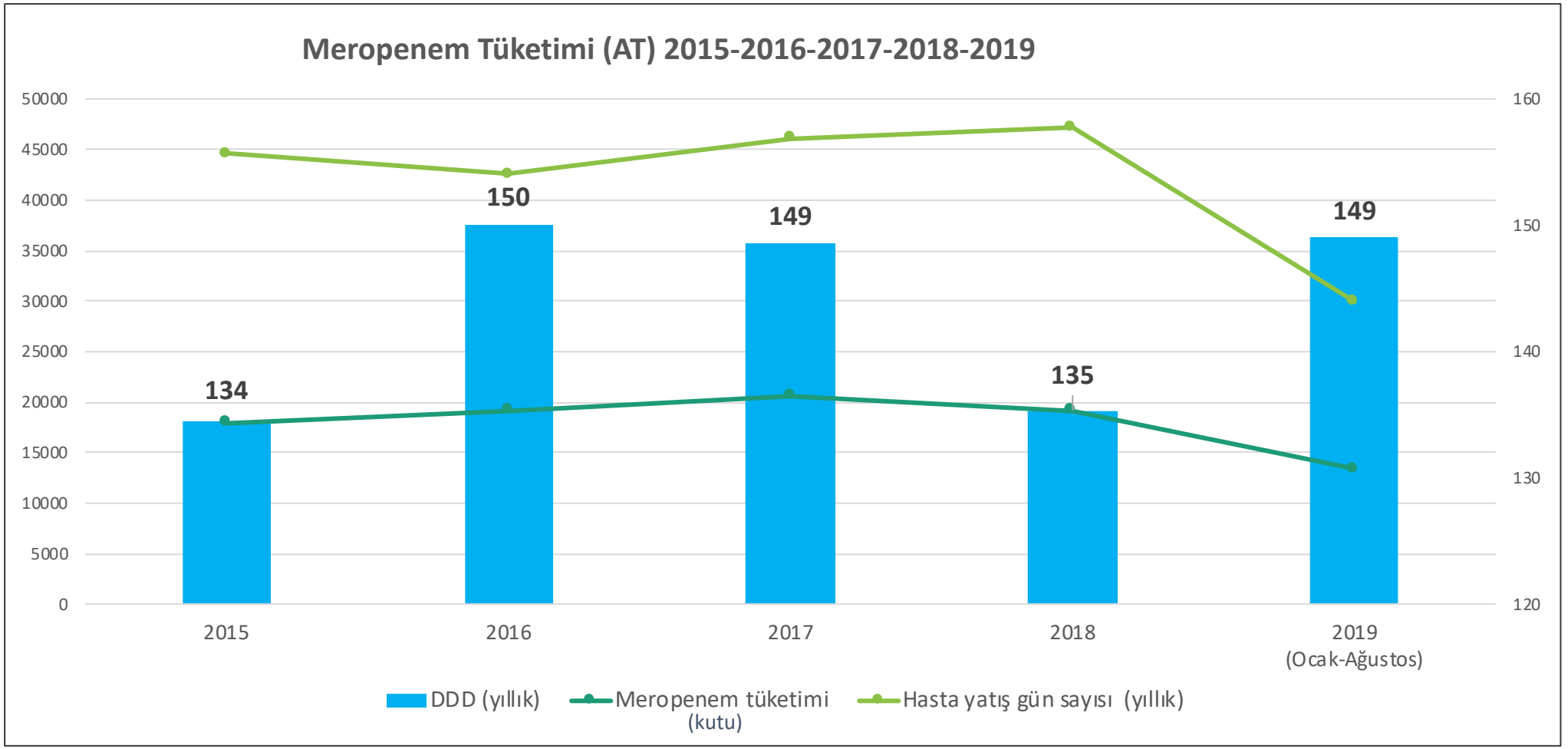
Meropenem Tüketimi (DDD) 2015-2016-2017-2018-2019



Meropenem Survey - Veri Toplama Formu

ik kans i	iligi trans aiy	koah/asti	siroz	kky	transfer	Yatış Tarihi	ab başlama tarihi	bitiş tarihi	amprik; a, etkene yön e	toplum kaynaklı/sbi	meropenem başlama endikasy	kültürde üreme var mı? e/h	kan kültürü	Tarih	idrar kült	Tarih	balgam kültürü	Tarih	diğer	Tarih	CRP1	PCT1 (ng/	Lökosit1 (K/	GFR (ml/	endikasyonu u m	endikasyonu u m	süre uygu
0	0	0	0	0	0	27.01.2019	24.02.2019	3.03.3019	a	sbi	FEN	UD	UD	UD	UD	UD	UD	UD	UD	UD	106	0,73	25,7	UD	1	1	1
0	0	0	0	0	0	1.03.2019	1.03.2019	4.03.2019	a	tk	sistit	H	UD	UD	üreme yok	1.03.2019	UD	UD	UD	UD	101	UD	15	UD	0	UD	UD
0	0	1	0	0	0	26.02.2019	28.02.2019	28.02.2019 (EX)	a	tk	pnömoni	E	Stafilokok	28.02.2019	UD	UD	Stafilokok	28.02.2019	UD	UD	195,3	UD	UD	18,51	0	UD	UD
0	0	0	0	1	0	13.02.2019	13.02.2019	20.02.2019	a	tk	pnömoni	H	üreme yok	13.02.2019	üreme yok	14.02.2019	UD	UD	UD	UD	58,3	UD	7,8	46,27	0	UD	UD
0	0	0	0	0	0	11.02.2019	11.02.2019	15.02.2019	a	tk	kolesistit	E	UD	UD	C.kefyr	11.02.2019	UD	UD	UD	UD	18,5	0,06	10,6	90	0	UD	UD
0	0	0	0	0	0	18.02.2019	18.02.2019	25.02.2019	a	tk	pnömoni	UD	UD	UD	UD	UD	UD	UD	UD	UD	73,3	UD	6,8	UD	0	UD	UD
0	0	1	0	0	0	10.02.2019	10.02.2019	18.02.2019	a	tk	selülit	UD	UD	UD	UD	UD	UD	UD	UD	UD	UD	UD	UD	UD	0	UD	UD
0	0	0	0	0	0	11.02.2019	11.02.2019	3.03.2019	a	tk	prostatit	UD	UD	UD	üreme yok	15.02.2019	UD	UD	UD	UD	12	0,05	8,3	UD	0	UD	UD
0	0	0	0	0	0	19.02.2019	19.02.2019	23.02.2019	a	tk	profilaksi (KT sonrası)	UD	UD	UD	UD	UD	UD	UD	dışkı üreme yok	19.02.2019	60,8	UD	5	60,12	0	UD	UD
0	0	1	0	0	1	31.01.2019	8.02.2019	20.02.2019	a	sbi	cerrahi alan, pnömoni	E	UD	UD	Candida albicans	31.01.2019	üreme yok	31.01.2019	UD	UD	122,4	UD	11,1	164,61	1	1	1
0	0	1	0	1	1	21.12.2018	11.02.2019	10.03.2019	a	sbi	pnömoni	E	üreme yok	10.02.2019	UD	5.01.2019	E.coli	10.02.2019	üreme yok (diyaliz katater ucu)	10.02.2019	137,5	UD	7,5	18,23	1	0	0
0	0	1	0	1	0	2.01.2019	4.02.2019	18.02.2019	a	tk	pnömoni	UD	UD	UD	UD	UD	UD	UD	UD	UD	4,7	0,07	13	64,21	0	UD	UD
0	0	0	0	0	0	31.01.2019	5.02.2019	18.02.2019	a	sbi	pnömoni	H	üreme yok	3.02.2019	üreme yok	3.02.2019	üreme yok	5.02.2019	UD	UD	58	UD	14,4	84,96	1	1	1
0	0	1	0	1	0	28.12.2019	11.02.2019	14.02.2019	a	sbi	pnömoni	E	UD	UD	UD	UD	Pseudomonas aeruginosa, Kleibsiella pneumoniae, metisiline duyarlı S.aureus	16.01.2019	UD	UD	149	1,29	10,2	UD	1	1	1
0	0	1	0	0	0	14.01.2019	8.02.2019	21.02.2019	a	tk	GDB	UD	UD	UD	UD	UD	UD	UD	UD	UD	43,5	UD	8,4	119,42	0	UD	UD

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AMERİKAN HASTANESİ

Meropenem Survey - Veri Toplama Formu

Hastaya Ait Bilgiler

- Ad soyad
- Protokol
- Oda
- Primer Hekim
- Varsa Enf. Hekimi
- Primer Tanı
- Yatış Tarihi
- Cerrahi Operasyon Geçirdi Mi?
- Antibiyotik Alerjisi Var Mı?
- Ko-morbidite
  - Diyabet, KBY, KOAH/Astım, Siroz, KKY
  - Solid Organ Tm (Remisyon, Aktif, Metsatatik)
  - Hematolojik Kanser (Remisyon, Aktif)
  - Kemik İligi Transplantasyonu

Değerlendirme

- Antibiyotik Başlama Tarihi
- Meropenem başlama endikasyonu
- Kültürde üreme var mı?
- Kan, idrar, balgam ve diğer kültürler
- Kültürde üreme varsa rapor tarihi
- Antibiyotik kesme tarihi
- CRP (mg/L)
- PCT (ng/mL)
- Lökosit (K/uL)
- GFR (ml/dk)

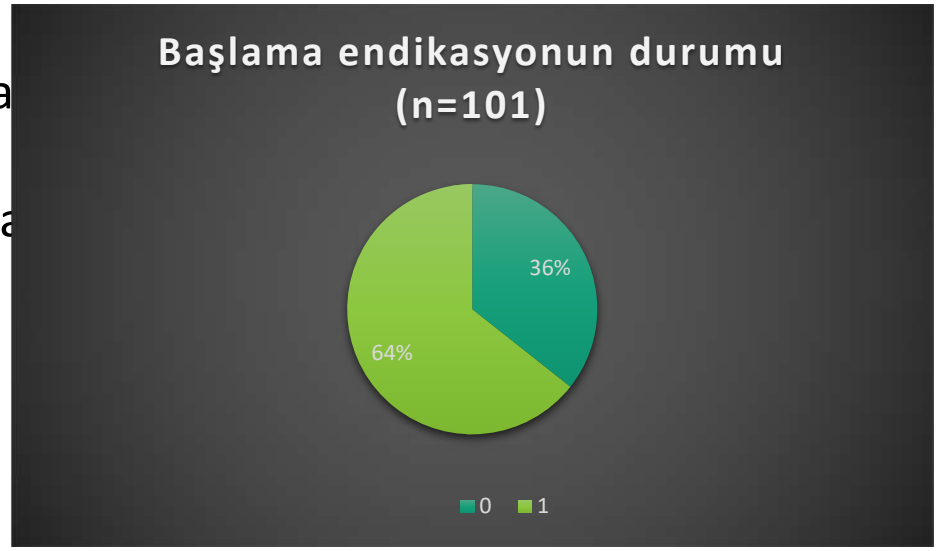
Sonuç

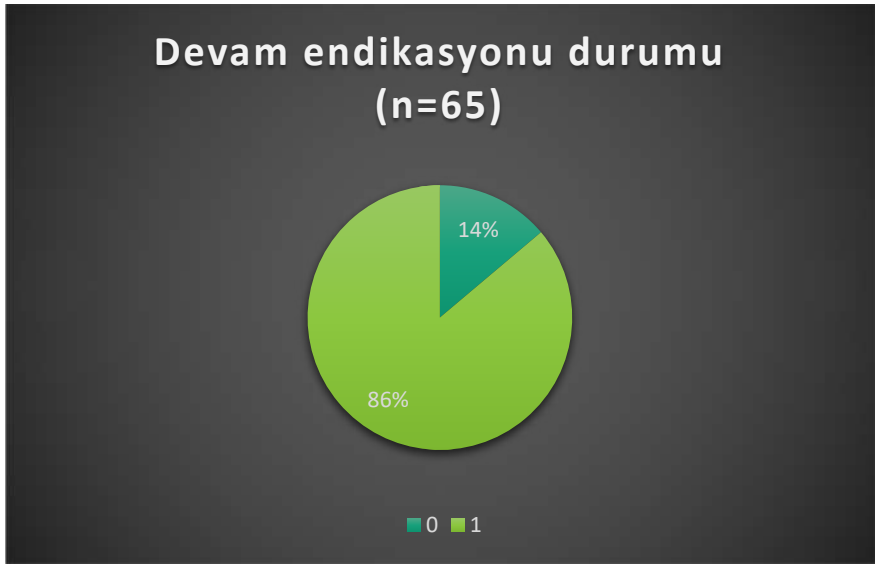
- Başlama endikasyonu uygun mu?
- Devam endikasyonu uygun mu?
- Süre uygun mu?

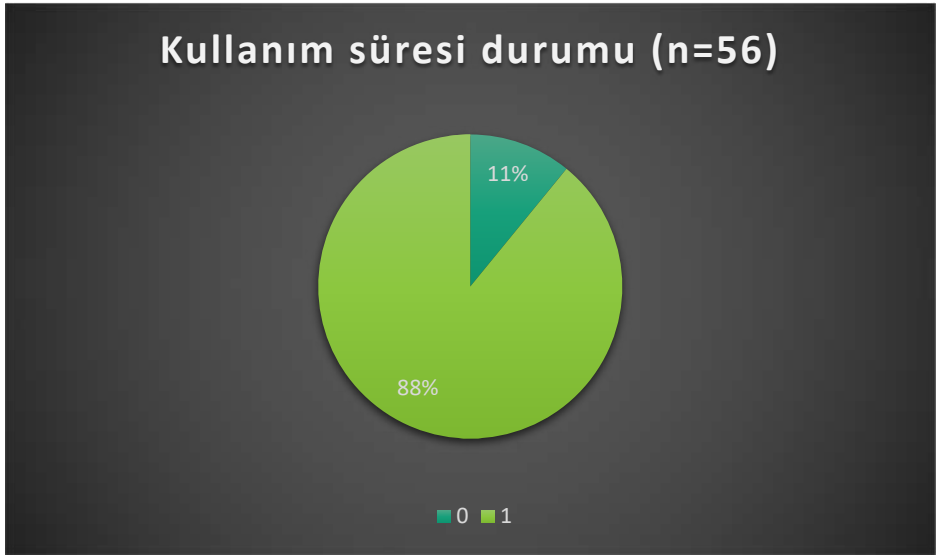
Meropenem Survey – Eczane Sonuçları

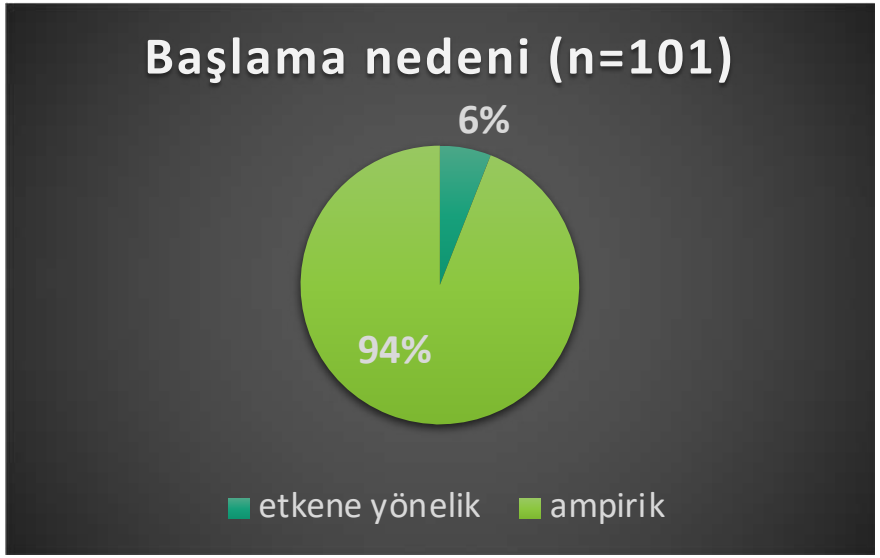
12 Şuba

87 hasta









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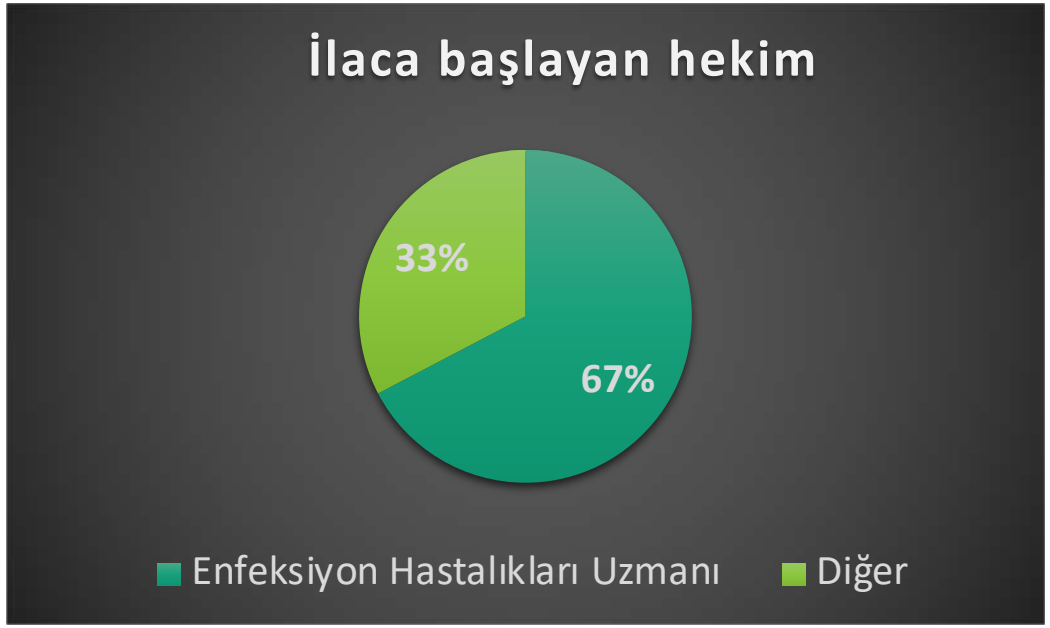
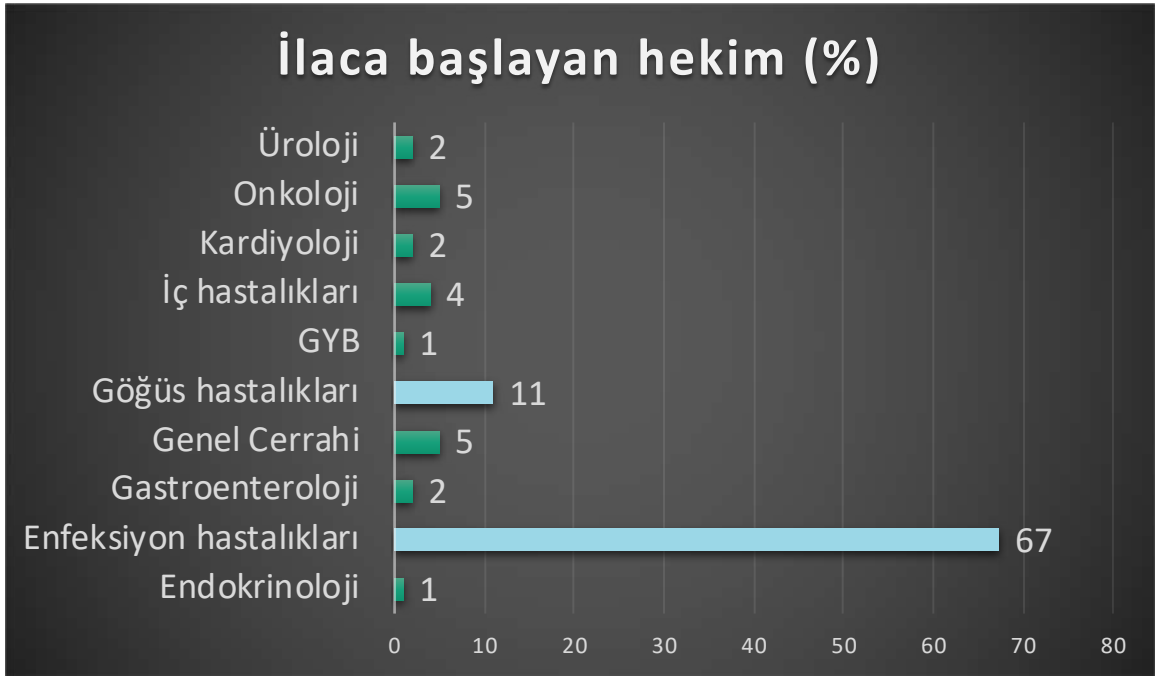
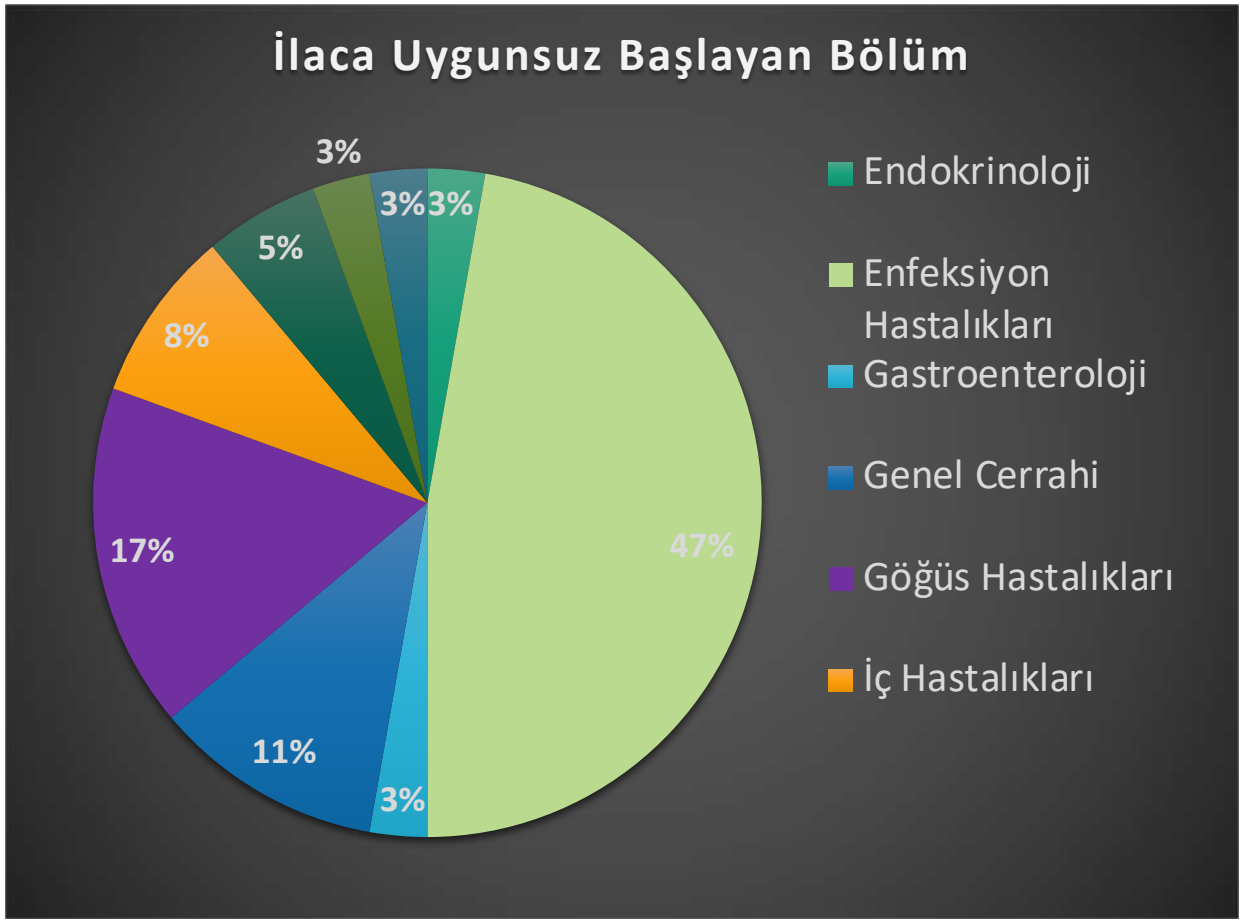
Meropenem Survey – Eczane Sonuçları





Meropenem Survey – Eczane Sonuçları

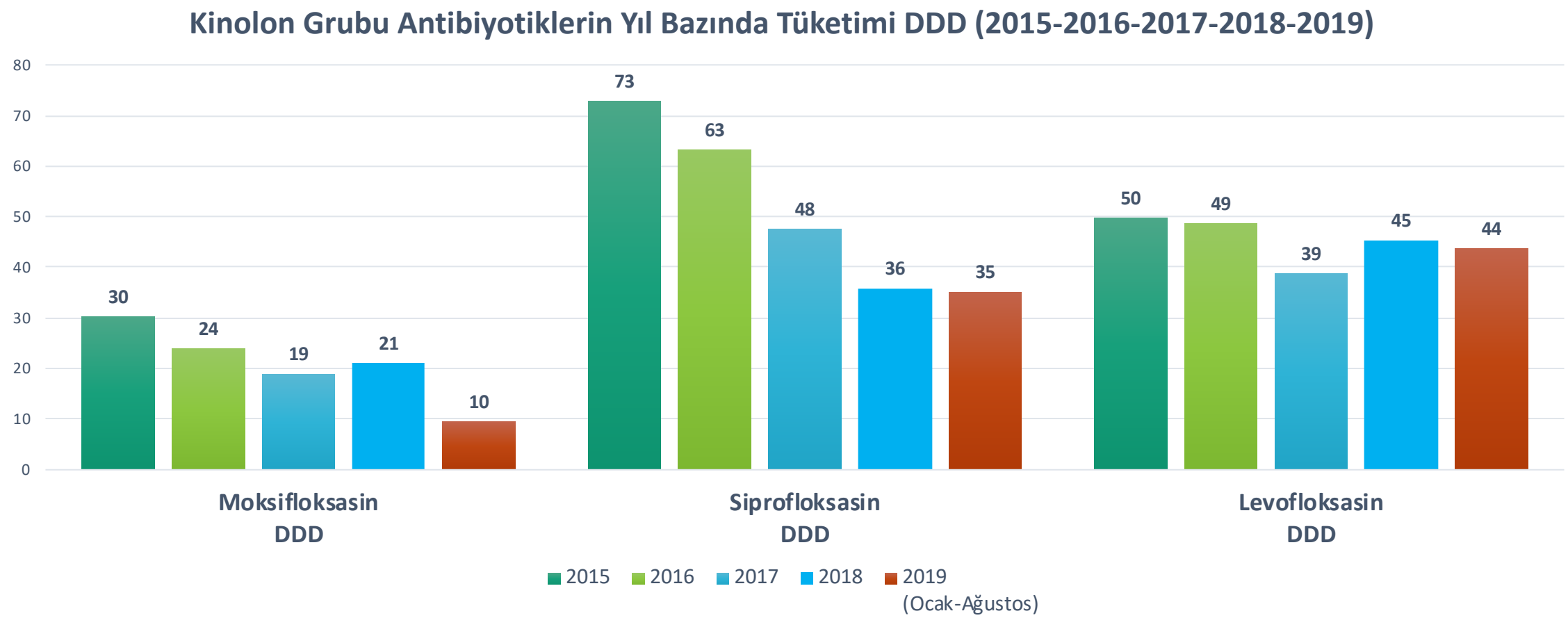


N:36 adet uygunsuz Meronem kullanımı bulunmaktadır. Bu veriye göre Meropenem başlama uygunsuzluğu şu şekildedir;

Enfeksiyon Hastalıkları'nın Konsülte ettiği hastalardan Meropenem başlama uygunsuzluğu **%25**'tir. (N:68 n:17)
Dr. H.Ö: **%63** (N:19, n:12)
Dr. Ş.K ve Dr. Ö.E: **%8** (N:48, n:4)

Enfeksiyon Hastalıkları'nın Konsülte etmediği hastalardan, Meropenem başlama uygunsuzluğu **%54**' tür. (N:35 n:19)

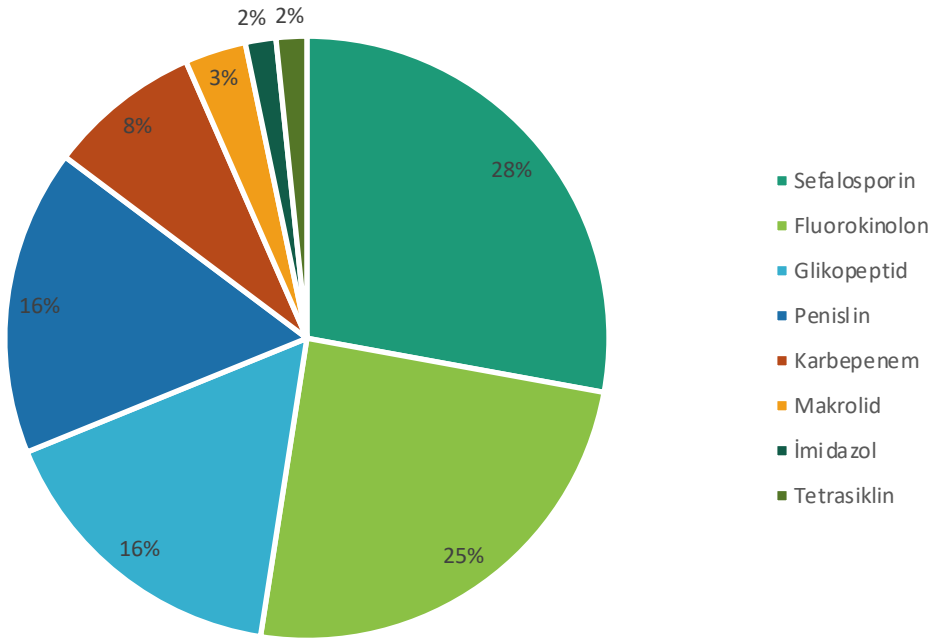
Kinolon Grubu Antibiyotik Tüketimi (DDD) 2015-2016-2017-2018-2019



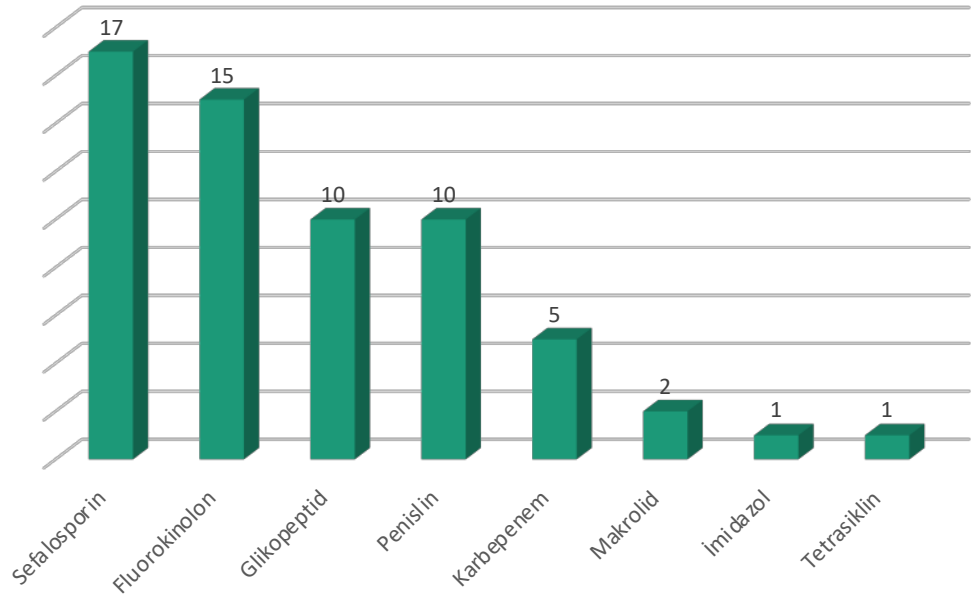
Vehbi Koç Vakfı

AMERİKAN HASTANESİ

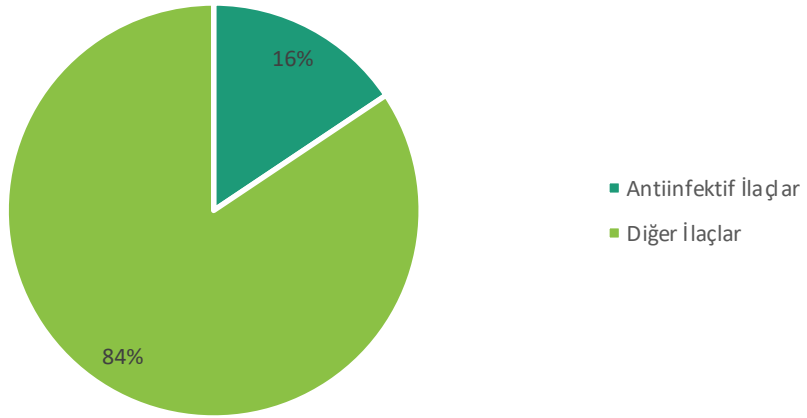
Antibiyotiklere bağlı advers etkiler
(2015-2016-2017-2018-2019)

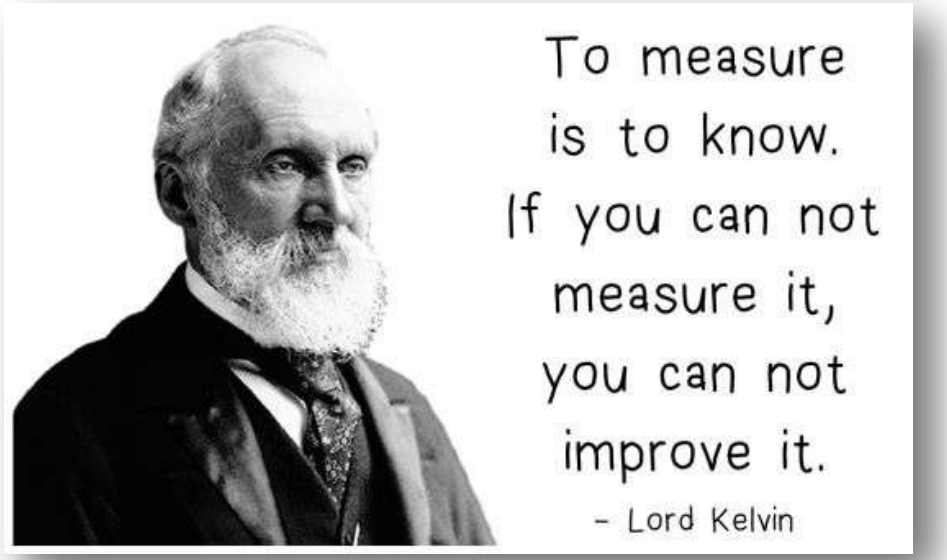


Antibiyotiklere bağlı advers etkiler
(2015-2016-2017-2018-2019)



Advers Etki Bildirimleri




To measure
is to know.
If you can not
measure it,
you can not
improve it.
- Lord Kelvin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