Pseudomonas spp. ve Stenotrophomonas spp.

Dr. Hüseyin Aytaç Erdem
Ege Üniversitesi Enfeksiyon Hastalıkları ve
Klinik Mikrobiyoloji Anabilim Dalı

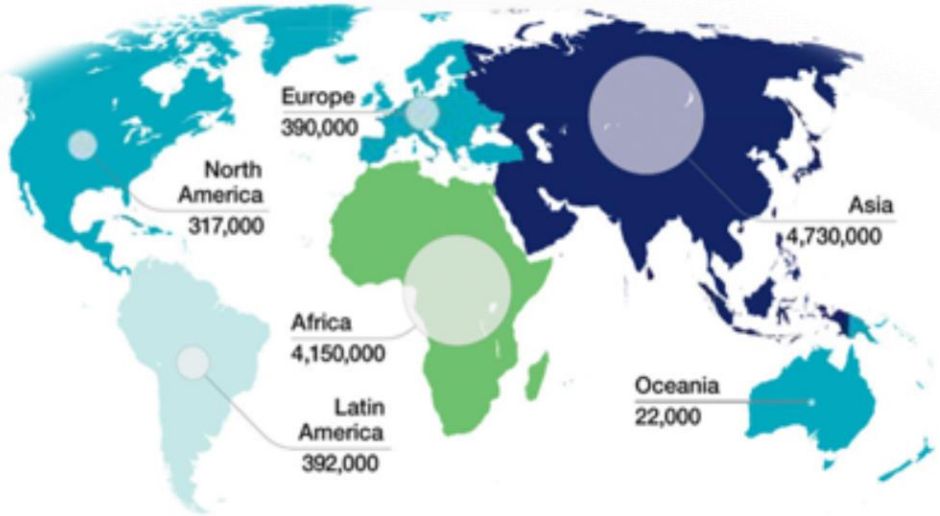
REVIEWS OF INFECTIOUS DISEASES • VOL. 6, SUPPLEMENT 3 • SEPTEMBER-OCTOBER 1984

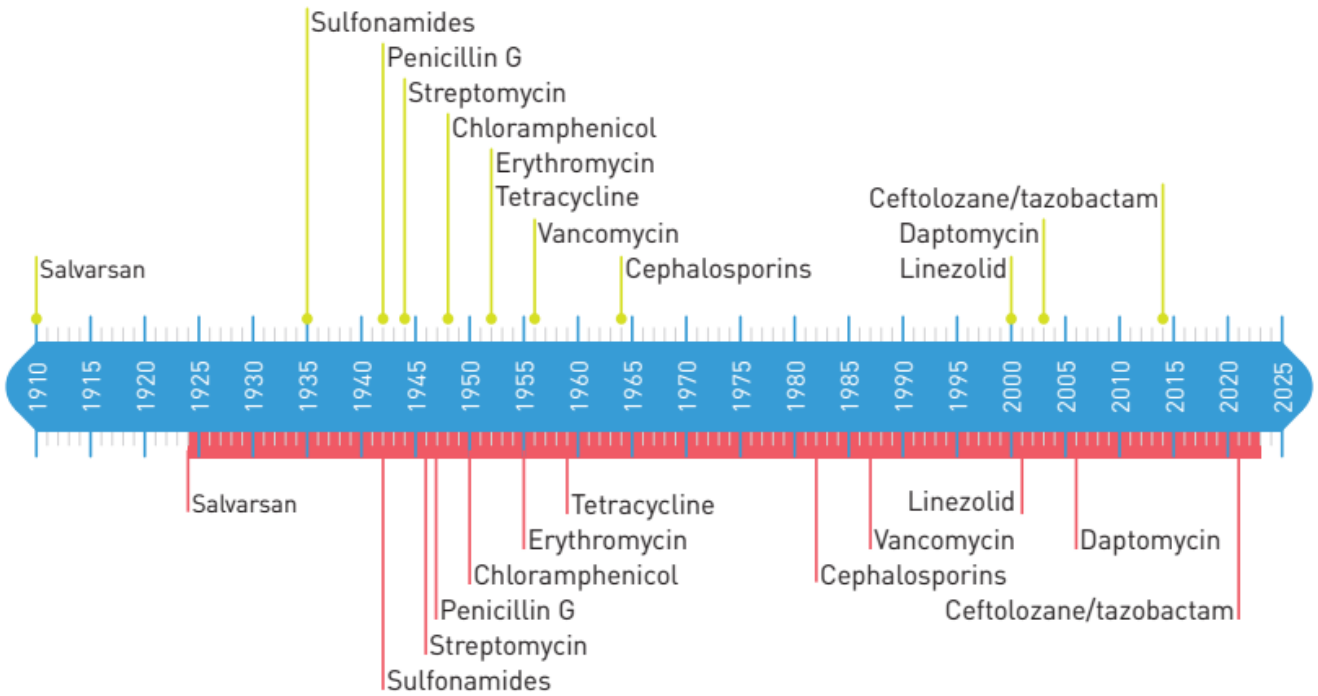
CLASSICS IN INFECTIOUS DISEASES

On the Blue and Green Coloration that Appears on Bandages

Carle Gessard
(1850–1925)

Moore, Nicholas M., and Maribeth L. Flaws. "Introduction: pseudomonas aeruginosa." *Clinical laboratory science* 24.1 (2011): 41.
Carle Gessard, On the Blue and Green Coloration that Appears on Bandages, Reviews of Infectious Diseases, Volume 6, Issue Supplement_3, September-October 1984, Pages S775–S776,


Europe
390,000
North America
317,000
Asia
4,730,000
Africa
4,150,000
Oceania
22,000
Latin America
392,000
Mortality per 10,000 population
Number of deaths


Sulfonamides
Penicillin G
Streptomycin
Chloramphenicol
Erythromycin
Tetracycline
Vancomycin
Cephalosporins
Salvarsan
Ceftolozane/tazobactam
Daptomycin
Linezolid
1910
1915
1920
1925
1930
1935
1940
1945
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1955
1960
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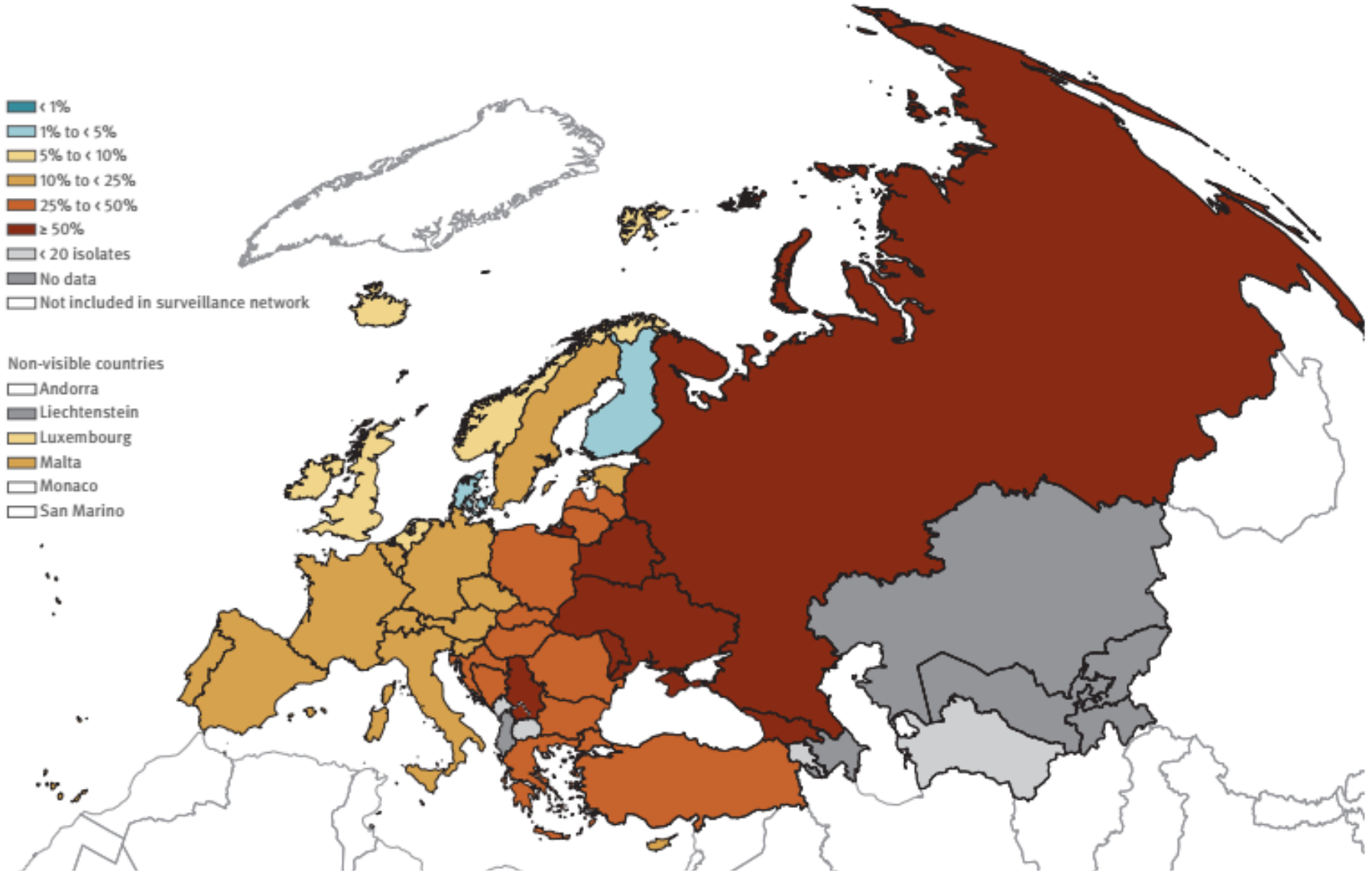
2020
2025
Salvarsan
Tetracycline
Erythromycin
Chloramphenicol
Penicillin G
Streptomycin
Sulfonamides
Linezolid
Vancomycin
Cephalosporins
Daptomycin
Ceftolozane/tazobactam

Fig. 6 *Pseudomonas aeruginosa*. Percentage of invasive isolates with resistance to carbapenems (imipenem/meropenem), by country, WHO European Region, 2021



Antimicrobial resistance surveillancein Europe 2023 - 2021 data. Stockholm: European Centre for Disease Prevention and Control and World Health Organization; 2023

Table 7a Total number of invasive isolates tested (n) and percentage of isolates with AMR phenotype (%) in EU/EEA[a], by bacterial species and antimicrobial group/agent, population-weighted EU/EEA[a] mean, 2017–2021

Bacterial species	Antimicrobial group/agent	2017		2018		2019		2020		2021		2021 EU/EEA country range[b]	
		n	%	n	%	n	%	n	%	n	%		
P. aeruginosa	Piperacillin-tazobactam resistance	13717	18.3	16018	18.5	16894	18.6	19799	18.8	21419	18.7	0.0–47.2	-
	Ceftazidime resistance	13801	16.0	16327	15.5	17328	15.7	20122	15.5	21750	15.8	2.3–46.0	-
	Carbapenem (imipenem/meropenem) resistance	14274	18.9	16473	18.8	17496	18.1	20517	17.9	22267	18.1	3.5–45.9	↓
	Fluoroquinolone (ciprofloxacin/levofloxacin) resistance	14118	21.8	16460	21.2	17635	20.5	20425	19.6	22129	18.7	3.3–48.0	↓*
	Aminoglycoside (gentamicin/netilmicin/tobramycin) resistance[d]	14117	14.4	16393	12.9	17552	12.6	12880	9.4	14537	8.9	0.0–41.7	↓*
	Combined resistance to ≥ 3 antimicrobial groups (among piperacillin-tazobactam, ceftazidime, carbapenems, fluoroquinolones and aminoglycosides)[d]	13022	14.1	15514	14.1	16289	13.5	12041	13.6	13684	12.6	0.0–42.1	↓

Total number of invasive isolates tested (n) and percentage of isolates with resistance phenotype (%)[a], by bacterial species and antimicrobial group/agent, Türkiye, 2017–2021

Bacterial species	Antimicrobial group/agent	2017		2018		2019		2020		2021		Trend 2017–2021[b]
		n	%	n	%	n	%	n	%	n	%	
P. aeruginosa	Piperacillin-tazobactam resistance	1491	37.2	1646	34.0	1533	34.1	1365	32.1	1764	32.5	↓
	Ceftazidime resistance	1481	30.0	1700	26.8	1645	28.0	1468	27.2	1723	28.1	–
	Carbapenem (imipenem/meropenem) resistance	1552	37.4	1682	37.5	1712	38.4	1547	36.2	1718	39.0	–
	Fluoroquinolone (ciprofloxacin/levofloxacin) resistance	1525	35.6	1674	32.7	1637	35.2	1503	31.0	1735	33.1	–
	Aminoglycoside (gentamicin/tobramycin) resistance[c]	1519	26.7	1730	19.0	1681	20.8	769	15.7	1069	17.8	↓*
	Combined resistance to ≥ 3 antimicrobial groups (among piperacillin-tazobactam, ceftazidime, carbapenems, fluoroquinolones and aminoglycosides)[c]	1279	31.7	1451	27.8	1424	30.1	672	27.5	955	28.1	–

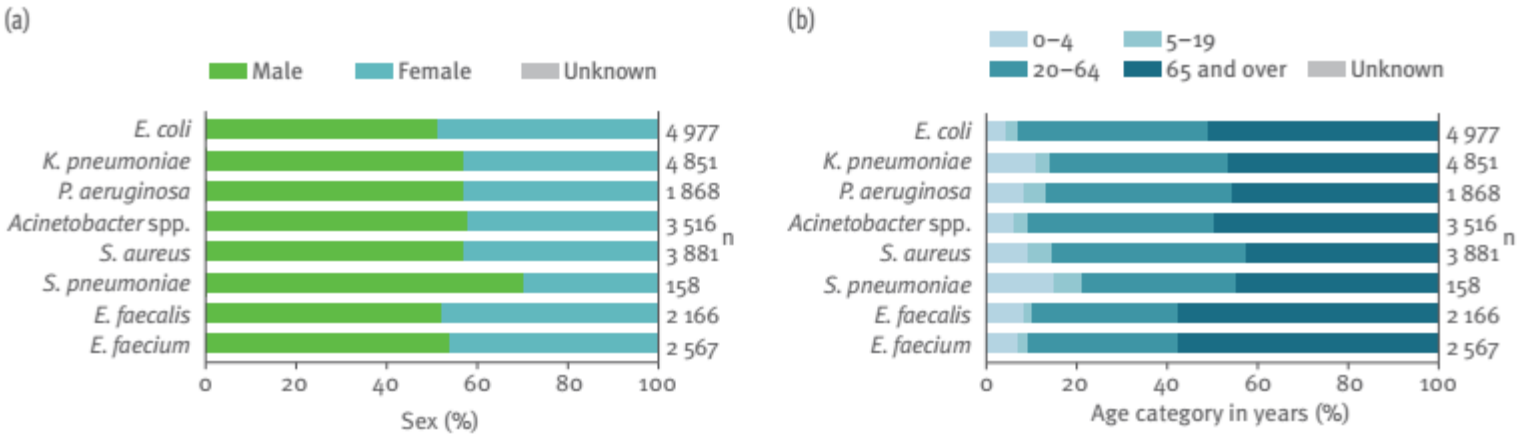
Antimicrobial resistance surveillancein Europe 2023 - 2021 data. Stockholm: European Centre for Disease Prevention and Control and World Health Organization; 2023

Annual number of reporting laboratories,[a] number of reported isolates and percentage[b] of isolates reported from patients in ICUs, Türkiye, 2017–2021

Bacterial species	2017			2018			2019			2020			2021		
	Labs (n)	Isolates (n)	Isolates from ICU (%)	Labs (n)	Isolates (n)	Isolates from ICU (%)	Labs (n)	Isolates (n)	Isolates from ICU (%)	Labs (n)	Isolates (n)	Isolates from ICU (%)	Labs (n)	Isolates (n)	Isolates from ICU (%)
E. coli	69	4459	16	67	5056	13	70	4999	12	70	4363	14	66	4977	26
K. pneumoniae	68	3232	36	67	3833	34	69	4167	28	70	4534	32	66	4851	58
P. aeruginosa	66	1605	33	65	1771	31	64	1727	29	66	1556	26	65	1868	50
Acinetobacter spp.	67	2620	45	66	2754	44	68	2477	42	69	3170	45	64	3516	83
S. aureus	68	3230	23	66	3354	21	69	3475	14	70	3614	20	66	3881	35
S. pneumoniae	45	235	24	43	253	12	40	227	16	39	132	17	35	158	29
E. faecalis	65	1735	37	67	1944	35	66	1976	32	69	2135	34	63	2166	56
E. faecium	65	1585	34	65	1669	32	66	1829	27	68	2204	31	65	2567	63

Labs: laboratories.
[a] Number of laboratories reporting at least one isolate during the specific year. The total number of participating laboratories might be higher.
[b] Isolates with missing information on hospital department are excluded from the calculation, and the percentage of isolates from ICU is presented only if there are ≥20 isolates of which ≥ 70% have data on hospital department. If not, the percentage is presented as not applicable (NA).

Percentage of isolates by patient sex (a) and age group (b), by bacterial species, Türkiye, 2021



Antimicrobial resistance surveillancein Europe 2023 - 2021 data. Stockholm: European Centre for Disease Prevention and Control and World Health Organization; 2023

Tablo 24. Türkiye'de Sağlık Hizmeti İlişkili Enfeksiyonlarda Antimikrobiyal Direnç Oranları, 2022.

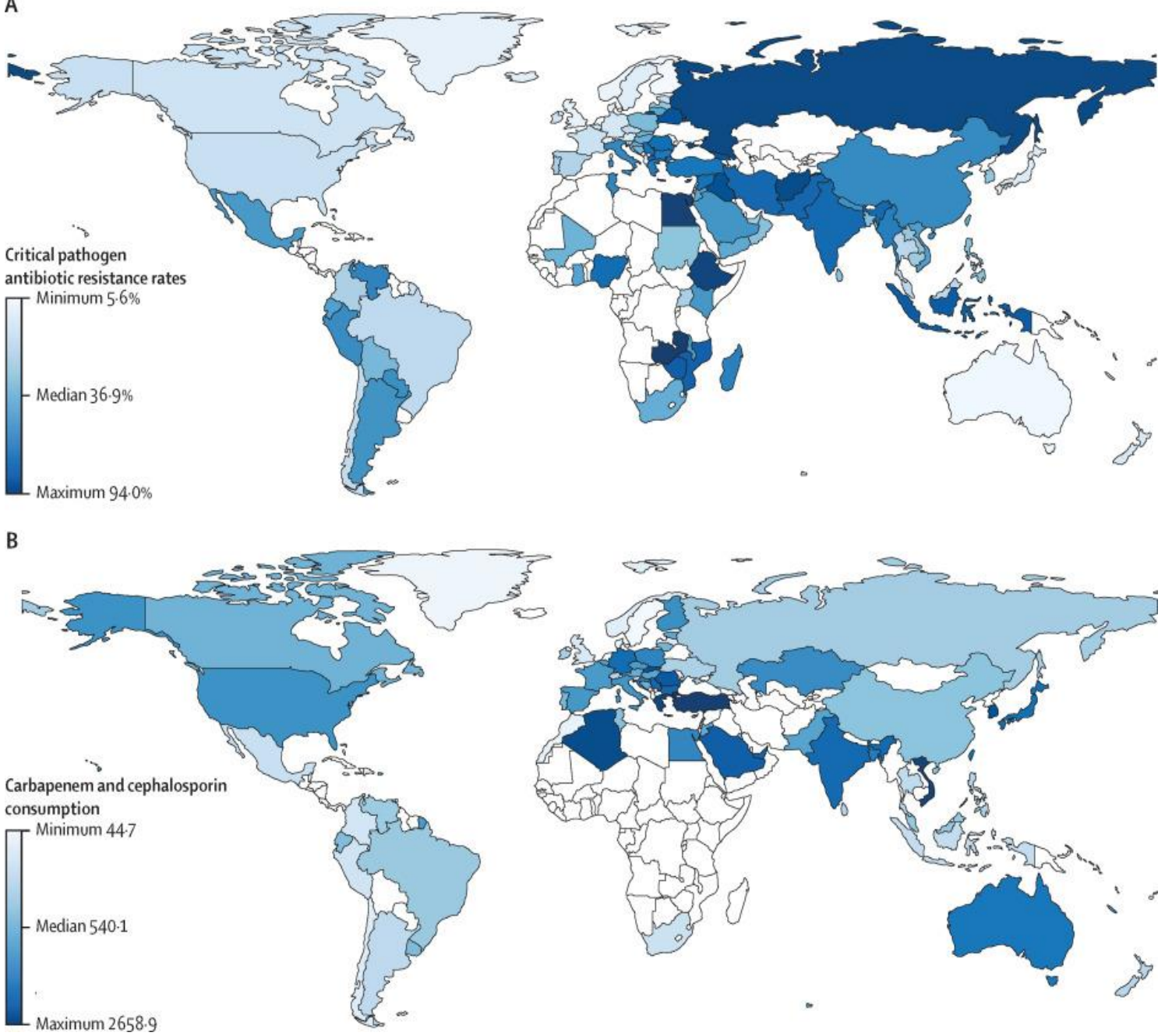
ANTİMİKROBİYAL DİRENÇLİ PATOJEN	Antimikrobiyal Direnç Oranları				PERSENTİL				
	Hastane Sayısı†	Toplam Etken Sayısı	Dirençli Etken Sayısı	Ağırlıklı Genel Ortalama	% 10	% 25	% 50 (Ortanca)	% 75	% 90
TÜRKİYE GENELİ									
Vankomisin dirençli *E.faecium*	228(57)	2340	542	23.16	0.00	8.20	20.00	29.79	52.21
Vankomisin dirençli *E faecalis*	235(46)	1799	79	4.39	0.00	0.00	0.00	5.73	9.09
MRSA	325(75)	2576	1286	49.92	25.00	32.80	42.86	63.61	81.41
MRKNS	308(41)	2569	2201	85.68	75.00	85.71	90.91	95.45	96.97
***E.coli* Suşlarında ESBL**	410(118)	2583	4360	59.24	26.37	50.00	64.17	77.78	90.91
***Klebsiella pneumoniae* Suşlarında ESBL**	404(197)	6179	8844	69.87	15.45	52.17	80.00	92.00	100.00
Karbapenem dirençli *Acinetobacter baumannii*	368(167)	8161	7523	92.18	81.59	90.69	95.87	100.00	100.00
Karbapenem dirençli *E.coli*	408(108)	4376	750	17.14	0.00	5.88	10.88	25.00	41.50
Karbapenem dirençli *Klebsiella pneumoniae*	411(190)	10042	6684	66.56	39.85	54.55	70.60	81.99	92.31
Karbapenem dirençli *Pseudomonas aeruginosa*	375(122)	4562	3084	67.60	37.95	55.97	72.47	84.90	95.26
Kolistin dirençli *Acinetobacter baumannii*	352(137)	6357	796	12.52	0.00	2.04	5.56	16.52	34.74
Kolistin dirençli *Klebsiella pneumoniae*	390(146)	6066	1893	31.21	3.70	13.83	27.27	47.47	67.71

https://hsgm.saglik.gov.tr/depo/birimler/bulasici-hastaliklar-ve-erken-uyari db/Dokumanlar/Raporlar/USHIESA_OZET_RAPORU_2022.pdf

Tablo 3. Türkiye'de sağlık hizmeti ilişkili enfeksiyonların enfeksiyon türüne göre etken dağılımı, 2022.

Mikroorganizmalar	Tüm Enfeksiyonlar		Pnömoni		VİP		VİO		ÜSE		Kİ-İYE		KDE		SKİ-KDE		CAE	
	Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%
Non-fermantatif gram (-) bakteriler	**27521**	**50.9**	**1699**	**61.0**	**5894**	**68.9**	**1218**	**69.8**	**626**	**38.9**	**3061**	**42.6**	**3524**	**45.0**	**7642**	**45.4**	**1346**	**40.3**
***Acinetobacter* spp**	12793	**23.7**	809	29.0	2968	34.7	694	39.7	263	16.4	1086	15.1	1705	21.8	3623	21.5	535	16.0
***Pseudomonas* spp**	13785	**25.5**	809	29.0	2656	31.0	494	28.3	358	22.3	1954	27.2	1692	21.6	3696	22.0	791	23.7
***Stenotrophomonas* spp**	683	**1.3**	58	2.1	193	2.3	24	1.4	4	0.2	12	0.2	82	1.0	251	1.5	13	0.4
***Burkholderia* spp**	93	**0.2**	1	0.0	15	0.2	4	0.2	1	0.1	3	0.0	16	0.2	41	0.2	3	0.1
***Haemophilus* spp**	20	**0.0**	11	0.4	5	0.1	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0
Diğer non-fermantatif gram negatif basiller	147	0.3	11	0.4	57	0.7	2	0.1	0	0.0	6	0.1	28	0.4	30	0.2	4	0.1

https://hsgm.saglik.gov.tr/depo/birimler/bulasici-hastaliklar-ve-erken-uyari-db/Dokumanlar/Raporlar/ETKEN_DAGILIM_VE_DIRENC_2022_RAPOR-v2.pdf



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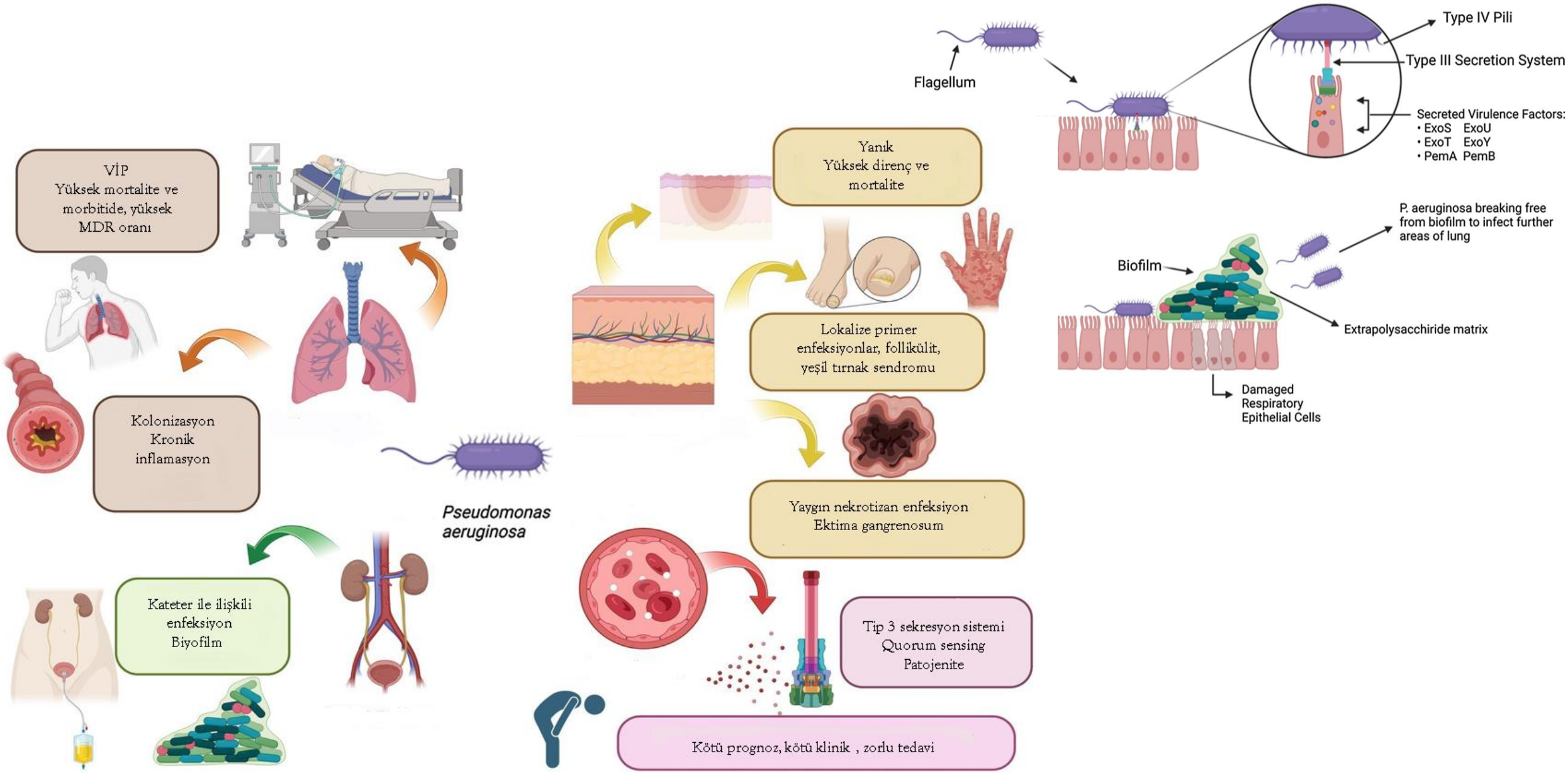

Elfadadny, Ahmed, et al. "Antimicrobial resistance of Pseudomonas aeruginosa: navigating clinical impacts, current resistance trends, and innovations in breaking therapies." *Frontiers in Microbiology* 15 (2024): 1374466.
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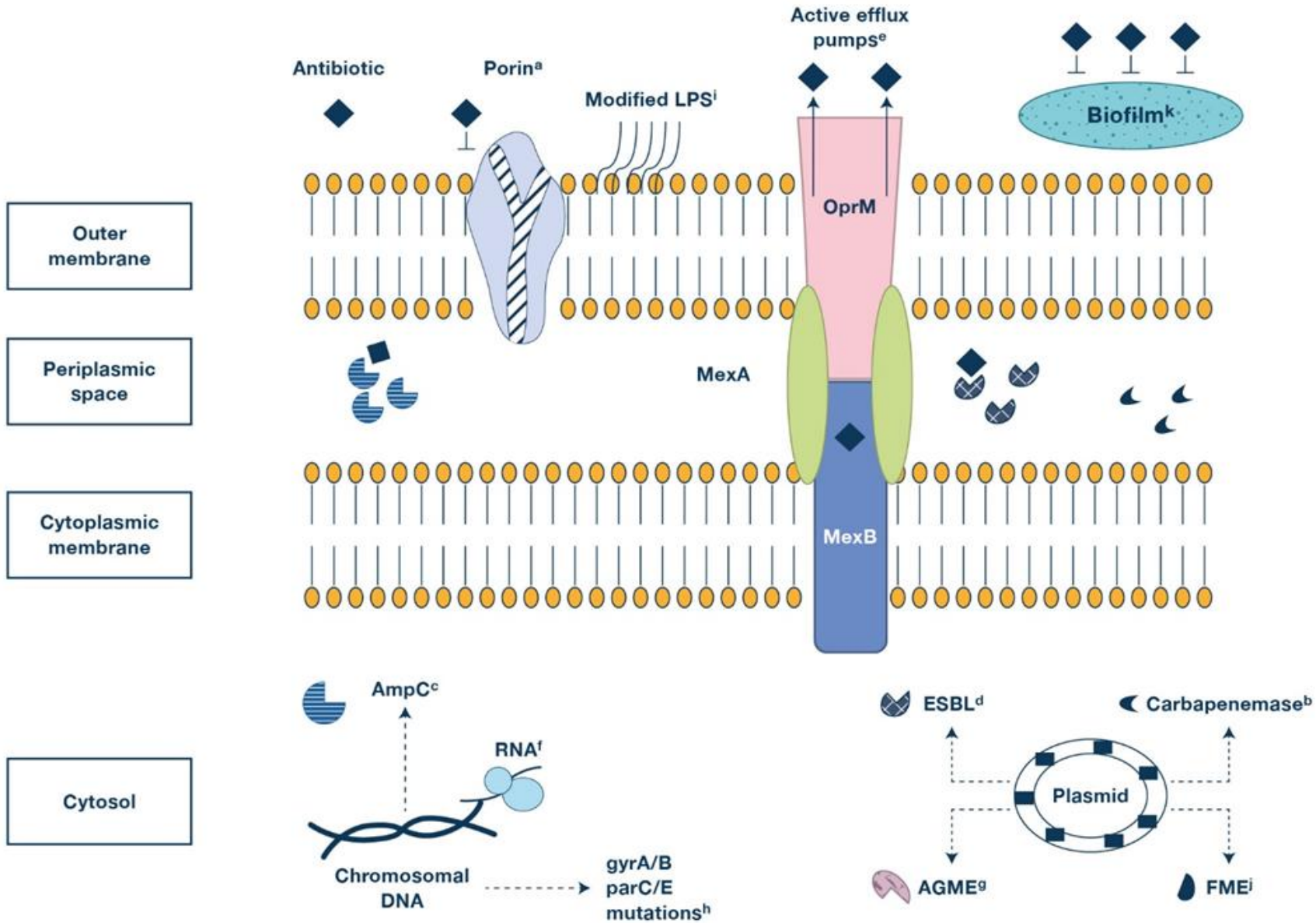
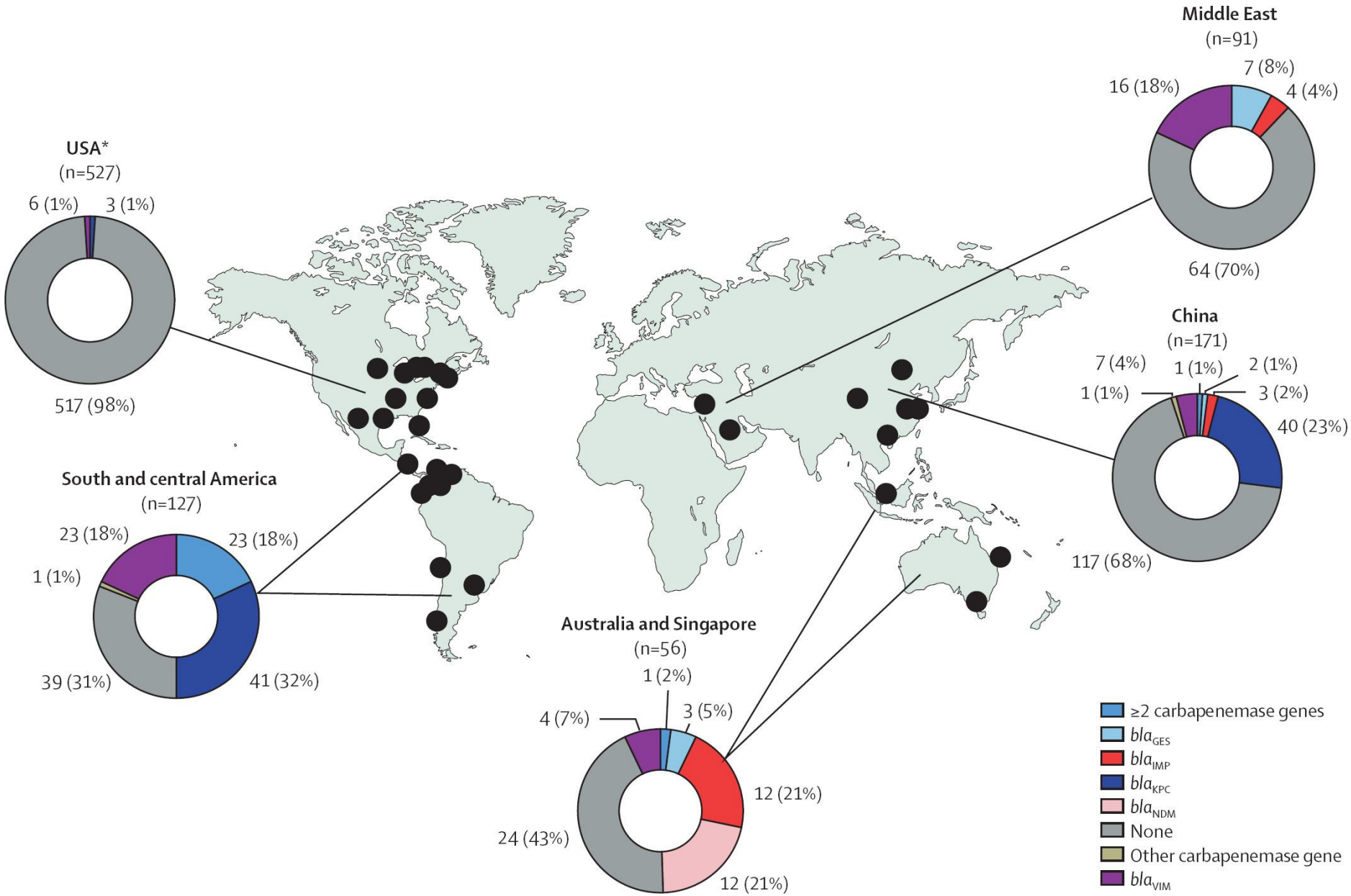


Dimopoulos, G., Akova, M., Rello, J., & Poulakou, G. (2020). Understanding resistance in Pseudomonas. *Intensive Care Medicine*, *46*, 350-352.



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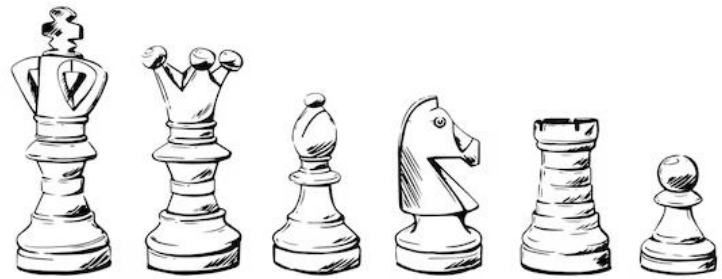
Zerbaxa™
ceftolozane/tazobactam
for injection
1 g/0.5 g per vial
For Intravenous Infusion
Refrigerate and keep vials in carton until
CUBIST
NDC 67919-030-01
Zerbaxa™
ceftolozane/tazobactam
for injection
1 g/0.5 g per vial
For Intravenous Infusion
Single-use vial




Zavicefta® 2 g/0.5 g
powder for concentrate
for solution for infusion
ceftazidime/avibactam
10 vials
Pfizer
Zavicefta® 2 g/0.5 g
powder for concentrate
for solution for infusion
ceftazidime/avibactam
10 vials


RECARBRIO™
(imipenem, cilastatin, and
relebactam) for injection 1.25 g
Recarbrio™


Fetcroja® 1 g
powder for concentrate for
solution for infusion
cefiderocol
Intravenous use after dilution
10 vials
Fetcroja® 1 g
powder for concentrate
cefiderocol
IV

CMI CLINICAL MICROBIOLOGY AND INFECTION
ESCMID

	KDAB	GSBL	KDPA non-MBL	KDE non-CP	KDE-KPC	KDE-OXA-48	KDE-MBL	
Yeni antibiyotikler								
Seftolozane-tazobactam	✗	✓	✓	✗	✗	✗	✗	EMA/FDA 👍 Komplike ÜSE, İAE, VİP, HGP
Seftazidim-avibaktam	✗	✓	✓	±	✓	✓	✗	EMA/FDA 👍 Komplike ÜSE, İAE, VİP, HGP / EMA 👍 Gram (-)
Meropenem-vaborbaktam	✗	✓	✗	±	✓	✗	✗	FDA 👍 Komplike ÜSE EMA 👍 Komplike ÜSE, VİP, HGP, Gram (-)
Imipenem-cilastatin/relebactam	✗	✓	✓	±	✓	✗	✗	FDA 👍 Komplike ÜSE, İAE EMA 👍 VİP, HGP, Kan Dolaşımı Enfeksiyonları, Gram (-)
Plazomicin	✗	✓	±	✓	✓	✓	±	FDA 👍 Komplike ÜSE, EMA ⊘
Eravacycline	✓	✓	✗	✓	✓	✓	✓	EMA/FDA 👍 Komplike İAE
Sefiderokol	✓	✓	✓	✓	✓	✓	✓	FDA 👍 Komplike ÜSE, HGP, VİP, EMA 👍 Gram (-)
Eski antibiyotikler								
Polimiksinler	✓	✓	✓	✓	✓	✓	✓	
Aminoglikozitler	±	±	±	±	±	±	±	
Fosfomisin iv	✗	✓	±	±	±	±	±	
Aztreonam	✗	✗	±	✗	✗	✗	±	
Tigesiklin	✓	✓	✗	✓	✓	✓	✓	
Temosilin	✗	✓	✗	✗	±	✗	✗	

Pseudomonas Aeruginosa

Clinical Infectious Diseases

IDSA GUIDELINES

Infectious Diseases Society of America 2023 Guidance on the Treatment of Antimicrobial Resistant Gram-Negative Infections

Clinical Microbiology and Infection 28 (2022) 521–547

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Guidelines

European Society of Clinical Microbiology and Infectious Diseases (ESCMID) guidelines for the treatment of infections caused by multidrug-resistant Gram-negative bacilli (endorsed by European society of intensive care medicine)

Clinical Infectious Diseases
IDSA GUIDELINES

IDSA
Infectious Diseases Society of America

- Çok ilaca dirençli (MDR) PSA
  - *Pseudomonas aeruginosa genel olarak duyarlı olması beklenen 5 ilaç sınıfından (penisilin, sefalosporin, florokinolon, aminoglikozid, karbapenem) 3'ündeki en az 1 ajana direnç olması*

- 2018 'den itibaren Multidrug-resistant *P. aeruginosa* MDR yerine

  DTR "difficult-to-treat"

  - Piperasilin-tazobaktam, seftazidim, sefepim, aztreonam,meropenem, imipenem-silastatin, siprofloksasin, ve levofloksasin dirençli

Clinical Infectious Diseases
IDSA GUIDELINES

IDSA
Infectious Diseases Society of America

- Karbapanem dışı β-laktam ajanlar
  - **Eğer duyarlı ise**

    Piperasilin-tazobaktam, Seftazidim, Sefepim, aztreonam tercih edilmeli (karbapenemlerden önce)

  - **Karbapenem dirençli fakat diğer β-laktam ajanlara duyarlı ise**

    Yüksek doz ve uzun infüzyon , kültür duyarlılık test tekrarı

    K**aynak kontrolü olmayan kritik hastalarda ise ; S**eftolozane-tazobaktam, Seftazidim-avibaktam, imipenem-silastatin-relebaktam gibi yeni ajanların kullanılması uygun

Clinical Infectious Diseases
IDSA GUIDELINES

IDSA
Infectious Diseases Society of America

- Sistit (Komplike olmayan)
  - Seftolozane-tazobaktam,
  - Seftazidime-avibaktam,
  - İmipenem- cilastatin-relebaktam,
  - Sefiderokol

Alternatif

Amikasin (tek doz)

Tobramisin (tek doz)

Kolistin ?

- Piyelonefrit ve Komplike Üriner Sistem
  - Seftolozane-tazobaktam,
  - Seftazidime-avibaktam,
  - İmipenem- Silastatin-relebaktam,
  - Sefiderokol

- Üriner Sistem Dışı Enfeksiyonlar
  - Seftolozane-tazobaktam,
  - Seftazidime-avibaktam,
  - İmipenem-silastatin-relebactam
  - Sefiderokol (Alternatif)
- MLB +
  - Sefiderokol

- Kombinasyon tedavisi ?
  - Yeni β-laktam **duyarlı ise kombinasyon önerilmemekte***
  - Direnç mevcut ise **tobramisin ile kombinasyon (MIC değerine göre tercih**)
  - Tobramisin dirençli ise **polimiksin B önerilmekte (Üriner sistem dışı)**

Öneri	Kanıt Düzeyi
Karbapenem-dirençli **Pseudomonas aeruginosa (KDPA)** ***Tedavi seçiminde öneriler***	
Ağır hastalarda DTR PA eğer duyarlı ise, **Seftolozane-tazobaktam İmipenem relebaktam/** Sefiderokol/ Seftazidim-Avibaktam için kanıt yetersiz	Düşük
Ağır olmayan ve düşük riskli hastalar için enfeksiyon kaynağı ve klinik özellikler değerlendirilerek eski antibiyotikler kullanılabilir	Uzman görüşü
Karbapenem-dirençli **Pseudomonas aeruginosa *(KDPA)*** ***Kombinasyon tedavisi için öneriler***	
Seftazidime-avibaktam and Seftolozane-tazobaktam) veya Sefiderokol için yetersiz kanıt	Öneri yok
Ağır ve yüksek riskli hastalarda in vitro iki aktif ajanla kombinasyon (polimiksin, aminoglikozit, fosfomisin)	Çok düşük
Ağır olmayan ve düşük riskli hastalar için enfeksiyon kaynağı ve klinik özellikler değerlendirilerek monoterapi önerisi	Uzman görüşü

	KDAB	GSBL	KDPA non-MBL	KDE non-CP	KDE-KPC	KDE-OXA-48	KDE-MBL	
Yeni antibiyotikler								
Seftolozan/tazobactam	✗	✓	✓	✗	✗	✗	✗	EMA/FDA 👍 Komplike ÜSE, İAE, VİP, HGP
Seftazidim-avibaktam	✗	✓	✓	±	✓	✓	✗	EMA/FDA 👍 Komplike ÜSE, İAE, VİP, HGP / EMA 👍 Gram (-)
Meropenem-vaborbaktam	✗	✓	✗	±	✓	✗	✗	FDA 👍 Komplike ÜSE EMA 👍 Komplike ÜSE, VİP, HGP, Gram (-)
Imipenem-cilastatin/relebactam	✗	✓	✓	±	✓	✗	✗	FDA 👍 Komplike ÜSE, İAE EMA 👍 VİP, HGP, Kan Dolaşımı Enfeksiyonları, Gram (-)
Plazomicin	✗	✓	±	✓	✓	✓	±	FDA 👍 Komplike ÜSE, EMA ⊘
Eravacycline	✓	✓	✗	✓	✓	✓	✓	EMA/FDA 👍 Komplike İAE
Sefiderokol	✓	✓	✓	✓	✓	✓	✓	FDA 👍 Komplike ÜSE, HGP, VİP, EMA 👍 Gram (-)
Eski antibiyotikler								
Polimiksinler	✓	✓	✓	✓	✓	✓	✓	
Aminoglikozitler	±	±	±	±	±	±	±	
Fosfomisin iv	✗	✓	±	±	±	±	±	
Aztreonam	✗	✗	±	✗	✗	✗	±	
Tigesiklin	✓	✓	✗	✓	✓	✓	✓	
Temosilin	✗	✓	✗	✗	±	✗	✗	

Colistin alone versus colistin plus meropenem for treatment of severe infections caused by carbapenem-resistant Gram-negative bacteria: an open-label, randomised controlled trial

Mical Paul, George L Daikos, Emanuele Durante-Mangoni, Dafna Yahav, Yehuda Carmeli, Yael Dishon Benattar, Anna Skiada, Roberto Andini, Noa Eliakim-Raz, Amir Nutman, Oren Zusman, Anastasia Antoniadou, Pia Clara Pafundi, Amos Adler, Yaakov Dickstein, Ioannis Pavleas, Rosa Zampino, Vered Daitch, Roni Bitterman, Hiba Zayyad, Fidi Koppel, Inbar Levi, Tanya Babich, Lena E Friberg, Johan W Mouton, Ursula Theuretzbacher, Leonard Leibovici

Randomize kontrollü çalışma
(2013-2016)

Çok merkezli
(İsrail-Yunanistan-İtalya, altı hastane)
Pseudomonas spp. 21 hasta !

Kolistin vs kolistin+meropenem (3x2 gr, 3 saat inf.)

14 ve 28 günlük mortalite
Klinik başarısızlık ?

Infection characteristics and treatment		
Acquisition of infection in the intensive care unit	77 (39%)	71 (34%)
Pathogen		
Acinetobacter baumannii	151 (76%)	161 (77%)
Enterobacteriacaeae	34 (17%)	39 (19%)
Pseudomonas/other	13 (7%)	8 (4%)
Meropenem MIC distribution	n=142	n=148
>8 mg/L	137 (97%)	144 (97%)
8 mg/L	1 (2%)	2 (1%)
>2 to <8 mg/L	4 (3%)	2 (1%)
Type of infection		
Bacteraemia	76 (38%)	97 (47%)
Ventilator-associated or hospital-acquired pneumonia	97 (49%)	85 (41%)
Probable ventilator-associated pneumonia	11 (6%)	14 (7%)
Urinary tract infection	14 (7%)	12 (6%)

Colistin alone versus colistin plus meropenem for treatment of severe infections caused by carbapenem-resistant Gram-negative bacteria: an open-label, randomised controlled trial

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	Colistin	Colistin and meropenem	Risk ratio (95% CI) for outcome with combination	p value
Main pathogen				
n	198	208	..	..
Clinical failure				
Acinetobacter baumannii	125 (83%), n=151	130 (81%), n=161	0·97 (0·87–1·09)	0·643
Enterobacteriaceae‡	23 (68%), n=34	18 (46%), n=39	0·78 (0·54–1·13)	0·185
Pseudomonas or others§	8 (62%), n=13	4 (50%), n=8	0·81 (0·36–1·84)	0·673
28-day mortality				
A baumannii	70 (46%), n=151	84 (52%), n=161	1·11 (0·87–1·41)	0·404
Enterobacteriaceae	12 (35%), n=34	8 (21%), n=39	0·62 (0·29–1·36)	0·235
Pseudomonas or others	4 (31), n=13	2 (25%), n=8	0·81 (0·19–3·47)	1·0
14-day mortality				
A baumannii	54 (36%), n=151	62 (39%), n=161	1·11 (0·82–1·52)	0·495
Enterobacteriaceae	6 (18%), n=34	6 (15%), n=39	0·90 (0·32–2·51)	0·838
Pseudomonas or others	4 (31%), n=13	2 (25%), n=8	0·81 (0·19–3·47)	1·0

Infection characteristics and treatment		
Acquisition of infection in the intensive care unit	77 (39%)	71 (34%)
Pathogen		
Acinetobacter baumannii	151 (76%)	161 (77%)
Enterobacteriaceae	34 (17%)	39 (19%)
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NEJM Evidence

Colistin Monotherapy versus Combination Therapy for Carbapenem-Resistant Organisms

Keith S. Kaye, M.D., M.P.H.[1], **Dror Marchaim, M.D.**[2], **Visanu Thamlikitkul, M.D.**[3], **Yehuda Carmeli, M.D.**[4], **Cheng-Hsun Chiu, M.D., Ph.D.**[5], **George Daikos, M.D.**[6], **Sorabh Dhar, M.D.**[7],

Randomize kontrollü
2012-2020 yılları arasında
ABD, Taiwan, Tayland, İsrail, Yunanistan, İtalya, Bulgaristan
Kolistin vs Kolistin + Meropenem

28 gün mortalite

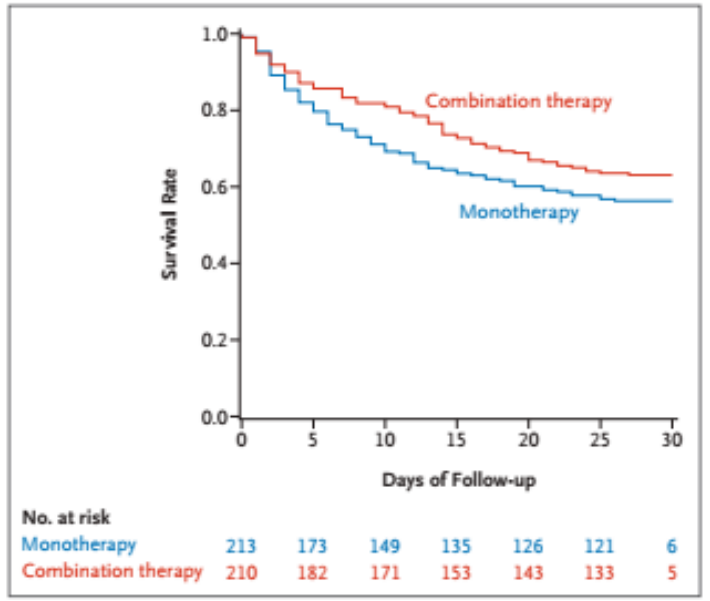
Klinik yanıtsız
Mikrobiyolojik başarı ?

Table 4. Secondary Outcomes.*

Outcome	Colistin plus Placebo	Colistin plus Meropenem	Difference (95% CI)† or P Value
Clinical failure‡			
Overall	119/184 (65)	110/190 (58)	6.8 (–3.1 to 16.6)
Death by 7 days' posttreatment	52/184 (28)	39/190 (21)	7.7 (–0.9 to 16.4)
Need for rescue therapy	44/184 (24)	42/190 (22)	1.8 (–6.7 to 10.3)
Discontinue due to adverse event	12/184 (7)	21/190 (11)	–4.5 (–10.2 to 1.2)
BSI >5 days§	4/59 (7)	2/67 (3)	3.8 (–3.8 to 11.4)
Oxygenation failure¶	72/123 (59)	53/117 (46)	12.9 (0.3–25.4)
Pneumonia	96/132 (73)	87/134 (65)	7.8 (–3.3 to 18.9)
Bloodstream infection	23/52 (44)	23/56 (41)	3.2 (–15.5 to 21.8)
Acinetobacter baumannii	95/140 (68)	88/146 (60)	7.6 (–3.5 to 18.7)
CRE	18/32 (56)	16/33 (48)	7.8 (–16.4 to 32.0)
Pseudomonas aeruginosa	12/20 (60)	11/19 (58)	2.1 (–28.8 to 33.0)
Microbiologic cure‖			
Overall	106/163 (65)	103/171 (60)	4.8 (–5.6 to 15.2)
Pneumonia	59/114 (52)	48/115 (42)	10.0 (–2.8 to 22.9)
BSI	47/49 (96)	55/56 (98)	–2.3 (–8.8 to 4.2)
A. baumannii	76/121 (63)	74/130 (57)	4.9 (–7.2 to 17.0)
CRE	23/29 (79)	24/32 (75)	4.3 (–16.7 to 25.3)
P. aeruginosa	9/19 (47)	6/17 (35)	12.1 (–19.9 to 44.0)
Adverse events of interest			
Acute kidney injury**	88/170 (52)	85/174 (49)	0.55
Risk	36/169 (21)	30/174 (17)	
Injury	31/169 (18)	29/174 (17)	
Failure	21/169 (12)	26/174 (15)	
Hypersensitivity reaction††	3/229 (1)	7/227 (3)	0.22
Neurotoxicity††	11/229 (5)	5/227 (2)	0.29
Seizures††	3/229 (1)	3/227 (1)	1.00

Table 3. Twenty-Eight–Day Mortality.*

Cause of Mortality	Colistin plus Placebo	Colistin plus Meropenem	Difference (95% CI)†	P Value
Overall	92/213 (43)	77/210 (37)	6.5 (–2.8 to 15.8)	0.17
Pneumonia	69/152 (45)	59/146 (40)	5.0 (–6.2 to 16.2)	
BSI	23/61 (38)	18/64 (28)	9.6 (–6.8 to 26.0)	
Acinetobacter baumannii	76/165 (46)	69/164 (42)	4.0 (–6.7 to 14.7)	
CRE	11/34 (32)	6/35 (17)	15.2 (–4.9 to 35.3)	
Pseudomonas aeruginosa	10/23 (43)	5/20 (25)	18.5 (–9.3 to 46.2)	



Active monotherapy and combination therapy for extensively drug-resistant *Pseudomonas aeruginosa* pneumonia

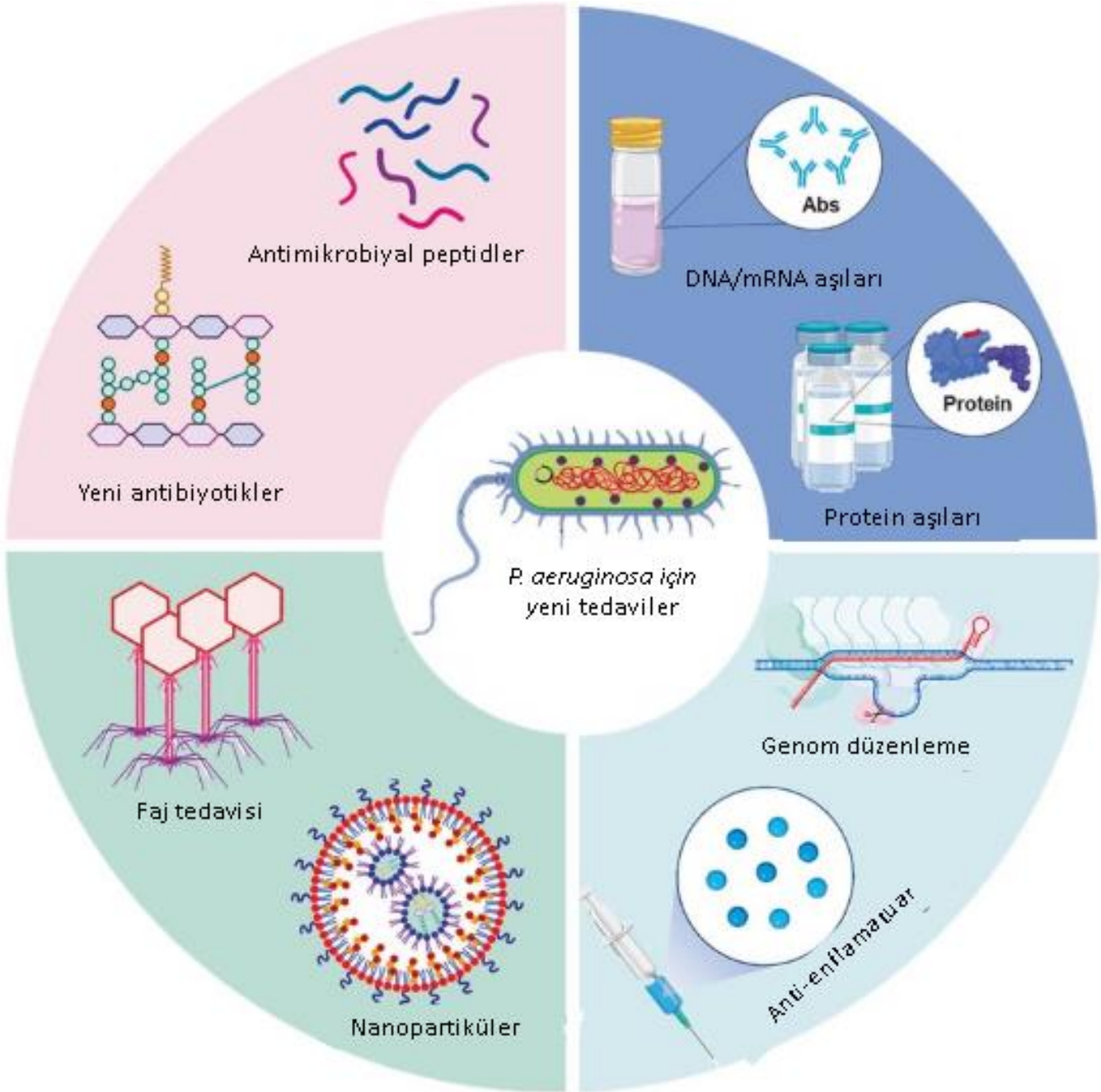
Thana Khawcharoenporn[a,*], Alan Chuncharunee[b], Chailat Maluangnon[b], Thitiporn Taweesakulvashra[b], Pimsiri Tiamsak[b]

[a] *Division of Infectious Diseases, Faculty of Medicine, Thammasat University, Pathumthani, Thailand*
[b] *Thammasat University Hospital, Pathumthani, Thailand*

Retrospektif, 2011-2016 yılları arasında
136 hasta
inaktif tedavi, aktif monoterapi ve aktif iki ilaçlı kombinasyon tedavisi karşılaştırma
Sağ kalım 14 ve 28 günler
Mikrobiyolojik başarı ?

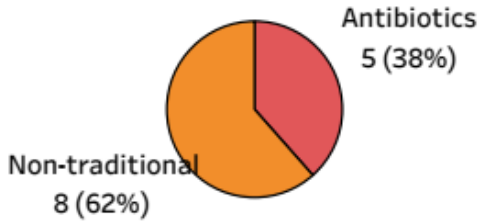
Active monotherapy (n=74)	Active combined two-drug therapy (n=40)	Inactive therapy (n=22)
Colistin and non-active carbapenem (n=40; 54%)	Colistin and fosfomycin (n=22; 55%)	Piperacillin-tazobactam (n=10; 46%)
Colistin alone (n=22; 30%)	Doripenem[a] and fosfomycin (n=12; 30%)	Non-active carbapenems (n=10; 46%)
Colistin and non-active fosfomycin (n=6; 8%)	Colistin and doripenem[a] (n=6; 15%)	Non-active fosfomycin and non-active carbapenems (n=2; 9%)
Fosfomycin and non-active carbapenem (n=4; 5%)		
Doripenem[a] and non-active fosfomycin (n=2; 3%)		

Variables	All (n=136)	Active monotherapy(n=74)	Active combined two-drug therapy(n=40)	Inactive therapy(n=22)	P-value[a]
Treatment characteristics					
Time to receipt of the active therapy[b] (h, median, IQR)	72 (48–96)	72 (48–96)	60 (48–120)	–	0.30
Infectious diseases consultation	98 (72)	58 (78)	40 (100)	0 (0)	<0.001
Colistin use	92 (68)	66 (89)	26 (65)	0 (0)	<0.001
Intravenous colistin	54/92 (59)	38/66 (58)	16/26 (61)	–	0.73[c]
Nebulized colistin	38/92 (41)	28/66 (42)	10/26 (39)	–	<0.001
Outcomes					
Survival at 28 days					
All pneumonia	74 (54)	38 (51)	36 (90)	0 (0)	<0.001
HAP	42/86 (49)	18/42 (43)	24/26 (92)	0/18 (0)	0.007
VAP	32/50 (64)	20/32 (63)	12/14 (86)	0/4 (0)	<0.001
Survival at 14 days	86 (68)	48 (65)	36 (90)	2 (9)	<0.001
Mean survival time by log rank test (days)					
All pneumonia	20	20	26	8	<0.001
HAP	19	19	27	8	0.001
VAP	21	22	25	8	<0.001
Microbiological cure at the end of therapy	76 (56)	40 (54)	36 (90)	0 (0)	0.11
Adverse reaction					
Nephrotoxicity	16 (12)	12 (16)	4 (10)	0 (0)	0.09
Diarrhoea	2 (2)	0 (0)	2 (5)	0 (0)	<0.001

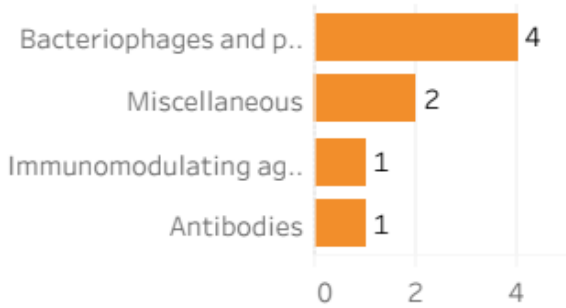


Qin, S., Xiao, W., Zhou, C. *et al. Pseudomonas aeruginosa*: pathogenesis, virulence factors, antibiotic resistance, interaction with host, technology advances and emerging therapeutics. *Sig Transduct Target Ther* **7**, 199 (2022). https://doi.org/10.1038/s41392-022-01056-1

A.1. Products by type



A.2. No. of non traditional products by category



A.3. Products by pathogen category and phase

Pathogen category	Phase I	Phase II	Phase III	Total
Priority pathogens	5	6	2	13
Total	5	6	2	13

Pathogen c..	Product type	Product name	Antibacterial class	
Priority pathogens	Antibiotics	MRX-8	Polymyxin	Phase I
		QPX7728 + QPX2014	Boronate-BLI + undisclosed	Phase I
		SPR-206	Polymyxin	Phase I
		Taniborbactam + cefepime	Boronate BLI + β-lactam (cephalosporin)	Phase III
		Zidebactam + cefepime	DBO-BLI/ PBP2 binder + cephalosporin	Phase I
	Non-traditional	"Bacteriophage"	Bacteriophage	Phase III
		AP-PA02	Bacteriophage	Phase II
		BX004-A	Bacteriophage	Phase II
		Ftortiazinon + cefepime	Type III secretion system inhibition + cefepime	Phase II
		OligoG	Alginate oligosaccharide (G-block) fragment	Phase II
		Rhu-pGSN	Recombinant human plasma gelsolin protein	Phase II
		TRL1068	Antibody	Phase I
		YPT-01	Bacteriophage	Phase II

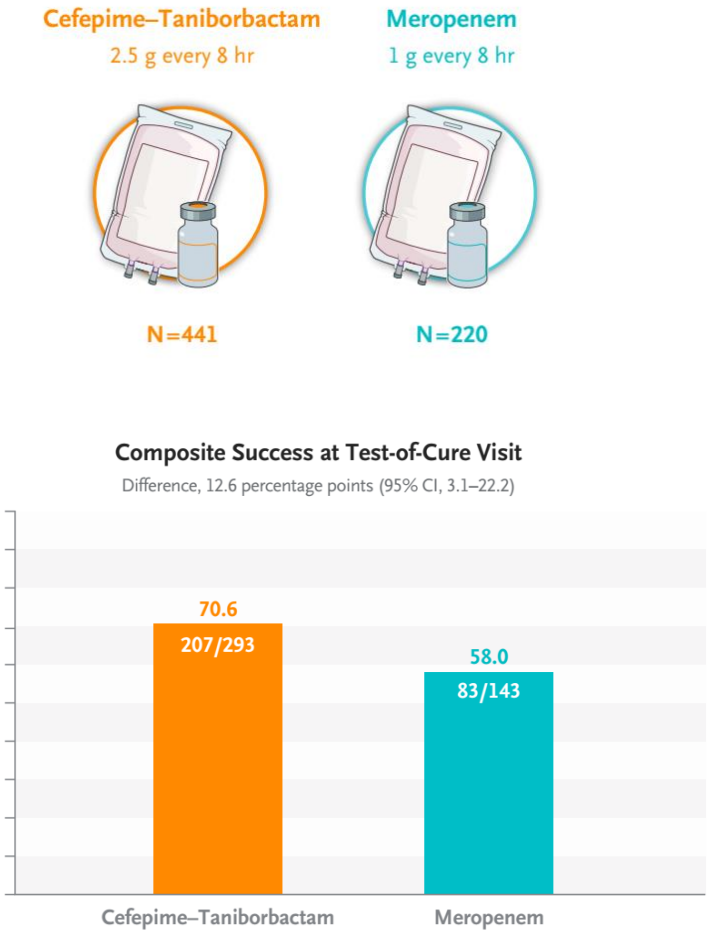
ORIGINAL ARTICLE

Cefepime–Taniborbactam in Complicated Urinary Tract Infection

Florian M. Wagenlehner, M.D., Leanne B. Gasink, M.D., Paul C. McGovern, M.D., Greg Moeck, Ph.D., Patrick McLeroth, M.D., MaryBeth Dorr, Ph.D., Aaron Dane, M.Sc., and Tim Henkel, M.D., Ph.D., for the CERTAIN-1 Study Team*

Table 3. Composite, Microbiologic, and Clinical Success at Test of Cure, According to Pathogen (Microbiologic Intention-to-Treat Population).*

Baseline Pathogen and Outcome	Cefepime–Taniborbactam	Meropenem
	no./total no. of patients (%)	
Microbiologic success		
Enterobacterales species or category	224/281 (80)	91/137 (66)
E. cloacae complex	11/14 (79)	1/3 (33)
E. coli	163/202 (81)	67/99 (68)
K. pneumoniae	27/40 (68)	14/20 (70)
P. mirabilis	9/10 (90)	4/10 (40)
Cefepime-resistant	50/66 (76)	18/30 (60)
ESBL-producing	57/76 (75)	25/40 (62)
Multidrug-resistant	71/100 (71)	38/55 (69)
P. aeruginosa	5/12 (42)†	4/6 (67)
Clinical success		
Enterobacterales species or category	241/281 (86)	111/137 (81)
E. cloacae complex	14/14 (100)	3/3 (100)
E. coli	177/202 (88)	80/99 (81)
K. pneumoniae	29/40 (72)	14/20 (70)
P. mirabilis	9/10 (90)	9/10 (90)
Cefepime-resistant	54/66 (82)	25/30 (83)
ESBL-producing	64/76 (84)	32/40 (80)
Multidrug-resistant	87/100 (87)	46/55 (84)
P. aeruginosa	10/12 (83)	5/6 (83)



Clinical Trial > JAMA. 2022 Oct 4;328(13):1304-1314. doi: 10.1001/jama.2022.17034.

Effect of Cefepime/Enmetazobactam vs Piperacillin/Tazobactam on Clinical Cure and Microbiological Eradication in Patients With Complicated Urinary Tract Infection or Acute Pyelonephritis: A Randomized Clinical Trial

Keith S Kaye [1], Adam Belley [2], Philip Barth [2], Omar Lahlou [2], Philipp Knechtle [3], Paola Motta [4], Patrick Velicitat [2]

POPULATION

573 Women
468 Men

Adults >18 years with a clinical diagnosis of complicated UTI or acute pyelonephritis caused by gram-negative urinary pathogens

Mean age: 54.7 years

LOCATIONS

90
Sites worldwide

INTERVENTION

1041 Patients randomized
1034 Patients analyzed

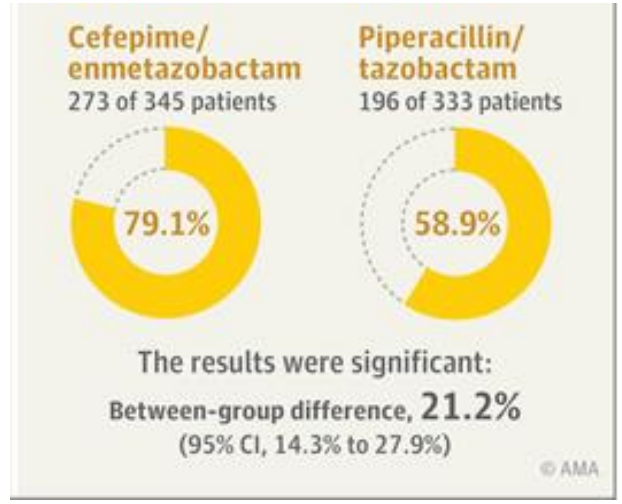
520
Cefepime/enmetazobactam
Cefepime, 2 g/enmetazobactam, 0.5 g, given by 2-hour infusion every 8 hours for 7 days

521
Piperacillin/tazobactam
Piperacillin, 4 g/tazobactam, 0.5 g, given by 2-hour infusion every 8 hours for 7 days

PRIMARY OUTCOMES

Proportion of patients in the primary analysis set who achieved overall treatment success, defined as clinical cure combined with microbiological eradication (<10^3 CFU/mL in urine) of infection

Response at visit	No. (%) Cefepime/enmetazobactam (n = 345)	No. (%) Piperacillin/tazobactam (n = 333)	Treatment difference, % (95% CI)[a]
Day 14[b]			
Overall success[c]	273 (79.1)	196 (58.9)	21.2 (14.3 to 27.9)
Clinical cure	319 (92.5)	296 (88.9)	3.5 (−1.0 to 8.0)
Microbiological eradication	286 (82.9)	216 (64.9)	19.0 (12.3 to 25.4)
Day 3 of treatment			
Overall success	318 (92.2)	293 (88.0)	4.1 (−0.6 to 8.9)
Clinical cure	18 (5.2)	16 (4.8)	0.5 (−3.1 to 4.0)
Improvement[d]	317 (91.9)	302 (90.7)	Not determined
Microbiological eradication	323 (93.6)	299 (89.8)	3.8 (−0.6 to 8.3)
End of treatment			
Overall success	318 (92.2)	311 (93.4)	−1.3 (−5.3 to 2.9)
Clinical cure	323 (93.6)	315 (94.6)	−1.1 (−4.8 to 2.7)
Microbiological eradication	332 (96.2)	322 (96.7)	−0.7 (−3.7 to 2.5)
Day 21[e]			
Overall success	236 (68.4)	196 (58.9)	10.7 (3.4 to 17.8)
Clinical cure	299 (86.7)	279 (83.8)	2.8 (−2.7 to 8.3)
Microbiological eradication	258 (74.8)	221 (66.4)	9.5 (2.6 to 16.3)

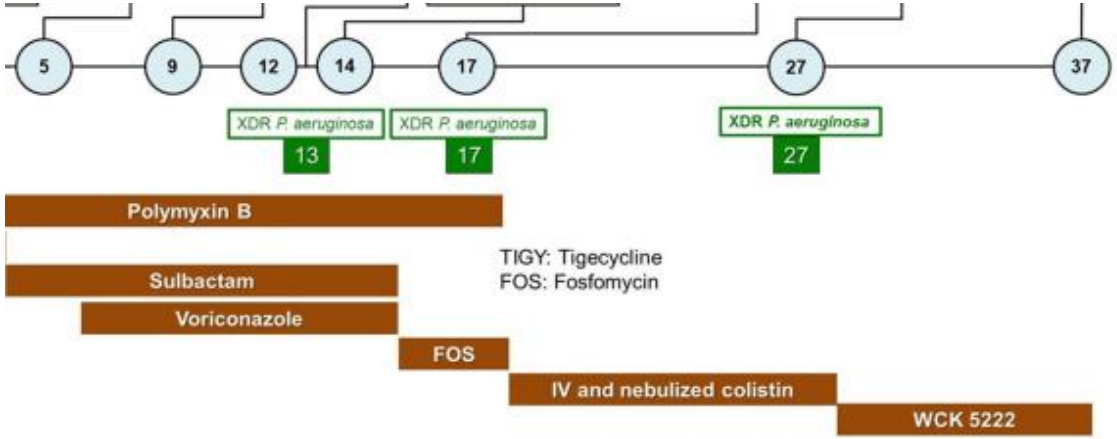


Dubey *et al. Annals of Clinical Microbiology and Antimicrobials* (2023) 22:55
https://doi.org/10.1186/s12941-023-00606-x

Annals of Clinical Microbiology and Antimicrobials

BRIEF REPORT **Open Access**

Compassionate use of a novel β-lactam enhancer-based investigational antibiotic cefepime/zidebactam (WCK 5222) for the treatment of extensively-drug-resistant NDM-expressing *Pseudomonas aeruginosa* infection in an intra-abdominal infection-induced sepsis patient: a case report

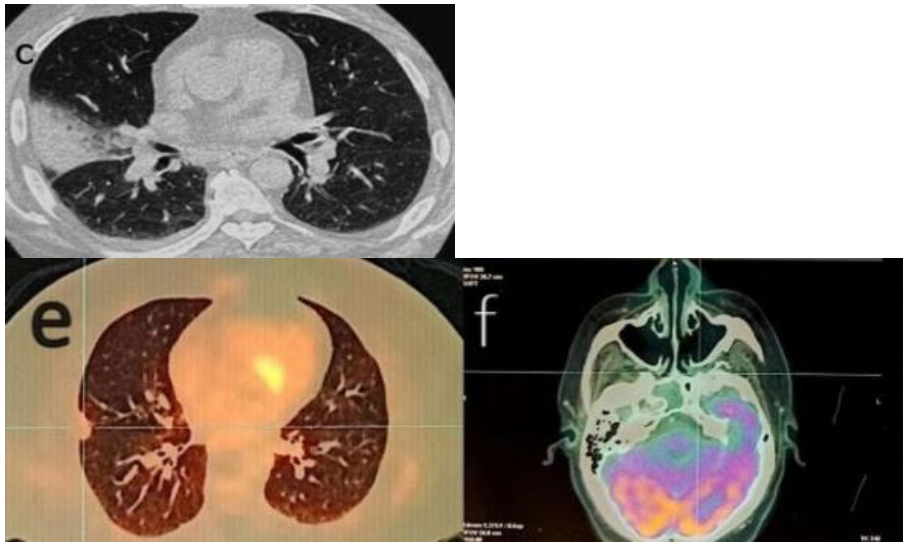


European Journal of Clinical Microbiology & Infectious Diseases
https://doi.org/10.1007/s10096-024-04791-1

BRIEF REPORT

Successful treatment of sino-pulmonary infection & skull base osteomyelitis caused by New Delhi metallo-β-lactamase-producing *Pseudomonas aeruginosa* in a renal transplant recipient by using an investigational antibiotic cefepime/zidebactam (WCK 5222)

Rajeev Soman[1,2] · Rasika Sirsat[3] · Ayesha Sunavala[4] · Neha Punatar[3] · Jugal Mehta[3] · Camilla Rodrigues[5] · Balaji Veeraraghavan[6]



Clinical Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of America · hivma hiv medicine association · OXFORD

Modifiable Risk Factors for the Emergence of Ceftolozane-tazobactam Resistance

Pranita D. Tamma,[1] Stephan Beisken,[2] Yehudit Bergman,[3] Andreas E. Posch,[4] Edina Avdic,[5] Sima L. Sharara,[6] Sara E. Cosgrove,[7] and Patricia J. Simner[8]

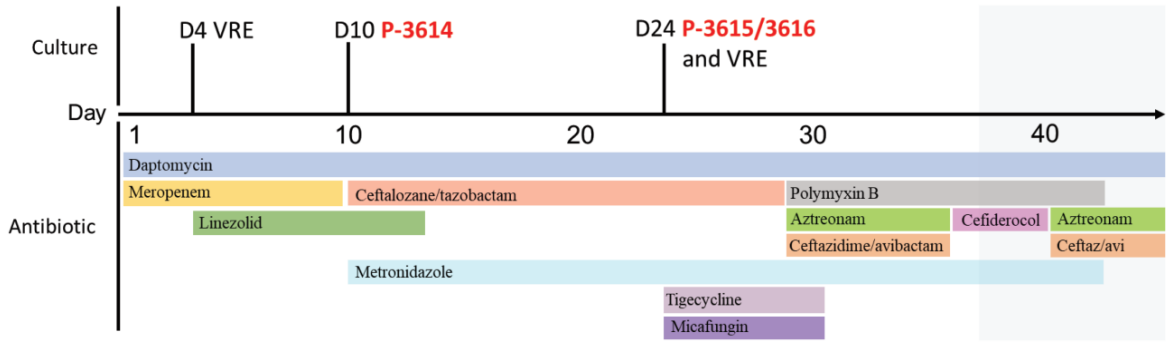
Variable	Increase in TOL-TAZ MIC (mcg/mL) (n = 14, 50%)	No Increase in TOL-TAZ MIC (mcg/mL) (n = 14, 50%)	*P*-value
Demographics			
Age in years (median, IQR)	56 (40–65)	56 (48–60)	.95
Female	5 (36%)	3 (21%)	.40
Weight in kilograms (median, IQR)	62 (56–79)	63 (56–76)	.87
Renal replacement therapy	4 (29%)	1 (7%)	.14
Underlying medical condition			
Cystic fibrosis	2 (14%)	1 (7%)	.54
Chronic ventilator dependence	3 (21%)	4 (29%)	.66
Burn	1 (7%)	1 (7%)	.99
Active immunosuppressive therapy	8 (57%)	5 (36%)	.26
Complex cardiovascular disease with foreign material[a]	3 (21%)	1 (7%)	.28
Site of infection			
Pneumonia	9 (64%)	10 (71%)	.69
Bacteremia	4 (29%)	1 (7%)	.14
Intra-abdominal infection	1 (7%)	3 (21%)	.28
Treatment data			
3 grams IV every 8 hours of TOL-TAZ	12 (86%)	14 (100%)	.14
1.5 grams IV every 8 hours of TOL-TAZ	2 (14%)	0	.14
1-hour TOL-TAZ infusion	14 (100%)	10 (71%)	.04
3-hour TOL-TAZ infusion	0	4 (29%)	.04
Duration of TOL-TAZ therapy	15 (8–22)	8.5 (6–14)	.32
Combination therapy for > 48 hours	6 (43%)	4 (29%)	.43
No source control[a]	4 (29%)	0	.04

Clinical Infectious Diseases

BRIEF REPORT

Evolution of Cefiderocol Non-Susceptibility in *Pseudomonas aeruginosa* in a Patient Without Previous Exposure to the Antibiotic

Ana Paula Streling,[1,2,†] Mohanad M. Al Obaidi,[3,4,†] William D. Lainhart,[3,4,5] Tirdad Zangeneh,[3,4] Ayesha Khan,[1,6,7] An Q. Dinh,[1,8,9] Blake Hanson,[1,8,9] Cesar A. Arias,[1,7,8,9,10] and William R. Miller[1,8]



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Emergence of cefiderocol resistance during ceftazidime/avibactam treatment caused by a large genomic deletion, including *ampD* and *piuCD* genes, in *Pseudomonas aeruginosa*

María A. Gomis-Font,[1] María A. Clari,[2] Carla López-Causapé,[1] David Navarro,[2] Antonio Oliver[1]

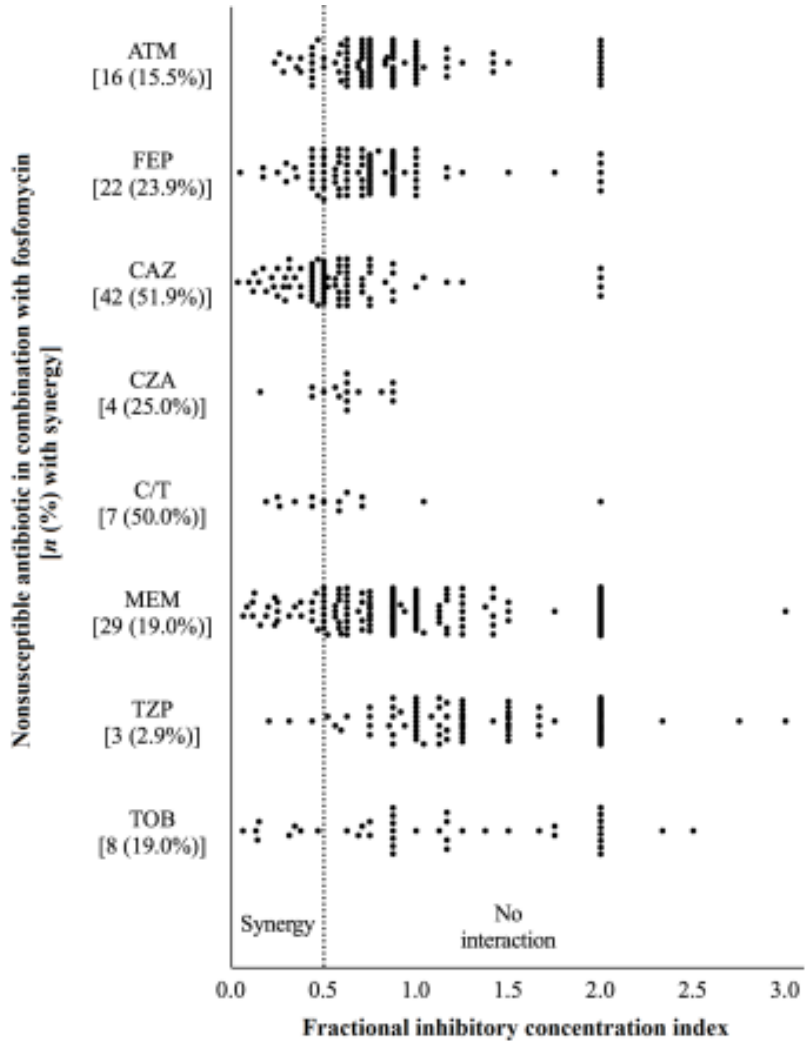
Prevalence of *in vitro* synergistic antibiotic interaction between fosfomycin and nonsusceptible antimicrobials in carbapenem-resistant *Pseudomonas aeruginosa*

Lindsay M. Avery[1], Christina A. Sutherland[1] and David P. Nicolau[1,2,*]

İnvitro çalışma
Karbapenem dirençli PSA izolatlarında
Fosfomisinin sinerjistik etkinliği ?

153 izolat
Sinerji en sık
Seftazidim (42/81, 51.9%) Seftolozane/tazobaktam (7/14, 50.0%)

Restoration of susceptibility !
Fosfomisin ile kombinasyonu sonrası duyarlılıkta düzelme
10 (%71.4) fosfomisin–Seftolozane/tazobaktam
11 (%68.8) fosfomisin–Seftazidime/avibaktam
Meropenem 21/153 (%13.7)



antibiotics

MDPI

Case Report

Azithromycin: An Underappreciated Quinolone-Sparing Oral Treatment for *Pseudomonas aeruginosa* Infections

Erlinda R. Ulloa [1,2,*] and George Sakoulas [3,4]

P. aeruginosa bağlı otolaringolojik enfeksiyonlar

Üç olgu ; Eksternal Otit ve Kronik Sinüzit

Azitromisin 500mg /gün

3-8 hafta süre ile tedavi

Klinik başarı !

Antibiotic	Case 1		Case 2		Case 3	
	MIC (mg/L)	Interpretation	MIC (mg/L)	Interpretation	MIC (mg/L)	Interpretation
Amikacin	>32	R	-	-	-	-
Aztreonam	>16	R	≤4	S	≤4	S
Cefepime	>16	R	≤2	S	8	S
Cefidericol	8	I	-	-	-	-
Ceftazidime	>16	R	≤1	S	4	S
Ceftazidime/avibactam	>16	R	-	-	-	-
Ceftolozane/tazobactam	>8	R	-	-	-	-
Ciprofloxacin	>2	R	≤0.25	S	>2	R
Delafloxacin	>2	R	-	-	-	-
Colistin	2	I	-	-	-	-
Eravacycline	4	(ND)	-	-	-	-
Gentamicin	>8	R	≤2	S	>8	R
Imipenem	>16/4	R	-	-	>8	R
Levofloxacin	>4	R	≤0.50	S	>4	R
Meropenem	>8	R	≤1	S	2	S
Meropenem/vaborbactam	>16/8	R	-	-	-	-
Piperacillin/tazobactam	>64	R	≤8	S	≤8	S
Tobramycin	>8	R	≤2	S	≤2	S

Review

Bacteriophage–Antibiotic Combination Therapy against *Pseudomonas aeruginosa*

Guillermo Santamaría-Corral [1], Abrar Senhaji-Kacha [1,2], Antonio Broncano-Lavado [1], Jaime Esteban [1,2,*] and Meritxell García-Quintanilla [1,2]

Disease	Bacteria	Phage Therapy	Antibiotic Combination	Outcome	Reference
Prosthetic joint infection (PJI)	*P. aeruginosa*	Three-phage cocktail (10^9 PFU/mL)	Ciprofloxacin Ceftazidime	Rapid improvement of patient's health	Akturk, E.;
Catheter-related bacteremia	Pandrug-resistant *P. aeruginosa*	Personalized three-phage cocktail (10^6 PFU/mL) IV 3 h for 21 days	IV Cefiderocol 2 weeks later IV Colistin	Favorable to patient after 21 months follow-up	Tkhilaishvili, T.
Catheter-related bacteremia	*P. aeruginosa* XDR	Phage cocktail (10^8 PFU/mL) by direct contact with the infected bone for 4 h	Colistin (local) IV Ceftolozane/Tazobactam	Favorable, with no bacterial growth and rapid healing of bone	Lin, Y.;
Liver infection	*P. aeruginosa* XDR	IV BFC1 cocktail (10^7 PFU/mL)	IV Gentamycin, Colistin and Aztreonam	Controlled the bloodstream infection, and retransplantation was possible after 72 days	Van Nieuwenhuyse, B.
Cystic fibrosis	*P. aeruginosa* MDR	IV AB-PA01 (10^9 PFU/mL) ev Cafora, M.; for 8 weeks	Ciprofloxacin and Piperaciclin-tazobactam for 3 weeks; added Doripenem	No *P. aeruginosa* recurrence or CF exacerbation	Duplessis, C
Pneumonia	*P. aeruginosa* MDR	1) Nebulized AB-PA01 (10^9 PFU/mL) for 2 weeks 2) AB-PA01-m1 and Navy-1 phage cocktail (10^9 PFU/mL)	Piperaciclin-Tazobactam and Colistin	No active *P. aeruginosa* pneumonia after 3 months	Cafora, M.;
Recurrent infections post-transplant	*P. aeruginosa* MDR	IV AB-PA01 for 4 weeks (10^6 PFU/mL)	Inhaled Colistin Piperaciclin-Tazobactam from day 60 to 90	No additional *P. aeruginosa* was cultured	Cafora, M.;
Pneumonia	Carbapenem-resistant *P. aeruginosa*	Personalized two-phage cocktail preparations (10^8 PFU/mL). Nebulized administration and intrapleural for 24 days	IV Amikacin, Azhitromycin, Imipenem, and Ceftazidime-Avibactam	Clearance of the pathogen and clinical improvement	Ferry, T.;
Graft infection, bacteremia	*P. aeruginosa*	OMK01 (10^7 PFU/mL)	Ceftazidime	General clinical improvement	Ferry, T.;
Wound infection	*P. aeruginosa*	PA5 and PA10 (10^{10} PFU/mL)	IV Ceftazidime-Avibactam and Colistin	The wound completely healed, with no *P. aeruginosa* detection	Ferry, T.;
Relapsing bacteremia	*P. aeruginosa* MDR	Local application of BFC 1.10 (10^7 PFU/mL) cocktail	IV Ceftazidime-Avibactam	Bacterial eradication	Racenis, K.
Bacteremia	*P. aeruginosa* MDR	Local application (10^8 PFU/mL) during surgery every 8 h for 5 days	IV Colistin, Meropenem, and Ceftazidime	No *P. aeruginosa* detection	Law, N.;

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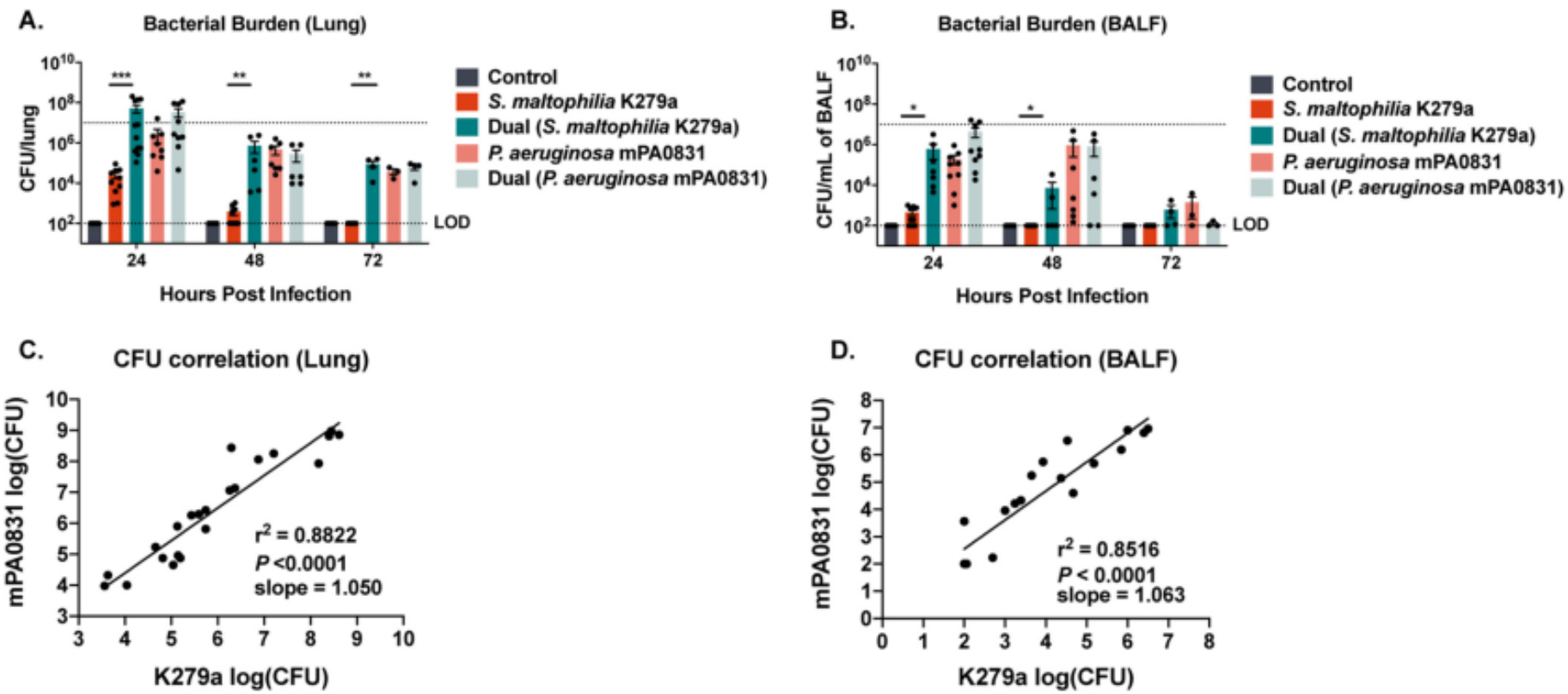
Cooperativity between *Stenotrophomonas maltophilia* and *Pseudomonas aeruginosa* during Polymicrobial Airway Infections

Melissa S. McDaniel,[a,b] Trenton Schoeb,[c] W. Edward Swords[a,b]



Stenotrophomonas maltophilia

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- Biyofilm üretmesi ve virülans faktörleri nedeniyle altta yatan akciğer hastalığı olanlar ve hematolojik malignitesi olanlarda enfeksiyon riski !
- Kolonizasyon / hastalık ??
- Beta laktam direnci !!
- Polimiksinler için tanımlanmış CLSI duyarlılık kriteri yok , polimiksin altında tam olmayan bakteri çoğalması mevcut , heterorezistans ??
- Tedavide polimiksinler önerilmemekte

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Tedavide genel yaklaşım ;

- TMP-SMX, minosiklin/tigesiklin, sefiderokol, levofloksasin ajanlarından ikisini kombine et

ya da

- Seftazidim-avibaktam +aztreonam (diğer ajanlarla yan etki var veya belirgin klinik instabilite varsa)

- Tekli tedavi ile kombinasyon tedavilerini kıyaslayan çalışma sayısı kısıtlı

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TMP-SMX duyarlı ise kombinasyon tedavisinin temel taşı olmalı

- 8-12 mg/kg (TMP dozuna göre) önerilmekte
- Duyarlılık oranı yüksek ve klinik deneyim oldukça fazla

Tigesiklin tedavide TMP-SMX'e başarılı bir alternatif

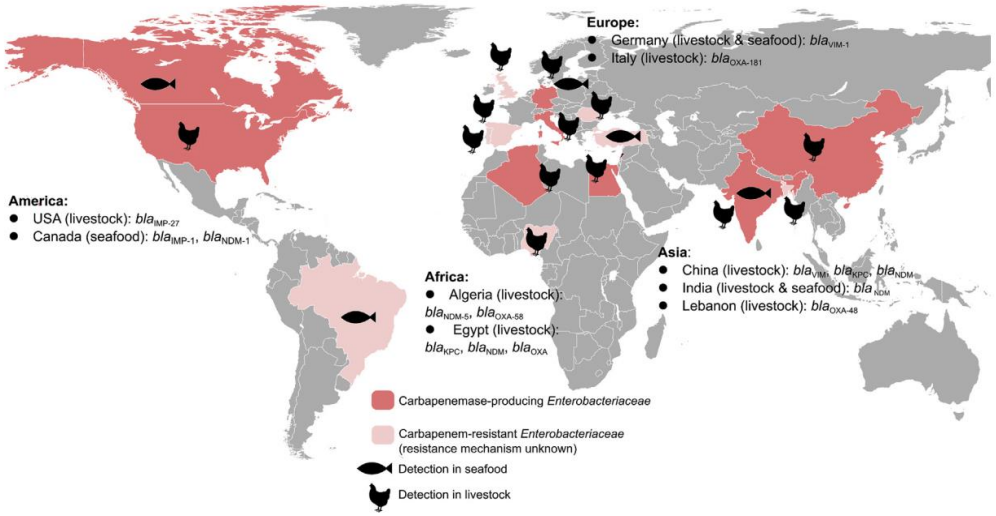
- TMP-SMX monoterapisi ile tigesiklin monoterapisini karşılaştıran çalışmalarda benzer klinik ve mikrobiyolojik başarı

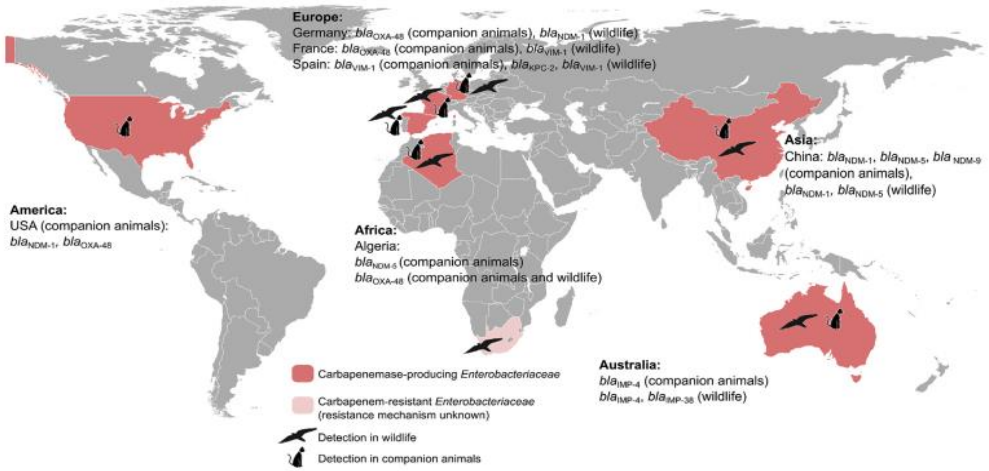
Levofloksasin sadece kombinasyon tedavisi dahilinde önerilmekte , monoterapi olarak önerilmiyor

- Tedavi başında duyarlı olarak saptanmasına rağmen tedavi sırasında MİK değerlerinin yükselmesi olası

Tedavide seftazidim önerilmemekte

- İntrinsik L1 ve L2 beta laktamazların seftazidimi inaktive etmesi beklenir
- %30-40 suş duyarlı görünse de klinik başarı paralel değil





Köck, R., et al. "Carbapenem-resistant Enterobacteriaceae in wildlife, food-producing, and companion animals: a systematic review." *Clinical Microbiology and Infection* 24.12 (2018): 1241-1250.
United Nations EnvironmentProgramme (2023). Bracing for Superbugs: Strengtheningenvironmental action in the One Health response to antimicrobial resistance. Geneva
https://www.ama.com.au/antimicrobial-resistance

ECDC One Health Framework

May 2024

Country	1. WHO AMR focal point appointed by the ministry of health agency	2. Multisectoral and One Health collaboration/coordination	3. AMR action plan developed	4. National surveillance system for AMR in humans	5. Submitted data to a regional network for AMR surveillance, for the year 2021	6. Participated in a regional EQA scheme, for the year 2021/2	7. Enrolled in GLASS	8. IPC in human healthcare	9. Optimising antimicrobial use in human health
Colour code	Yes / No	Excellent / Very good / Good / Fair / Poor	Yes / No/In progress	Excellent / Very good / Good / Fair / Poor	Yes / No	Yes / No	Yes / No	Excellent / Very good / Good / Fair / Poor	Excellent / Very good / Good / Fair / Poor
Türkiye	■	■	■	■	■	■	■	■	■

European Centre for Disease Prevention and Control (ECDC). ECDC One Health Framework. Stockholm: ECDC; 2024. ISBN: 978-92-9498-718-1; Catalogue Number: TQ-02-24-506-EN-N; DOI: 10.2900/634973