



# COVID-19 Pandemi Döneminde Değişen Hastane Epidemiyolojisi ve Yaşanan Salgınlar

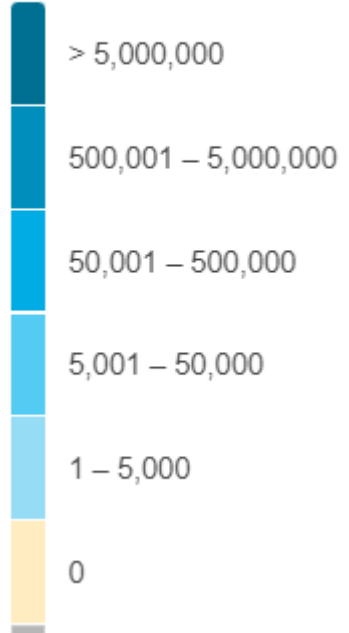
Doç.Dr. Elif SARGIN ALTUNOK

SBÜ Kartal Dr. Lütfi Kırdar Şehir Hastanesi, İstanbul

14.03.2023



Cases - Total x



**‘Dünyayı deęiřtiren 3 yıl’**

**Aralık 2019 - Mart 2023**

**69,886**

new cases in last 24hrs

**758,390,564**

cumulative cases

**6,859,093**

cumulative deaths

In **Türkiye**, from **3 January 2020** to **6:21pm CET, 7 March 2023**, there have been **17,004,677 confirmed cases** of COVID-19 with **101,419 deaths**, reported to WHO. As of **28 January 2023**, a total of **139,694,693 vaccine doses** have been administered.

## Türkiye Situation

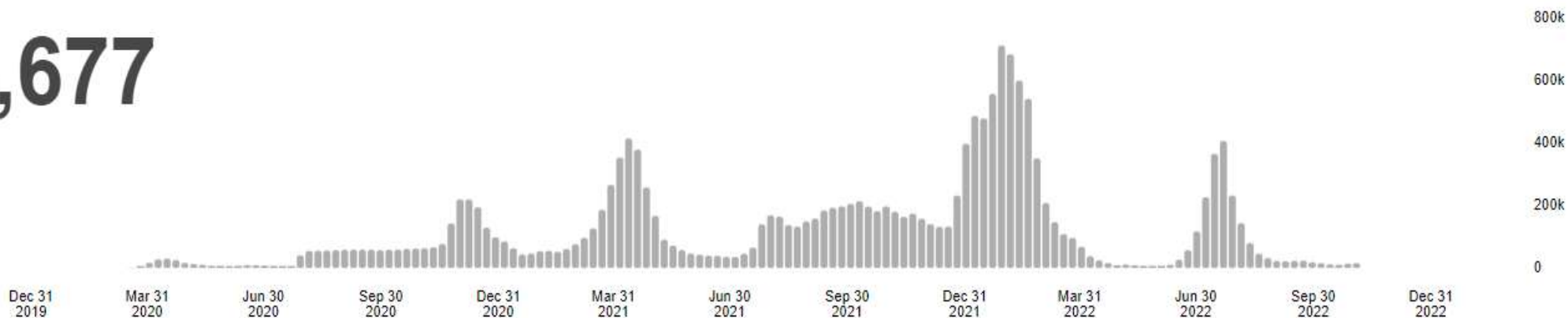


Daily

Weekly

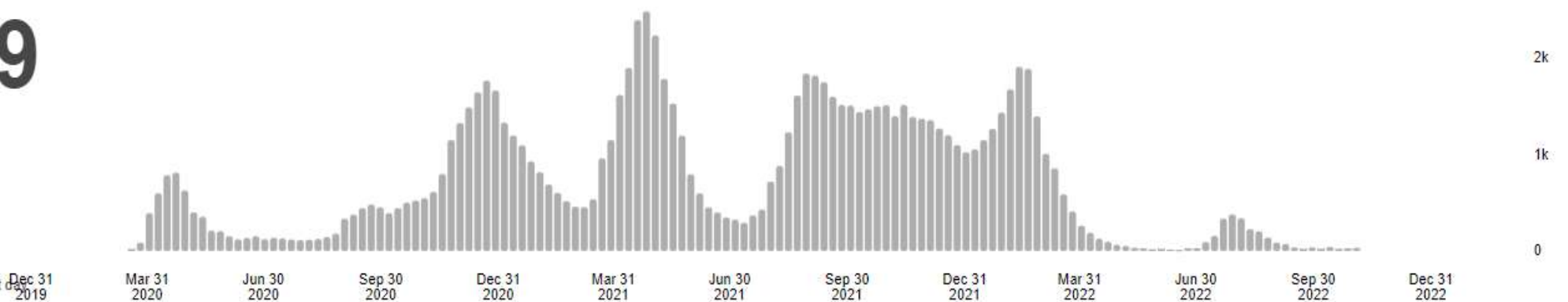
# 17,004,677

confirmed cases



# 101,419

deaths



Source: World Health Organization

■ Data may be incomplete for the current day or week.

# COVID-19 pandemi müdahalelerinin SBİi hızlarını etkileme potansiyeli;

- Özellikle YB takibi gereken kritik hasta sayısında kısa sürede kapasitenin üstünde artışlar
- Sağlık kurumları, **ani ve beklenmedik bu hasta akışını** yönetmek için hızla adapte oldular, ancak;

▪ **Enfeksiyon önleme ve kontrolü uygulamalarına uyum ve sürdürme yeteneği bu dönemde daha da zorlaştı**





# Pandemi döneminde SBİi hızlarını etkileyen faktörler;

- Artan kritik hasta sayısı
  - Komorbiditelerin artması
  - Daha uzun yatış süreleri
  - Daha uzun cihaz kullanım süreleri
- 
- **YB'de zorunlu yeniden yapılanmalar - artırılan yatak kapasitesi**
  - **Değişen personel sayısı, düzeni ve yeni uygulamalar**
  - **Kişisel koruyucu ekipmanların 'modifiye' kullanımları**

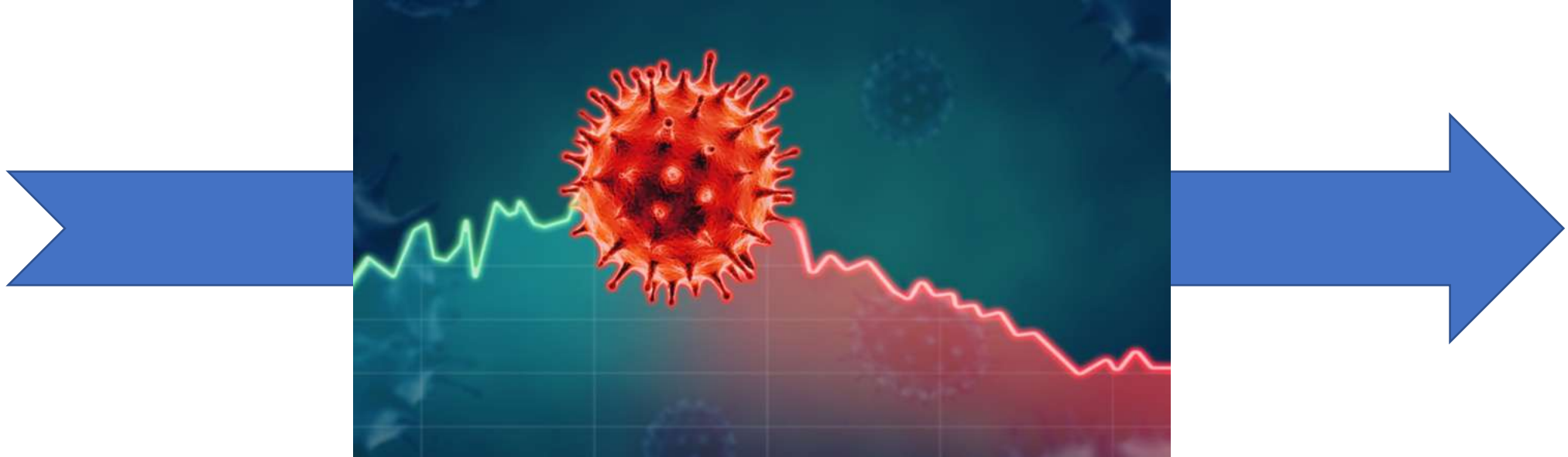


# Hastane Epidemiyolojisi

Pandemi öncesi

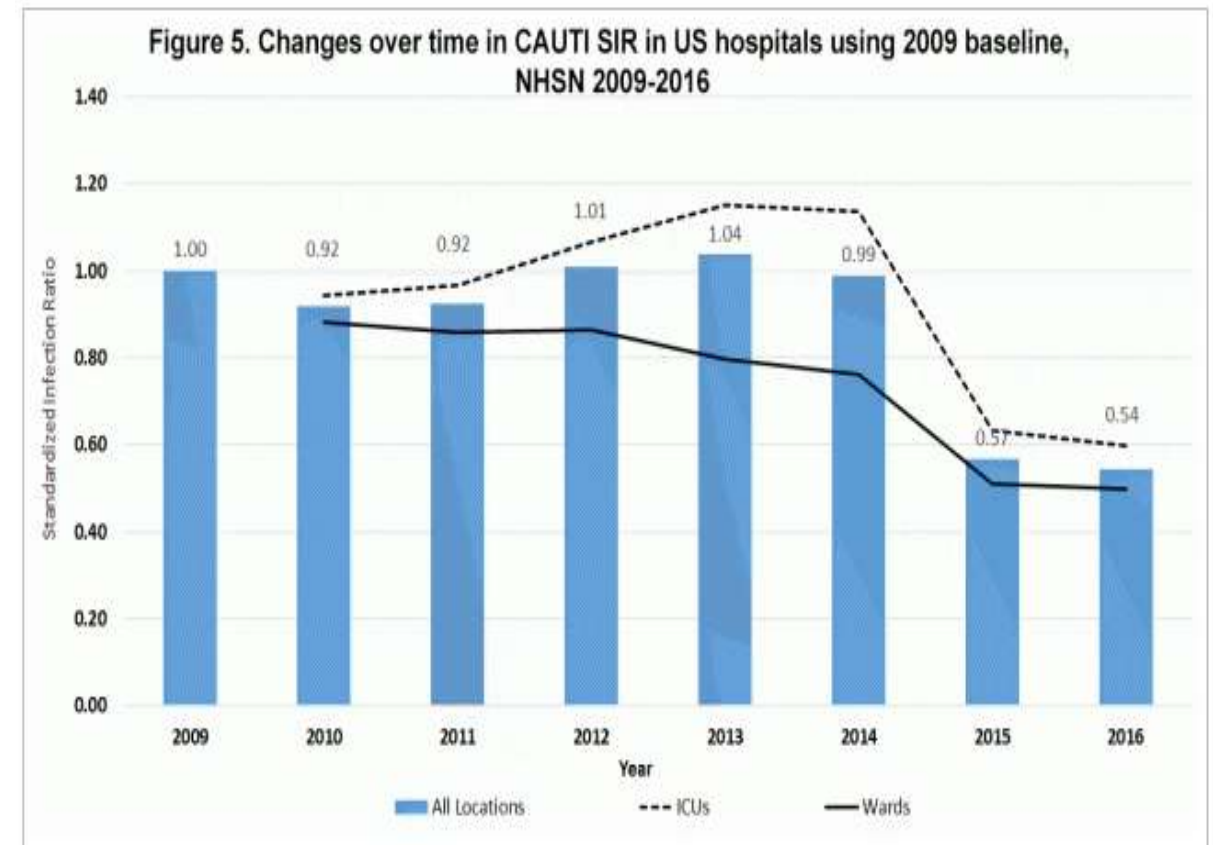
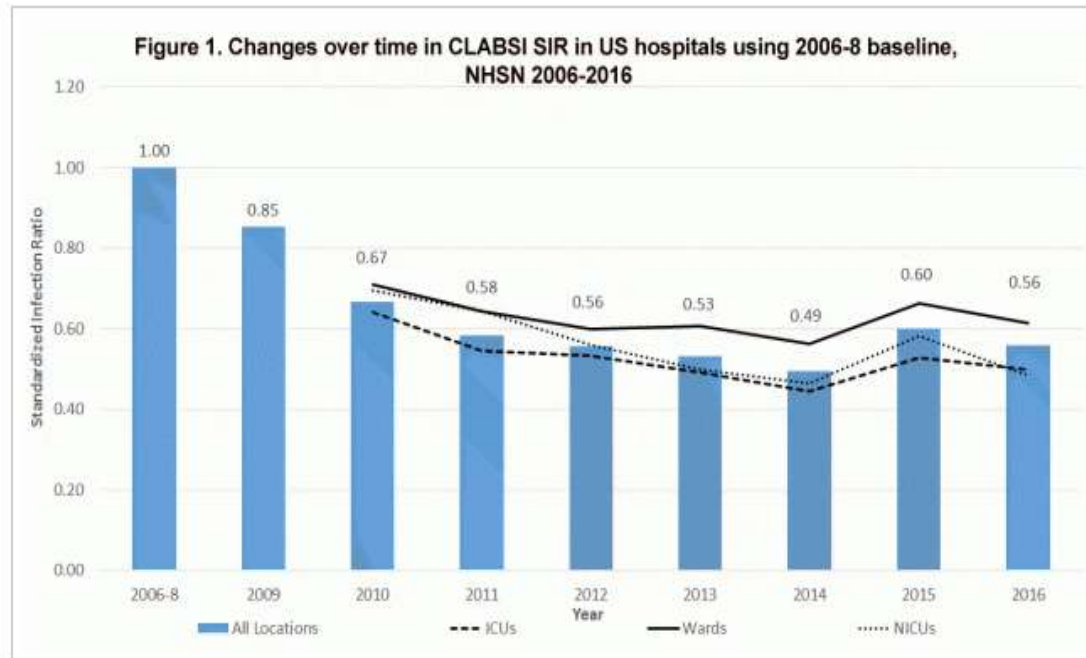
- Aralık 2019
- Mart 2020

Pandemi dönemi



# Data Summary of HAIs in the US: Assessing Progress 2006-2016

- Hospitals have made significant progress in preventing CLABSIs—nationally, there has roughly 50% drop in CLABSIs between 2008 and 2016. (Figures 1 and 2)



# DSÖ, 2016: Enfeksiyon Kontrol programlarınızı güçlendirin!!!

- **SBİİ yaygın görülen, ama potansiyel olarak önlenebilen infeksiyonlardır.**
- Sağlık hizmet kalitesinin artırılması, hasta ve çalışan güvenliğinin sağlanması için kanıta dayalı rehber önerileri ile bu infeksiyonların önlenmesi mümkün ve gerekli.

## 8 bileşenli kanıta dayalı öneriler

Guidelines on Core Components  
of Infection Prevention and Control  
Programmes at the National and Acute  
Health Care Facility Level





# National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination (HAI Action Plan)

- Ekim 2016'da ABD'de SBİİ'lerin önlenmesi için Ulusal Eylem Planı ile 5 yıllık hedefler belirlendi.

## Progress: National Acute Care Hospital HAIs

Measure (and data source)	Progress made 2016 (from 2015 baseline)	Progress made 2019 (from 2015 baseline)	2020 Target (from 2015 baseline)
CLABSI (NHSN) <sup>1</sup>	11% reduction	31% reduction	50% reduction
CAUTI (NHSN) <sup>1</sup>	7% reduction	26% reduction	25% reduction
Invasive MRSA (NHSN/EIP) <sup>1, 2</sup>	8% reduction	5% increase <sup>4</sup>	50% reduction
Hospital-onset MRSA (NHSN) <sup>1</sup>	6% reduction	18% reduction	50% reduction
Hospital-onset CDI (NHSN) <sup>1</sup>	8% reduction	42% reduction	30% reduction
SSI (NHSN) <sup>1</sup>	6% reduction	7% reduction	30% reduction
<i>Clostridioides difficile</i> -related hospitalizations (HCUP) <sup>3</sup>	4% reduction	29% reduction	30% reduction

## 2020 National and State Healthcare-Associated Infections Progress Report

• Pandeminin 1.yılı

**Nationally, among acute care hospitals, the 2020 annual highlights in this report include:**


- Overall, about 24% increase in CLABSI between 2019 and 2020
  - Largest increase in ICU (50%)
- Overall, there was no significant change in CAUTI between 2019 and 2020
  - About 10% increase observed in ICU
- Overall, there was a 35% increase in VAE between 2019 and 2020
  - About 34% increase observed in ICU
  - About 60% increase observed in ward
- Overall, there was 5% decrease in SSI, for 10 select procedures between 2019 and 2020.
  - The 10 select procedures are Surgical Care Improvement Project (SCIP) procedures. Note: The initial set of acute care hospital targets and metrics included a measure on SCIP processes. That measure is no longer part of the HAI Action Plan because these processes are now widely accepted as standards of practice. For details, please see [National HAI Targets & Metrics](https://health.gov/our-work/health-care-quality/health-care-associated-infections/targets-metrics) (<https://health.gov/our-work/health-care-quality/health-care-associated-infections/targets-metrics>)
  - About 9% decrease in abdominal hysterectomy SSIs
  - About 5% decrease in colon surgery SSIs
- There was a 15% increase in hospital onset MRSA bacteremia between 2019 and 2020
- About 11% decrease in hospital onset C. difficile infections between 2019 and 2020



Original Article

The impact of coronavirus disease 2019 (COVID-19) on healthcare-associated infections in 2020: A summary of data reported to the National Healthcare Safety Network

• Pandeminin 1.yılı

Lindsey M. Weiner-Lastinger MPH<sup>1</sup> , Vaishnavi Pattabiraman MSc, MS, MPH<sup>1,2</sup>, Rebecca Y. Konnor MPH<sup>1,3</sup>, Prachi R. Patel MPH<sup>1,3</sup>, Emily Wong MPH<sup>1,2</sup>, Sunny Y. Xu MPH<sup>1,3</sup>, Brittany Smith MPH<sup>1,4</sup>, Jonathan R. Edwards MStat<sup>1</sup> and Margaret A. Dudeck MPH<sup>1</sup>

<sup>1</sup>Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, <sup>2</sup>Leidos, Atlanta, Georgia, <sup>3</sup>CACI, Atlanta, Georgia and <sup>4</sup>Oak Ridge Institute of Science and Education, Oak Ridge, Tennessee

	2020 Q1	2020 Q2	2020 Q3	2020 Q4
CLABSI	 -11.8%	 27.9%	 46.4%	 47.0%
CAUTI	 -21.3%	No Change <sup>1</sup>	 12.7%	 18.8%
VAE	 11.3%	 33.7%	 29.0%	 44.8%
SSI: Colon surgery	 -9.1%	No Change <sup>1</sup>	 -6.9%	 -8.3%
SSI: Abdominal hysterectomy	 -16.0%	No Change <sup>1</sup>	No Change <sup>1</sup>	 -13.1%
Laboratory-identified MRSA bacteremia	 -7.2%	 12.2%	 22.5%	 33.8%
Laboratory-identified CDI	 -17.5%	 -10.3%	 -8.8%	 -5.5%



## Concise Communication

# Continued increases in the incidence of healthcare-associated infection (HAI) during the second year of the coronavirus disease 2019 (COVID-19) pandemic

• **Pandeminin 2.yılı**

Lindsey M. Lastinger MPH<sup>1</sup> , Carlos R. Alvarez MPH, CPH<sup>1,2</sup>, Aaron Kofman MD<sup>1</sup>, Rebecca Y. Konnor MPH<sup>1,3</sup>, David T. Kuhar MD<sup>1</sup>, Allan Nkwata PhD<sup>1,2</sup>, Prachi R. Patel MPH<sup>1,3</sup>, Vaishnavi Pattabiraman MSc, MS, MPH<sup>1,2</sup> , Sunny Y. Xu MPH<sup>1,3</sup> and Margaret A. Dudeck MPH<sup>1</sup> 

<sup>1</sup>Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, <sup>2</sup>Leidos, Atlanta, Georgia and <sup>3</sup>CACI, Atlanta, Georgia

### Abstract

Data from the National Healthcare Safety Network were analyzed to assess the impact of COVID-19 on the incidence of healthcare-associated infections (HAI) during 2021. Standardized infection ratios were significantly higher than those during the prepandemic period, particularly during 2021-Q1 and 2021-Q3. The incidence of HAI was elevated during periods of high COVID-19 hospitalizations.

- **Kİ-KDİ, Kİ-ÜSİ, VAE ve MRSA bakteriyemilerinde artış devam etti;**
  - Özellikle COVID-19 yatışlarının (delta varyantı) arttığı yılın ilk ve üçüncü çeyreğinde
  - Enfeksiyon türleri arasında **en büyük artış VİO da oldu.**
    - 2019'un aynı dönemine göre %51, üçüncü çeyrekte %60 daha yüksek.



## Coronavirus disease 2019 (COVID-19) pandemic, central-line-associated bloodstream infection (CLABSI), and catheter-associated urinary tract infection (CAUTI): The urgent need to refocus on hardwiring prevention efforts

Mohamad G Fakih<sup>1,2</sup>, Angelo Bufalino<sup>3</sup>, Lisa Sturm<sup>1</sup>, Ren-Huai Huang<sup>3</sup>, Allison Ottenbacher<sup>3</sup>, Karl Saake<sup>3</sup>, Angela Winegar<sup>3</sup>, Richard Fogel<sup>1</sup>, Joseph Cacchione<sup>1</sup>

- **COVID-19 prevalansının yüksek olduğu aylarda Ki-KDi 2.4 kat daha yüksek**
- **Ki-ÜSi oranında anlamlı fark yok**

**ABD-78 hastane:** Pandemi öncesi 12 aylık dönem ve pandeminin ilk 6 ayı karşılaştırıldığında **Ki-KDi oranları pandemi döneminde %51 arttı.**

Table 3.

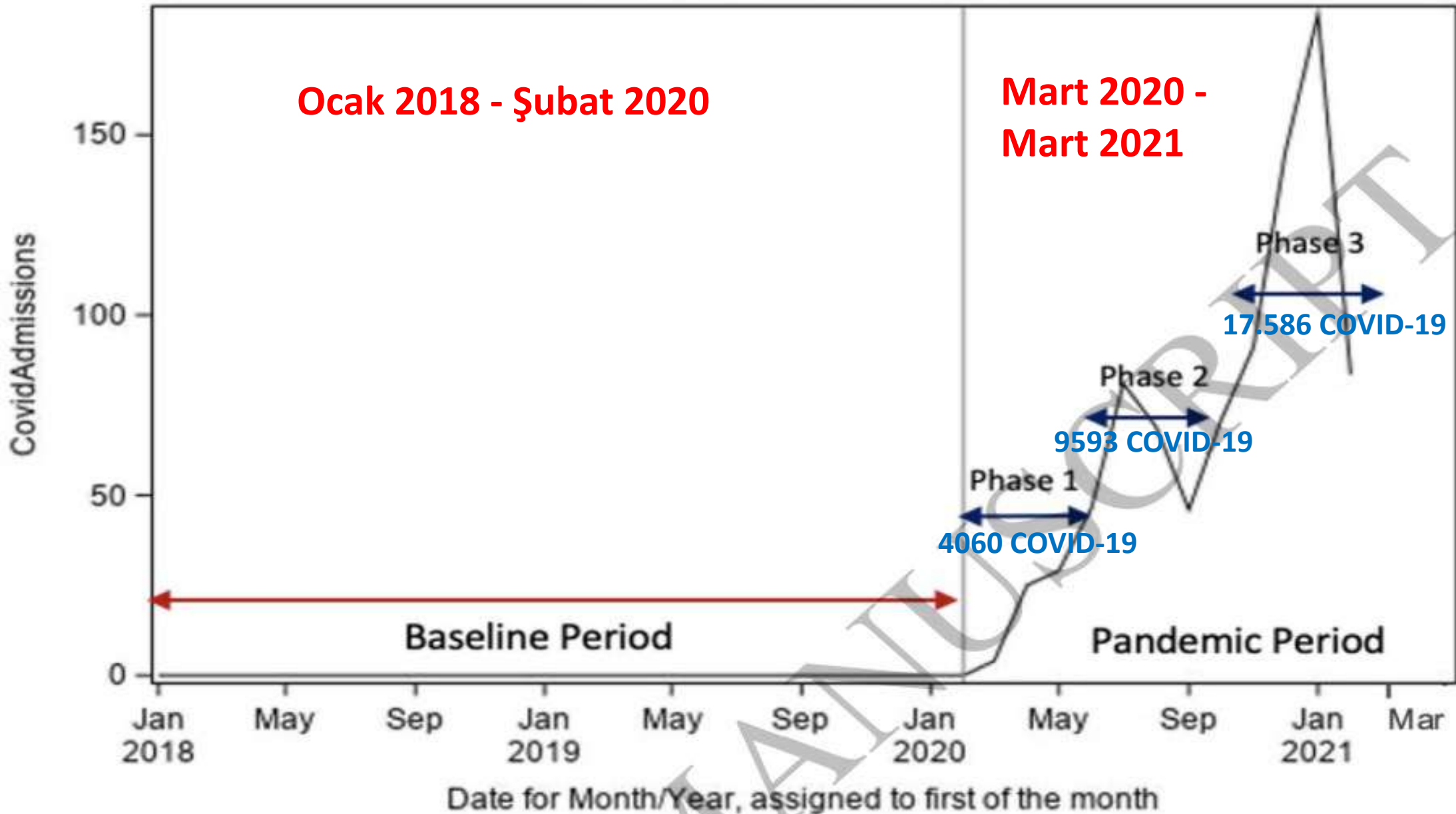
CLABSI and CAUTI Device SIRs and COVID-19 as a Proportion of Admissions During Pandemic Period

Monthly COVID-19 Prevalence <sup>a</sup>	CLABSI dSIR	P Value	CAUTI dSIR	P Value
High (>10% of hospital admissions)	1.58	Reference	0.61	Reference
Mid (>5%-10% of hospital admissions)	1.09	.05	0.70	.55
Low (≤5% of hospital admissions)	0.67	.004	0.64	.64

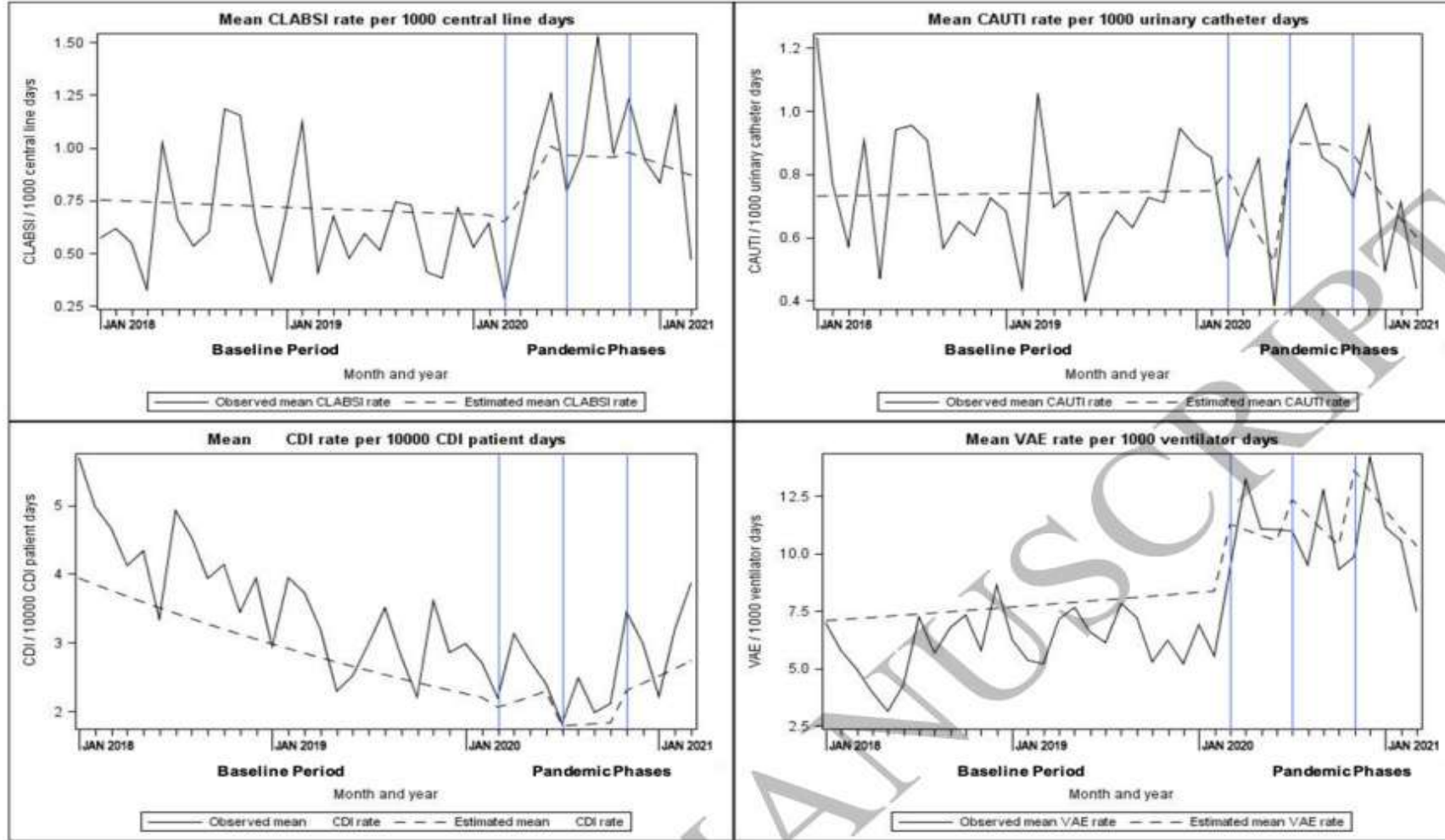
# The Disproportionate Impact of Coronavirus Disease 2019 (COVID-19) Pandemic on Healthcare-Associated Infections in Community Hospitals: Need for Expanding the Infectious Disease Workforce

Sonali D Advani<sup>1 2</sup>, Emily Sickbert-Bennett<sup>3</sup>, Rebekah Moehring<sup>1 2</sup>, Andrea Cromer<sup>2</sup>, Yuliya Lokhnygina<sup>4</sup>, Elizabeth Dodds-Ashley<sup>1 2</sup>, Ibukunoluwa C Kalu<sup>5</sup>, Lauren DiBiase<sup>3</sup>, David J Weber<sup>3</sup>, Deverick J Anderson<sup>1 2</sup>; CDC Prevention Epicenters Program

- ABD, 53 hastane (2 üniversite, 12 orta-büyük DH, 39 küçük DH)
- %75'inde EHU yok
- Toplumun 2/3'üne devlet hastaneleri hizmet veriyor



- Pandemi döneminde Ki-KDi %24 ve ViP %34 arttı.
- Ki-ÜSi hızlarında önemli bir değişiklik yok





eTable 2: Impact of COVID-19 pandemic on CLABSI, CAUTI, VAE, and CDI in unadjusted analysis showing level and trend changes by hospital type (academic vs community) during baseline and entire pandemic period

	Hospital type	Baseline Trend RR (95% CI); p-value	Pandemic <u>Level</u> Change RR (95% CI); p-value	Pandemic <u>Trend</u> Change RR (95% CI); p-value
<b>CLABSI</b>	Academic	<b>1.015 (1.004-1.026); 0.006</b>	0.834 (0.623-1.115); 0.220	0.995 (0.968-1.022); 0.711
	Community	<b>0.986 (0.973-1); 0.050</b>	<b>1.48 (1.166-1.88); 0.001</b>	1.03 (0.998-1.062); 0.065
<b>CAUTI</b>	Academic	<b>1.02 (1.007-1.033); 0.002</b>	0.936 (0.611-1.434); 0.762	0.98 (0.935-1.028); 0.407
	Community	0.997 (0.985-1.008); 0.560	1.06 (0.848-1.326); 0.608	0.999 (0.969-1.029); 0.945
<b>VAE</b>	Academic	0.995 (0.987-1.004); 0.289	0.979 (0.851-1.127); 0.766	<b>1.029 (1.003-1.057); 0.029</b>
	Community	1.011 (0.993-1.028); 0.236	<b>1.414 (1.071-1.865); 0.014</b>	0.989 (0.968-1.011); 0.326
<b>CDI</b>	Academic	0.997 (0.993-1.002); 0.258	<b>0.572 (0.345-0.947); 0.030</b>	1.018 (0.951-1.091); 0.601
	Community	<b>0.976 (0.965-0.987); &lt;.0001</b>	0.914 (0.79-1.057); 0.224	<b>1.045 (1.019-1.073); &lt;0.001</b>

- **Pandeminin SBİİ insidansı ve eğilimleri üzerinde ki etkisi daha küçük ölçekli hastanelerde daha anlamlı...**

# COVID-19 increased the risk of ICU-acquired bloodstream infections: a case–cohort study from the multicentric OUTCOMEREA network

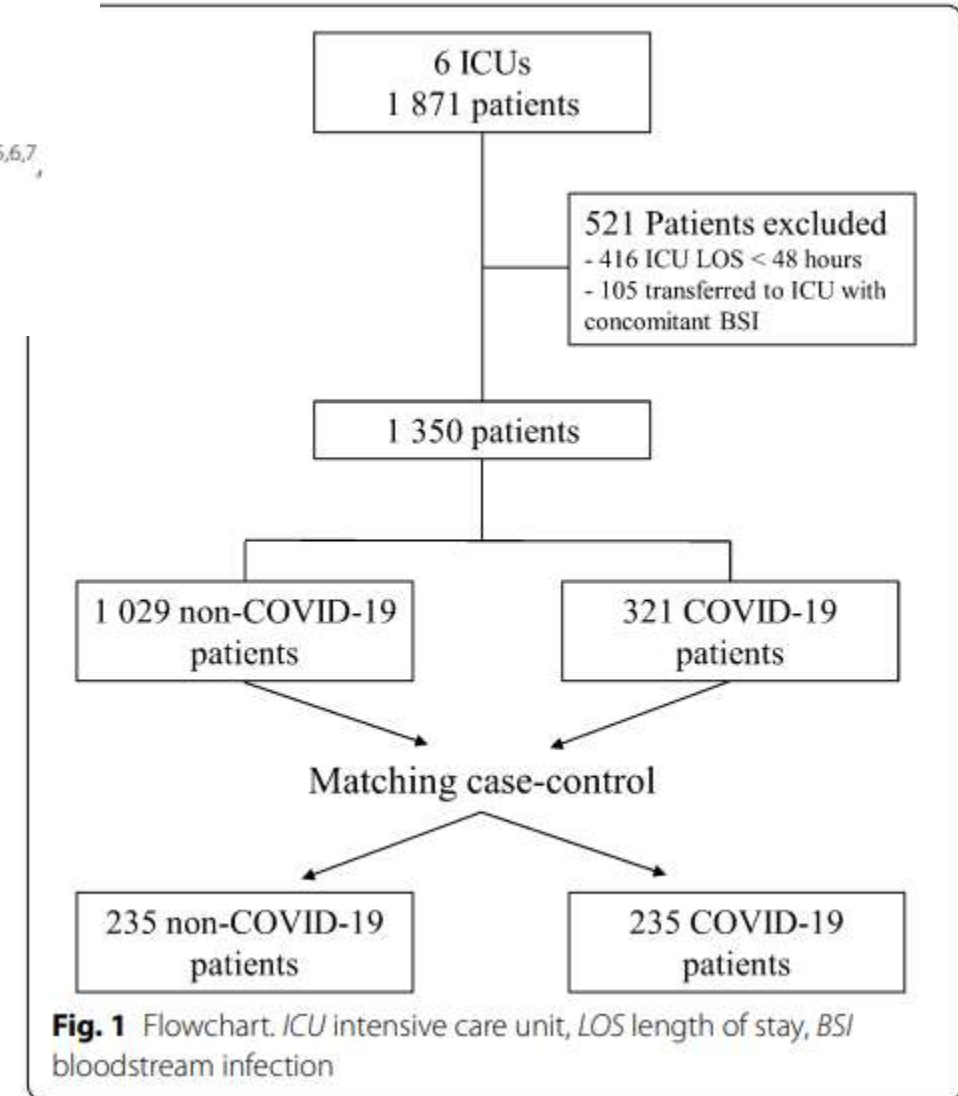


Niccolò Buetti<sup>1,11</sup>, Stéphane Ruckly<sup>1</sup>, Etienne de Montmollin<sup>1,9</sup>, Jean Reignier<sup>2</sup>, Nicolas Terzi<sup>3,4</sup>, Yves Cohen<sup>5,6,7</sup>, Shidasp Shiami<sup>8</sup>, Claire Dupuis<sup>1,10</sup> and Jean-François Timsit<sup>1,9\*</sup>

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## Fransa;

- Çok merkezli prospektif bir kohort çalışması;
  - COVID: Ocak - Ekim 2020
  - Non-COVID: 2012-2020





# COVID-19 increased the risk of ICU-acquired bloodstream infections: a case–cohort study from the multicentric OUTCOMEREA network

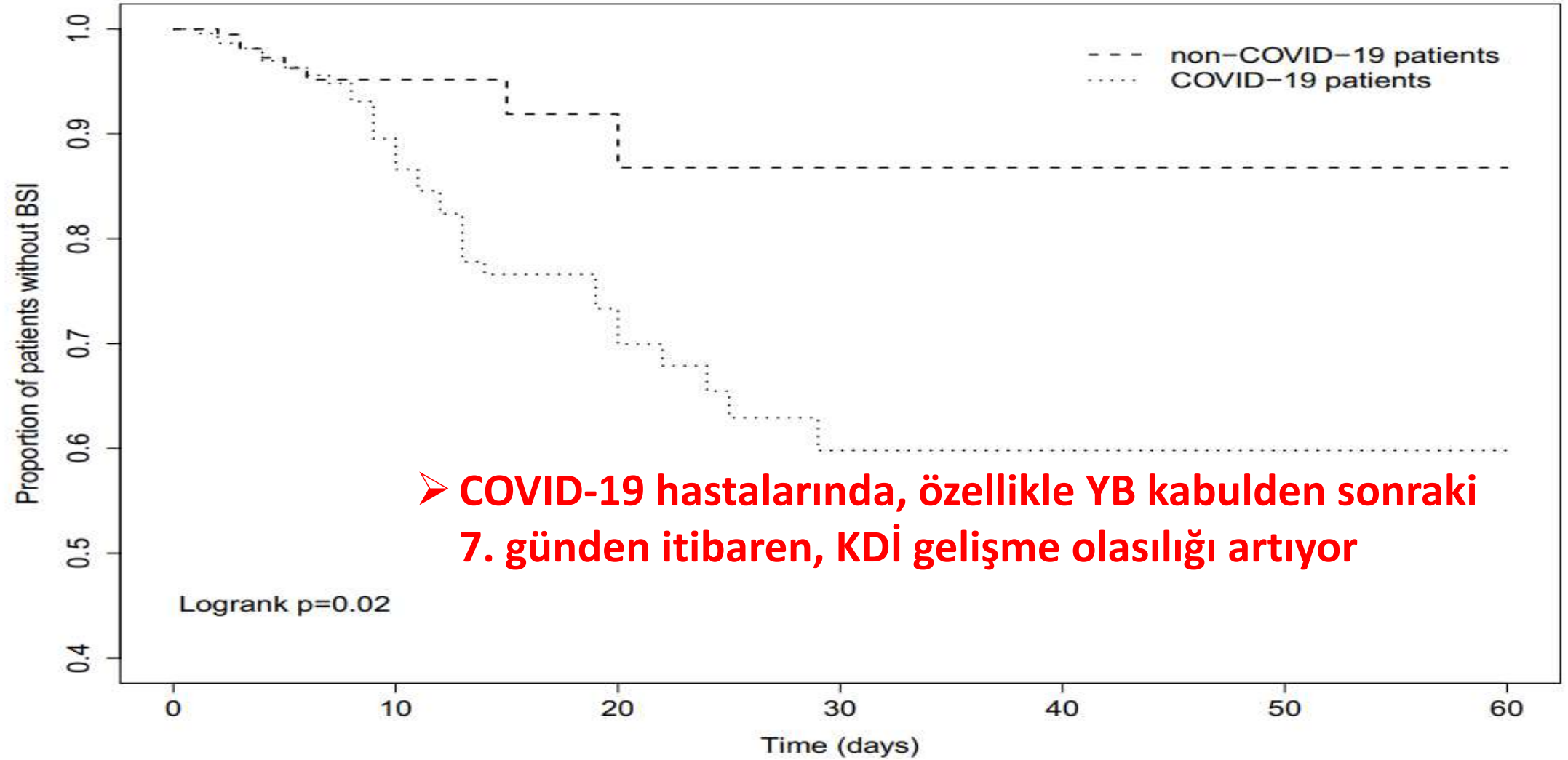
Niccolò Buetti<sup>1,11</sup>, Stéphane Ruckly<sup>1</sup>, Etienne de Montmollin<sup>1,9</sup>, Jean Reignier<sup>2</sup>, Nicolas Terzi<sup>3,4</sup>, Yves Cohen<sup>5,6,7</sup>, Shidasp Shiami<sup>8</sup>, Claire Dupuis<sup>1,10</sup> and Jean-François Timsit<sup>1,9\*</sup>

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**Table 2 Outcomes in the matched population**

	Non-COVID-19 (n = 235)	COVID-19 (n = 235)	p value
Length of stay ICU, mean days [IQR]	6 [4; 11]	9 [5; 20]	< 0.0001
ICU-BSI, n (%)	8 (3.4)	35 (14.9)	< 0.0001
Time between ICU admission and BSI, median days [IQR]	6.5 [5; 12.5]	12 [9; 16]	0.086 <sup>§</sup>
Mortality day-60, n (%)	38 (16.2)	84 (35.7)	< 0.0001
Mortality day-60 among BSIs, n (%)	2 (25.0)	25 (71.4)	0.037 <sup>§</sup>

➤ **COVID-19 hastalarında YB'de KDi gelişme riski 4.5 kat daha yüksek**



**Fig. 2** Kaplan–Meier with the time to bloodstream infection in COVID-19 and non-COVID-19 patients. *BSI* bloodstream infection, *T0* is the day of ICU admission



# KDİ risk artışının nedenleri;

- COVID-19 hastalarında uygulanan immün modölatör tedaviler (tocilizumab veya anakinra)
- Süperenfeksiyona karşı artan duyarlılık
  - SARS-CoV-2, antijen sunumunu bozuyor
  - Eşlik eden lenfopeni ile edinilmiş bir immünsüpresyonu tetikleniyor
- SARS-CoV-2 ile ilişkili koagülopati, mikro ve makro dolaşımı etkileyerek bakteriyel translokasyon riskini artırıyor
- Mezenterik enfarktüse bağlı sindirim sisteminde endotel disfonksiyonu
- Kateter süresinin COVID-19 hasta grubunda daha uzun olması



Practice Points

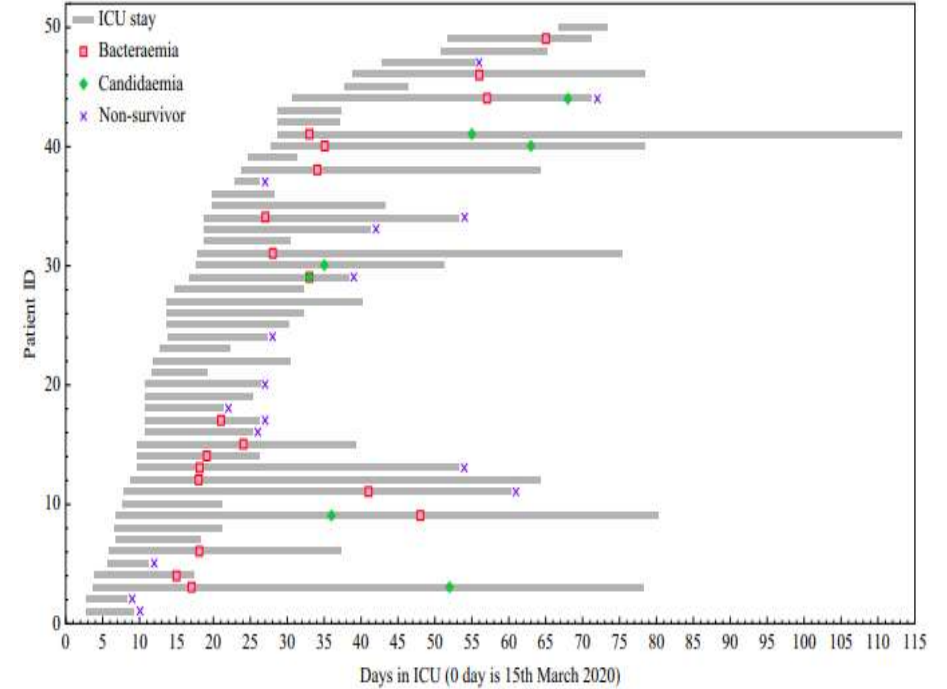
## ICU-acquired bloodstream infections in critically ill patients with COVID-19<sup>☆</sup>

S. Kokkoris<sup>a</sup>, I. Papachatzakis<sup>a</sup>, E. Gavrielatou<sup>a</sup>, T. Ntaidou<sup>a</sup>, E. Ischaki<sup>a</sup>, S. Malachias<sup>a</sup>, C. Vrettou<sup>a</sup>, C. Nichlos<sup>a</sup>, A. Kanavou<sup>a</sup>, D. Zervakis<sup>a</sup>, E. Perivolioti<sup>b</sup>, K. Ranellou<sup>b</sup>, A. Argyropoulou<sup>b</sup>, S. Zakyntinos<sup>a</sup>, A. Kotanidou<sup>a</sup>, C. Routsis<sup>a,\*</sup>

**Şubat - Nisan 2020**

**Yunanistan;**

- YB'de KDI insidansında artış
  - Mekanik ventilasyon ve YB kalış süresinin uzaması ile ilişkili
- **Mortalite değişmemiş**



- **Gr(-) patojenler baskın**
  - *A.baumannii* ve *K.pneumoniae*
- **Gr(+)** arasında ise *Enterococcus spp.* baskın

Multicenter Study

> Infect Control Hosp Epidemiol. 2022 Apr;43(4):461-466.

doi: 10.1017/ice.2021.144. Epub 2021 Apr 16.

İtalya

## Carbapenem-resistant bacteria in an intensive care unit during the coronavirus disease 2019 (COVID-19) pandemic: A multicenter before-and-after cross-sectional study

Renato Pascale <sup># 1</sup>, Linda Bussini <sup># 1</sup>, Paolo Gaibani <sup>2</sup>, Federica Bovo <sup>2</sup>, Giacomo Fornaro <sup>1</sup>, Donatella Lombardo <sup>2</sup>, Simone Ambretti <sup>2</sup>, Giulia Pensalfine <sup>3</sup>, Lucia Appolloni <sup>3</sup>, Michele Bartoletti <sup>1</sup>, Sara Tedeschi <sup>1</sup>, Fabio Tumietto <sup>1</sup>, Russell Lewis <sup>1</sup>, Pierluigi Viale <sup>1</sup>, Maddalena Giannella <sup>1</sup>

**CR-Ab infeksiyonları genel insidansı 10.000 YB hasta günü başına:**

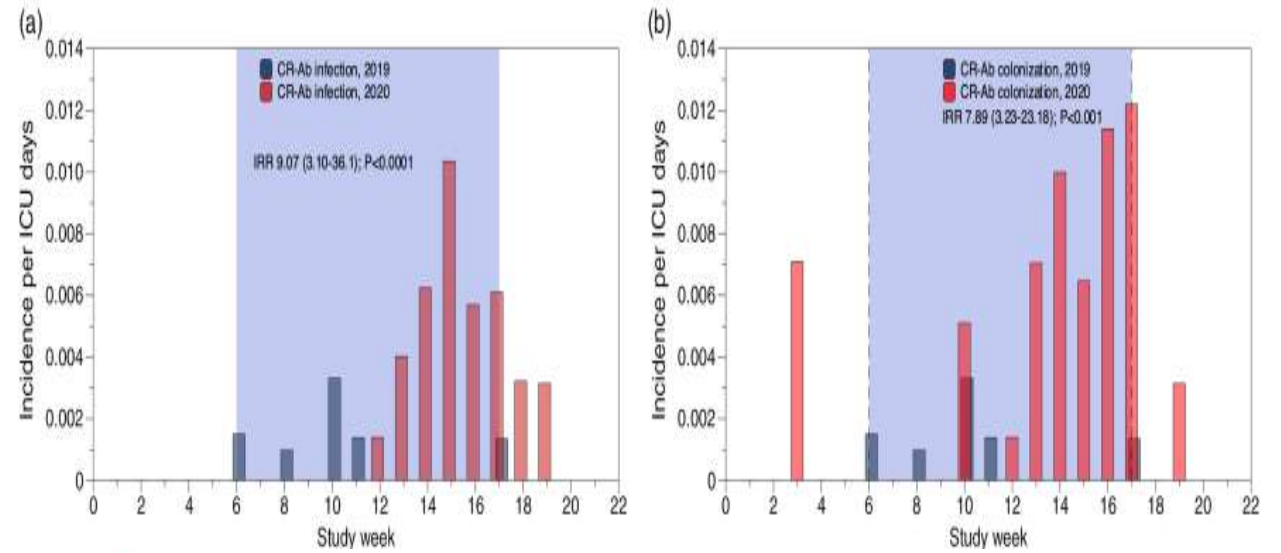
Ocak-Nisan 2019'da 5.1



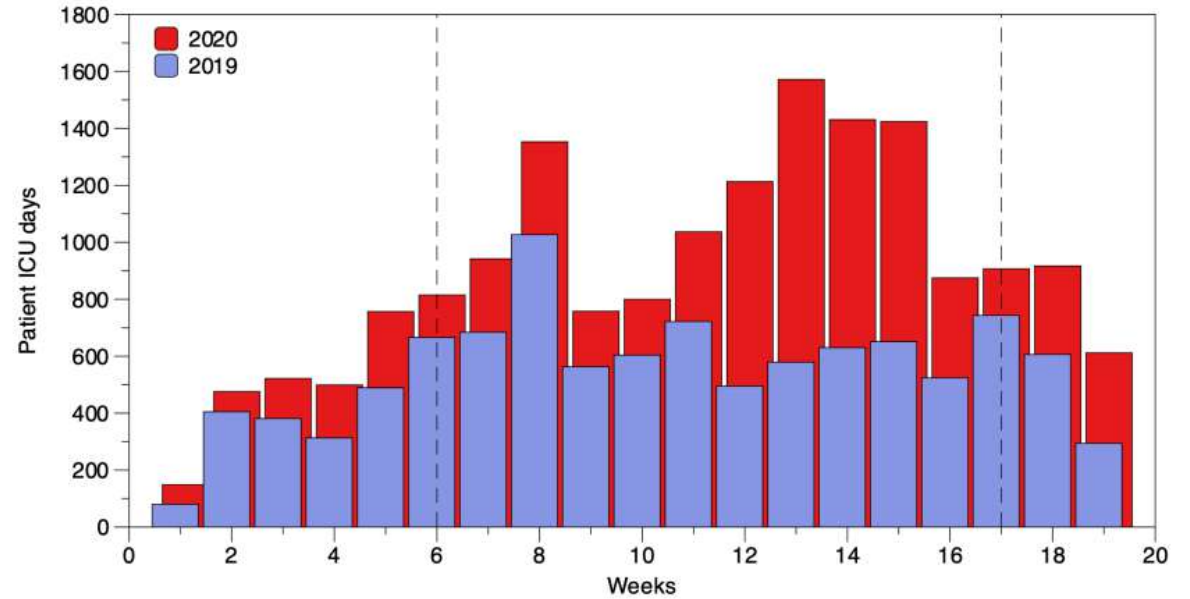
Ocak-Nisan 2020'de 26.4

**5X**

➤ **CR-Ab, COVID-19** döneminde önemli ölçüde artması, hasta sayısının fazla olması nedeniyle çapraz kontaminasyon ile yayılması ile ilişkili olmuş olabilir



*Infection Control & Hospital Epidemiology*



**Fig 2.** Trends in ICU patient days from January through April in 2019 and 2020. Vertical dotted lines indicate the period with COVID units used to calculate the incidence rate ratio of infection.



**Table 2.** Comparison of Colonization and Infection Episodes During the 2 Study Periods

Characteristic	ICU Admissions Period 1 (N=1345), No. (%)	ICU Admissions Period 2 (N=1367), No. (%)	P Value
<b>No. of samples processed</b>			
Rectal swabs	750	1,118	
Respiratory specimens (BAL and or BAS)	2,632	2,469	
<b>Carbapenemase-producing Enterobacteriaceae</b>			
Colonization	37 (2.8)	35 (2.6)	.81
Rectal	36/37 (97.3)	32/35 (91.4)	
Respiratory	1/37 (2.7)	3/35 (8.5)	
<b>Mechanism of resistance</b>			
KPC	33/37 (89.2)	22/35 (62.8)	.006
OXA-48	0	6/35 (17.1)	
VIM	2/37 (5.4)	7/35 (20)	
NDM	2/37 (5.4)	0	
Infection	3 (0.2)	2 (0.1)	.68
BSI	2/3 (70)	1/2 (50)	
LRTI	1/3 (30)	1/2 (50)	
<b>Carbapenem-resistant <i>A. baumannii</i></b>			
Colonization	5 (0.4)	32 (2.3)	<.001
Rectal	0	5/32 (15)	
Respiratory	5/5 (100%)	16/32 (50)	
Other	0	16/32 (34)	
Infection	4 (0.3)	23 (1.7)	<.001
BSI	0	9/23 (39)	
LRTI	4/4 (100%)	14/23 (60.8)	

Note. BAL, bronchoalveolar lavage; BAS, bronchoalveolar aspirate; KPC *Klebsiella pneumoniae* carbapenemase-producing; NDM, New Delhi metallo- $\beta$ -lactamase-producing; BSI, bloodstream infection; LRTI, lower respiratory tract infection.

› Infect Control Hosp Epidemiol. 2022 Dec 23;1-6. doi: 10.1017/ice.2022.267. Online ahead of print.

# Hospital-acquired bacterial infections in coronavirus disease 2019 (COVID-19) patients in Israel

Mitchell J Schwaber<sup>1 2</sup>, Elizabeth Temkin<sup>1</sup>, Rona Lobl<sup>1</sup>, Vered Schechner<sup>1 2</sup>, Amir Nutman<sup>1 2</sup>,  
Yehuda Carmeli<sup>1 2</sup>

**\*26 hastane, çalışma dönemi Mart 2020-Ocak 2021**

Affiliations + expand

PMID: 36562287 DOI: 10.1017/ice.2022.267

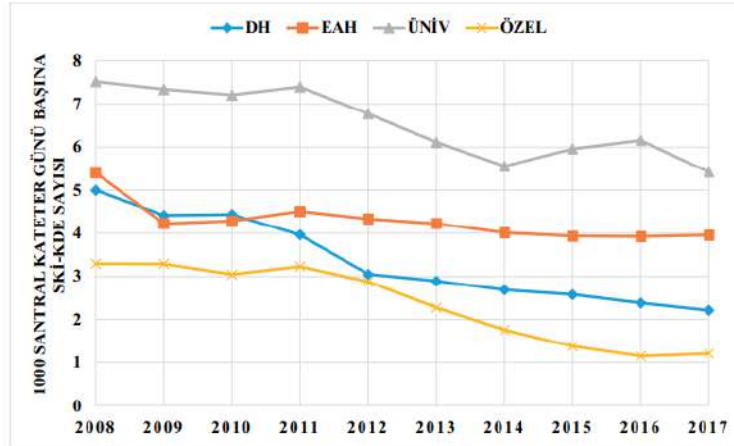
- Pandeminin birinci yılında yatırılan COVID-19 hastalarında SBİi sıklığı daha yüksek
- Birinci dalgadan sonra kritik COVID-19 hasta oranında artış olmasına rağmen SBİi sıklığı azaldı;
  - **SBİi çoğundan sağlık çalışanlarının uygulamaları sorumlu olabilir**

# Türkiye pandemi öncesi

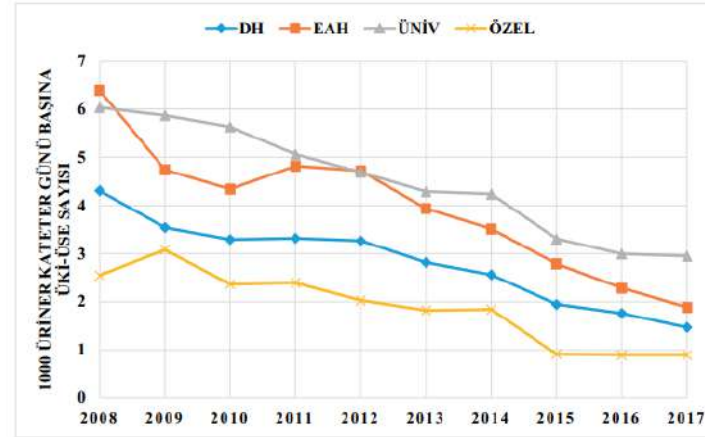
> Am J Infect Control. 2021 Jul;49(7):885-892. doi: 10.1016/j.ajic.2020.12.013. Epub 2020 Dec 25.

## National Infection Control Program in Turkey: The healthcare associated infection rate experiences over 10 years

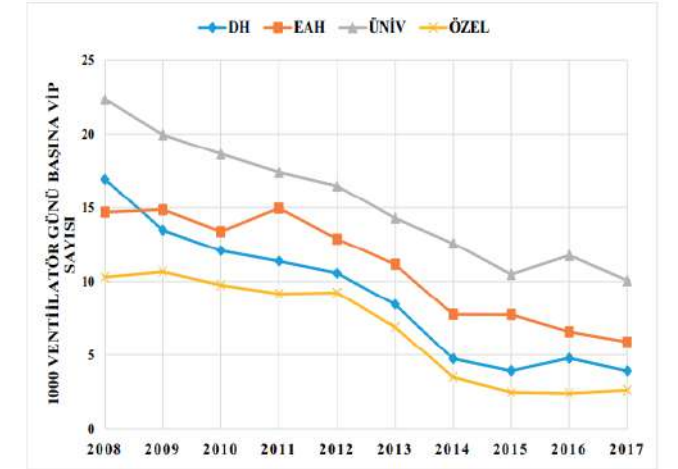
Mustafa Gokhan Gozel <sup>1</sup>, Can Huseyin Hekimoglu <sup>2</sup>, Emine Yildirim Gozel <sup>3</sup>, Esen Batir <sup>2</sup>, Mary-Louise McLaws <sup>4</sup>, Emine Alp Mese <sup>5</sup>



Şekil 3. Türkiye'de yoğun bakım ünitelerinde kurum türüne göre santral kateter ile ilişkili kan dolaşımı enfeksiyonu hızı, 2008-2017.



Şekil 2. Türkiye'de yoğun bakım ünitelerinde kurum türüne göre üriner kateter ile ilişkili üriner sistem enfeksiyonu hızı, 2008-2017.



Şekil 1. Türkiye'de yoğun bakım ünitelerinde kurum türüne göre ventilatör ile ilişkili pnömoni hızı, 2008-2017.

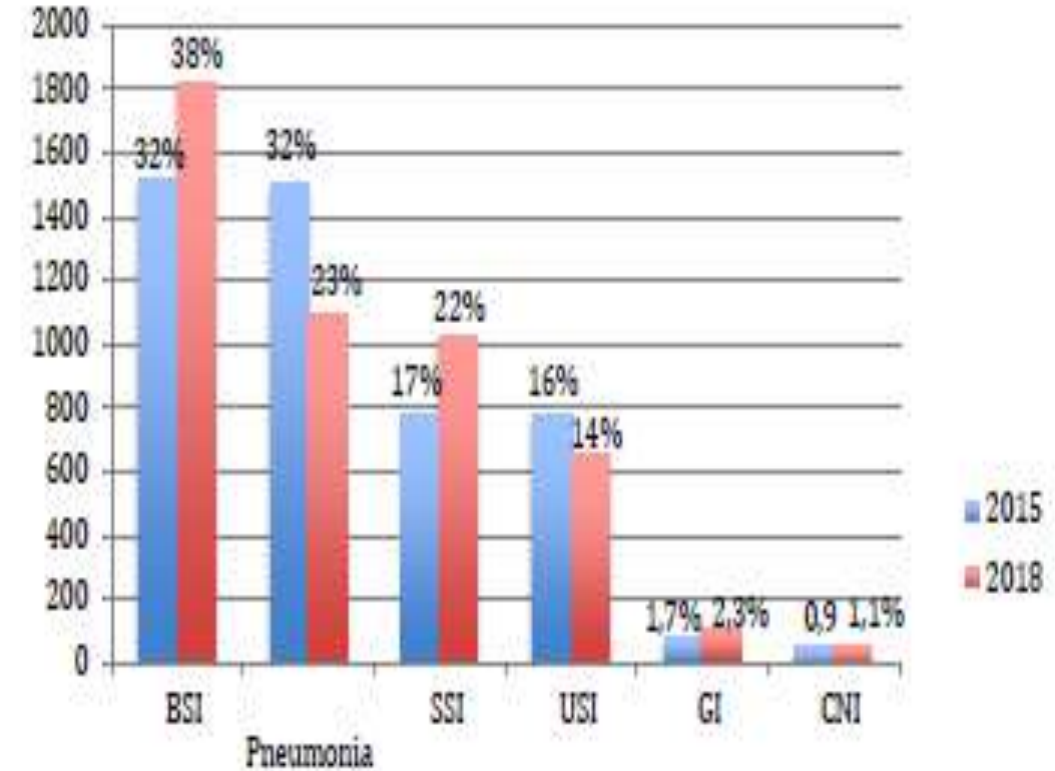


## Changes in antimicrobial resistance and outcomes of health care-associated infections

Mehtap Aydın<sup>1</sup>, Emel Azak<sup>2</sup>, Hüseyin Bilgin<sup>3</sup>, Sirin Menekşe<sup>4</sup>, Ali Asan<sup>5</sup>, Habibe Tülin Elmaslar Mert<sup>6</sup>, Zerrin Yulugkural<sup>6</sup>, Lutfiye Nilsun Altunal<sup>7</sup>, Çiğdem Ataman Hatipoğlu<sup>8</sup>, Gunay Tuncer Ertem<sup>8</sup>, Elif Sargın Altunok<sup>9</sup>, Melike Hamiyet Demirkaya<sup>10</sup>, Sevil Alkan Çeviker<sup>11</sup>, Fethiye Akgül<sup>12</sup>, Zeynep Memiş<sup>13</sup>, Petek Konya<sup>14</sup>, Alpay Azap<sup>15</sup>, Gule Aydın<sup>15</sup>, Derya Korkmaz<sup>16</sup>, Zehra Çağla Karakoç<sup>17</sup>, Derya Yapar<sup>18</sup>, Faruk Karakeçili<sup>19</sup>, Ozgur Gunal<sup>20</sup>, Siran Keske<sup>21</sup>, Mahir Kapmaz<sup>21</sup>, Cigdem Kader<sup>22</sup>, Aslıhan Demirel<sup>23</sup>, Önder Ergönül<sup>21</sup>

Affiliations + expand

PMID: 33586014 DOI: 10.1007/s10096-020-04140-y



### 24 merkez / 9378 SBİİ

2015 yılında 4679 / 2018 yılında 4699

- En yaygın görüleni KDI
- 2018'de KDI ve CAE'nda artış

# Changes in antimicrobial resistance and outcomes of health care-associated infections

Mehtap Aydın<sup>1</sup>, Emel Azak<sup>2</sup>, Hüseyin Bilgin<sup>3</sup>, Sirin Menekse<sup>4</sup>, Ali Asan<sup>5</sup>, Habibe Tülin Elmaslar Mert<sup>6</sup>, Zerrin Yulugkural<sup>6</sup>, Lutfiye Nilsun Altunal<sup>7</sup>, Çiğdem Ataman Hatipoğlu<sup>8</sup>, Gunay Tuncer Ertem<sup>8</sup>, Elif Sargın Altunok<sup>9</sup>, Melike Hamiyet Demirkaya<sup>10</sup>, Sevil Alkan Çeviker<sup>11</sup>, Fethiye Akgül<sup>12</sup>, Zeynep Memis<sup>13</sup>, Petek Konya<sup>14</sup>, Alpay Azap<sup>15</sup>, Gule Aydın<sup>15</sup>, Derya Korkmaz<sup>16</sup>, Zehra Çagla Karakoç<sup>17</sup>, Derya Yapar<sup>18</sup>, Faruk Karakeçili<sup>19</sup>, Ozgur Gunal<sup>20</sup>, Siran Keske<sup>21</sup>, Mahir Kapmaz<sup>21</sup>, Cigdem Kader<sup>22</sup>, Aslıhan Demirel<sup>23</sup>, Önder Ergönül<sup>21</sup>



Affiliations + expand

PMID: 33586014 DOI: 10.1007/s10096-020-04140-y

## 24 merkez / 9378 SBii

- En sık etken *Klebsiella spp.*
- Candida ve Enterokok türleri ile olan enfeksiyonlarda artış

Table 3. Antibiotic resistance rates in healthcare-associated Gram negative infections

	Carbapenem			Quinolones			Colistin		
	2015	2018	p	2015	2018	p	2015	2018	p
<b>Gram Negatives</b>									
<i>Acinetobacter</i>	689/80 3 (86)	546/ 587 (93)	<0.00 1	716/78 3 (91)	531/56 4 (94)	0.064	12/876 (1.4)	43/620 (7)	<0.00 1
<i>Klebsiella</i>	393/48 6 (81)	396/50 6 (78)	0.31	438/73 0 (60)	517/71 5 (72)	<0.00 1	166/82 5 (20)	129/79 3 (16)	0.045
<i>E. coli</i>	50/123 (41)	62/174 (35)	0.379	249/44 3 (56)	298/50 6 (59)	0.404	5/536 (0.9)	9/558 (1.6)	0.317
<i>Pseudomonas</i>	210/28 9 (73)	264/34 6 (76)	0.294	141/43 1 (33)	209/45 2 (46)	<0.00 1	11/499 (3)	57/508 (15)	<0.00 1



*Coronavirus Pandemic*

**Secondary infections in COVID-19 patients: A two-centre retrospective observational study**

Şirin Menekşe<sup>1</sup>, Seçil Deniz<sup>2</sup> **\*2 merkez**

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<sup>2</sup> *Department of Infectious Diseases, Pamukkale University School of Medicine, Denizli, Turkey*

- 26 Mart - 31 Aralık 2020
- Retrospektif
- YB / COVID-19 pnömonisi olan 146 hasta

**Table 1.** Demographic, clinical and laboratory characteristics of COVID-19 patients.

Parameters	n (%) or median [IQR]
Age, years	64 [56–72.3]
Gender, M/F	96 (65, 8) / 50 (34.2)
Body mass index, kg/m <sup>2</sup>	25.1 [24.1–28]

**Patients' condition at ICU admission**

APACHE II score	24 [17–31]
SOFA score	5 [3-9]
Septic shock	51 (34, 9)
Acute respiratory distress syndrome	87 (59.6)
PaO <sub>2</sub> /F <sub>i</sub> O <sub>2</sub>	100 [90–150]
<b>ICU interventions/treatment</b>	
Length of ICU stay (days)	10 [5–21.3]
Cytokine filter	23 (15.8)
Convalescent plasma	17 (11.6)
Tocilizumab	19 (13)
Steroids	118 (80.8)
Duration of central catheter (days)	10 [5–20]
ECMO	26 (17.8)
Duration of ECMO (days)	17, 5 [8.5–53.3]
Invasive mechanical ventilation	116 (79.5)
Duration of mechanical ventilation (days)	10 [4.3–20]
Secondary infections	58 (39.7)
Bloodstream infections	36 (24.7)
Lung infections	33 (22.6)
Urinary infections	2 (1.4)
Wound infections	1 (0.7)
Carbapenem resistance	41 (28.1)
Survived	50 (34.2)
Deceased	96 (65.8)

- 58 (%40) hastada 84 enfeksiyon atağı

- **En sık KDI**

- **Mortalite %65**

**Table 3.** Univariate and multivariate analysis of risk factors for the development of secondary infections.

Parameters	Nosocomial infections		Univariate analysis <i>p</i> <sup>1</sup>	Multivariate analysis OR (95% CI) <i>p</i> <sup>2</sup>
	Present n (%) or median [IQR]	Absent n (%) or median [IQR]		
Age, years	59.5 [47.8-67.3]	67.0 [58.0-74.8]	0.001	
Gender, M/F	38 (65.5)/20 (34.5)	58 (65.9)/30 (34.1)	0.550	
Body mass index, kg/m <sup>2</sup>	27.1 [24.2-33.0]	24.4 [24.1-26.9]	0.000	
<b>Comorbidities</b>				
Diabetes mellitus	23 (39.7)	33 (37.5)	0.464	
Arterial hypertension	13 (22.4)	39 (44.3)	0.005	
Chronic arterial disease	9 (15.5)	18 (20.5)	0.299	
COPD	8 (13.8)	12 (13.6)	0.582	
Malignant neoplasia	2 (3.4)	16 (18.2)	0.006	
Chronic kidney disease	3 (5.2)	11 (12.5)	0.116	
Obesity	6 (10.3)	1 (1.1)	0.016	
Procalcitonin, ng/mL	5.6 [1.4-10.8]	1.4 [0.2-8.4]	0.006	1.1 (1.0-1.1) 0.030
APACHE II score	24.0 [18.0-28.0]	24.0 [15.3-32.8]	0.296	
SOFA score	5.0 [2.8-8.0]	6.0 [3.0-10.0]	0.163	
Septic shock at ICU admission	15 (25.9)	36 (40.9)	0.045	0.4 (0.1-1.1) 0.074
Severe ARDS at ICU admission	37 (63.8)	50 (56.8)	0.253	
P <sub>a</sub> O <sub>2</sub> /F <sub>i</sub> O <sub>2</sub> on the first day of IMV	100.0 [80.0-120.0]	120.0 [100.0-150.0]	0.003	1.0 (1.0-1.0) 0.329
Length of ICU stay (days)	23.0 [14.0-36.5]	7.0 [4.0-11.5]	0.000	
Days from diagnosis to discharge/death	27.0 [18.0-47.8]	11.5 [7.3-16,8]	0.000	
Cytokine filter	17 (29.3)	6 (6.8)	0.000	
Convalescent plasma	13 (22.4)	4 (4.5)	0.001	2.3 (0.4-13.1) 0.357
Tocilizumab	13 (22.4)	6 (6.8)	0.007	2.3 (0.4-13.1) 0.357
Steroids	48 (82.8)	70 (79.5)	0.398	
Duration of central catheter (days)	23.0 [13.5-36.0]	6.0 [4.0-10.0]	0.000	
ECMO	25 (43.1)	1 (1.1)	0.000	22.7 (2.6-199.2) 0.005
Duration of ECMO (days)	19.0 [9.5-54.5]	6.0 [6.0-6.0]	0.308	
Invasive mechanical ventilation	55 (94.8)	61 (69.3)	0.000	
Duration of mechanical ventilation (days)	20.0 [11.0-35.0]	5.0 [3.0-11.0]	0.000	

<sup>1</sup> Mann-Whitney U-test for numerical variables; Fisher's exact test for categorical variables. <sup>2</sup> Logistic regression analysis. COPD: Chronic obstructive pulmonary disease; ARDS: Acute respiratory distress syndrome; IMV: Invasive mechanical ventilation.

➤ Çok değişkenli analizde **ECMO** kullanımı ve Pct yüksekliği ilişkili



**Table 2.** Pathogens recovered from blood, lower respiratory tract and/or urine cultures.

Pathogens	Blood culture	Respiratory culture	Combined	Urine	Total patients
<b>Gram-negative</b>					
<i>Klebsiella pneumoniae</i>	13	7	6		26
<i>Acinetobacter baumannii</i>	2	12	13		27
<i>Pseudomonas aeruginosa</i>	2	2	5		9
<i>Escherichia coli</i>	2		1*	1	4
<i>Enterobacter aerogenes</i>	2				2
<i>Serratia marcescens</i>	1		1		2
<i>Stenotrophomonas maltophilia</i>	3	1			4
<i>Sphingomonas paucimobilis</i>	1		1**		2
<i>Providencia rettgeri</i>			1		1
<b>Gram-positive</b>					
<i>Staphylococcus aureus</i>					
Methicillin-resistant	2	3	1		6
Methicillin-susceptible	2				2
Coagulase-negative staphylococci	6				6
<i>Enterococci</i>	6				6
<i>Candida spp.</i>	7				

\*Urine and blood cultures; \*\*Wound and blood cultures.

- %74'ü Gram negatif patojenler
- Karbapenem direnci %28

# COVID-19, Santral Venöz Kateter İlişkili Kan Dolaşımı İnfeksiyon Riskini Artırıyor mu?

2021

Does COVID-19 Increase the Risk of Central-Line-Associated Bloodstream Infections?

Elif Sargin-Altunok<sup>1</sup> , Ayşe Batırel<sup>1</sup> , Zeynep Ersöz<sup>2</sup> , Deniz Akay-Güven<sup>2</sup> , Sultan Öztürk-Aydemir<sup>2</sup> 

<sup>1</sup>Sağlık Bilimleri Üniversitesi İstanbul Kartal Dr. Lütfi Kırdar Şehir Hastanesi, İnfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Kliniği, İstanbul, Türkiye; <sup>2</sup>Sağlık Bilimleri Üniversitesi İstanbul Kartal Dr. Lütfi Kırdar Şehir Hastanesi, İnfeksiyon Kontrol Hemşireliği, İstanbul, Türkiye

Di Hız ve

- COVID-YBÜ 57 yatak
- Diğer 3.düzyer erişkin YBÜ ise 7 ünite ve toplam 77 yatak
- COVID-YBÜ'de Ki-KDi hızı daha yüksek

	COVID-19 YBÜ	Genel YBÜ
Hasta Sayısı	1071	3114
Hasta Yatış Günü Sayısı	8176	27 982
SVK Kullanılan Gün Sayısı	3930	17 601
SVK Kullanım Oranı	0.5	0.6
SVKİ-KDi Sayısı	22	32
SVKİ-KDi İnsidans Dansitesi	2.7	1.1
SVKİ-KDi Hızı	2.05	1.03



**Tablo 2.** Kateterle ilişkili Kan Dolaşımı İnfeksiyonu Tanısı Alan Hastaların Demografik ve Klinik Özelliklerinin Karşılaştırılması

Demografik ve Klinik Özellikler	COVID-19 YBÜ n=22 (%)	Genel YBÜ n=32 (%)	p
Yaş (yıl) (medyan, IQR) (minimum-maksimum)	66.5 (18) (32-89)	66.5 (23) (21-96)	0.93
Erkek Cinsiyet	13 (59.1)	23 (71.9)	0.327
<b>Komorbiditeler</b>			
Yok	4 (18.2)	4 (12.5)	0.564
Bir Komorbidite	11 (50)	11 (34.4)	0.251
Diabetes Mellitus	10 (45.5)	13 (40.6)	0.724
Hipertansiyon	14 (63.6)	11 (34.4)	<b>0.034*</b>
Kronik Akciğer Hastalığı	2 (9.1)	4 (12.5)	0.695
Kronik Kalp Hastalığı	1 (4.5)	8 (25)	<b>0.048*</b>
Kronik Böbrek Hastalığı	0 (0)	2 (6.3)	0.232
Kronik Karaciğer Hastalığı	1 (4.5)	1 (3.1)	0.786
Diğer**	1 (4.5)	7 (21.9)	0.078
YBÜ Kabulden Önceki Yatış Süresi (gün) (medyan, IQR) (minimum-maksimum)	0 (5) (0-33)	0 (0) (0-48)	0.226
YBÜ Kabulden KDİ tanısı alana kadar geçen süre (gün) (medyan, IQR) (minimum-maksimum)	8.5(6) (4-22)	24 (23) (5-143)	<b>&lt;0.001*</b>
YBÜ kalış süresi, gün (medyan, IQR) (minimum-maksimum)	13 (9.25) (4-30)	52.5 (38.25) (8-206)	<b>&lt;0.001*</b>
Mortalite, n (%)	17 (77.3)	22 (68.8)	0.492



Risk Faktörü	COVID-19 YBÜ n=22 (%)	Genel YBÜ n=32 (%)	p
<b>Mekanik Ventilasyon</b>	22 (100)	29 (90.6)	0.139
Endotrakeal Entübasyon	22 (100)	25 (78.1)	<b>0.019*</b>
Trakeostomi	0 (0)	5 (15.6)	0.052
<b>Enteral Beslenme</b>	22 (100)	29 (90.6)	0.139
<b>Parenteral Nutrisyon</b>	2 (9.1)	5 (15.6)	0.482
<b>Perkütan Gastrostomi</b>	0 (0)	8 (25)	<b>0.011*</b>
<b>Kan Transfüzyonu</b>	4 (18.2)	11 (34.4)	0.192
<b>H<sub>2</sub> Reseptör Antagonisti</b>	19 (86.4)	31 (96.9)	0.147
<b>İmmunosüpresyon</b>	13 (59.1)	5 (15.6)	<b>0.001*</b>
<b>Dekübitus Ülseri</b>	10 (45.5)	5 (15.6)	<b>0.016*</b>
<b>Hemodiyaliz</b>	2 (9.1)	2 (6.3)	0.695
<b>Nazogastrik Sonda</b>	22 (100)	29 (90.6)	0.139
<b>Üriner Kateter</b>	22 (100)	32 (100)	**
<b>Periferik Arter Kateteri</b>	11 (50)	7 (21.9)	<b>0.031*</b>
<b>Santral Kateter Bölgesi</b>			
Juguler	10 (45.5)	10 (31.3)	0.288
Subklavyen	4 (18.2)	11 (34.4)	0.192
Femoral	8 (36.4)	11 (34.4)	0.88

- YBÜ'de en sık Gram-negatif bakteriler ile Kİ-KDİ gelişiyor

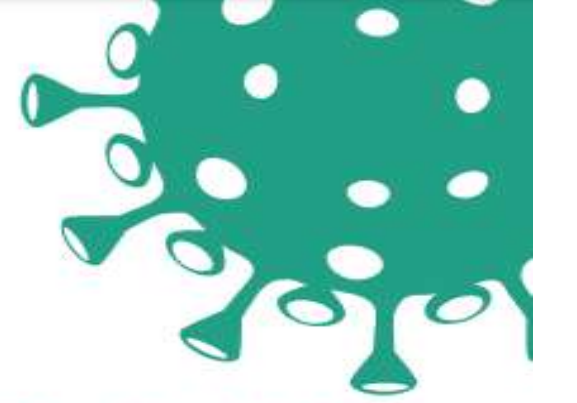
### *Acinetobacter baumannii*



Mikroorganizmalar	COVID-19 YBÜ n=29 (%)	Genel YBÜ n=40 (%)	p
<b>Gram-negatif Bakteriler</b>	16 (55.2)	18 (45)	0.404
<i>A. baumannii</i>	12 (41.4)	7 (17.5)	
<i>E. coli</i>	1 (3.4)	2 (5)	
<i>K. pneumoniae</i>	1 (3.4)	3 (7.5)	
<i>P. aeruginosa</i>	1 (3.4)	1 (2.5)	
<i>A. lwoffii</i>	0 (0)	1 (2.5)	
<i>K. oxytoca</i>	0 (0)	1 (2.5)	
<i>Citrobacter</i>	0 (0)	1 (2.5)	
<i>Burkholderia spp.</i>	0 (0)	1 (2.5)	
<i>E. aerogenes</i>	0 (0)	1 (2.5)	
<i>S. marcescens</i>	1 (3.4)	0 (0)	
<b>Gram-pozitif Bakteriler</b>	10 (34.5)	11 (27.5)	0.534
<i>Enterococcus faecium</i>	3 (10.3)	4 (10)	
<i>Enterococcus faecalis</i>	3 (10.3)	4 (10)	
<i>Staphylococcus aureus</i>	1 (3.4)	2 (5)	
<i>Salmonella spp.</i>	1 (3.4)	0 (0)	
Koagülaz-negatif stafilokok	2 (6.9)	1 (2.5)	
<b>Candidalar</b>	3 (10.3)	11 (27.5)	0.08
<i>C. parapsilosis</i>	2 (6.9)	4 (10)	
<i>C. albicans</i>	0 (0)	5 (12.5)	
<i>C. tropicalis</i>	1 (3.4)	1 (2.5)	
<i>C. krusei</i>	0 (0)	1 (2.5)	

# Sonuç: Pandemi döneminde enfeksiyon kontrolü zorlaştı!!!

- Enfeksiyon kontrol uzmanlarına etkisi
- Enfeksiyon kontrol uygulamalarına etkisi
- SBİi hızlarına etkisi
  - COVID-19 hastalarında SBİi
  - SBİ COVID-19
- Antibiyotik direncine etkisi



## COVID-19 Pandemisinde Sağlık Kurumlarında Çalışma Rehberi ve Enfeksiyon Kontrol Önlemleri

Bilimsel Danışma Kurulu Çalışması

24 Temmuz 2020



T.C. SAĞLIK BAKANLIĞI



# Enfeksiyon kontrol uzmanlarına etkisi






## Enfeksiyon kontrol uygulamalarına etkisi

- COVID-19 pandemisi enfeksiyon önleme ve kontrolüne ilişkin kavramları ve uygulamaları önemli ölçüde deęiřtirdi



## Review

# Current knowledge of COVID-19 and infection prevention and control strategies in healthcare settings: A global analysis

M. Saiful Islam MSS, MPH<sup>1,2</sup> , Kazi M. Rahman MBBS, MS, PhD<sup>3,4</sup>, Yanni Sun MPH, PhD<sup>5</sup>, Mohammed O. Qureshi MBA<sup>1</sup>, Ikram Abdi MPH<sup>1</sup>, Abrar A. Chughtai MBBS, MPH, PhD<sup>1</sup> and Holly Seale MPH, PhD<sup>1</sup>

- Virusun bilinmeyen ve spesifik olmayan doğası
- KKE küresel olarak tedarik sıkıntısı
  - Kılavuzların neredeyse tamamı KKE kullanımına ilişkin ilk tavsiyelerini revize etti.



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## American Journal of Infection Control

journal homepage: [www.ajicjournal.org](http://www.ajicjournal.org)



### Major Article

## The impact of COVID-19 pandemic on hand hygiene performance in hospitals



Lori D. Moore MPH, BS, RN <sup>a,\*</sup>, Greg Robbins BA <sup>b</sup>, Jeff Quinn PhD <sup>c</sup>, James W. Arbogast PhD <sup>d</sup>

<sup>a</sup> Clinical Educator, Healthcare, GOJO Industries, Akron, OH

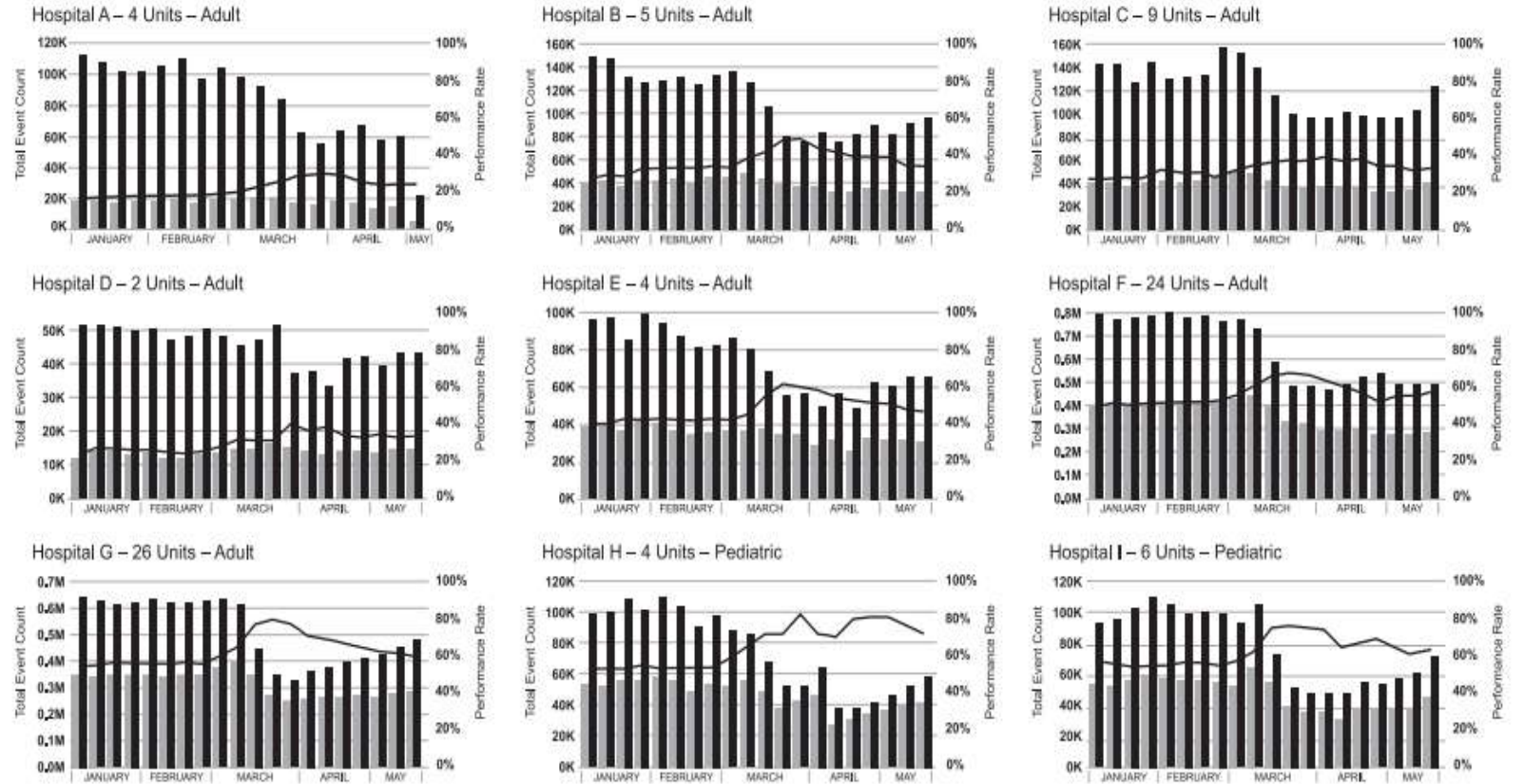
<sup>b</sup> GOJO Industries, Akron, OH

<sup>c</sup> GOJO Industries, Akron, OH

<sup>d</sup> Hygiene Sciences & Public Health Advancements Vice President, GOJO Industries, Akron, OH

- ABD, pandeminin ilk 5 ayı, **9 hastane / 84 klinik**
- Dezenfektan ve el yıkama davranışları izlenmiş
  - Sağlık çalışanlarında ki el hijyeni uyumu, kendilerini ve ailelerini korumak için artan risk algısı ile artıyor!!!!

- **El hijyeni performansı;** Tedbirlerin artırıldığı ilk dönemde normal seviyelerin üzerinde, ancak sonra ki dönemlerde tekrar azalıyor



**Fig 1.** Weekly opportunities (black bars), events (gray bars), and average performance rates (solid lines), for each hospital (2020).



## COVID-19 outbreak and healthcare worker behavioural change toward hand hygiene practices

F. Huang<sup>a,\*</sup>, M. Armando<sup>b</sup>, S. Dufau<sup>b</sup>, O. Florea<sup>c</sup>, P. Brouqui<sup>a,c</sup>, S. Boudjema<sup>a</sup>

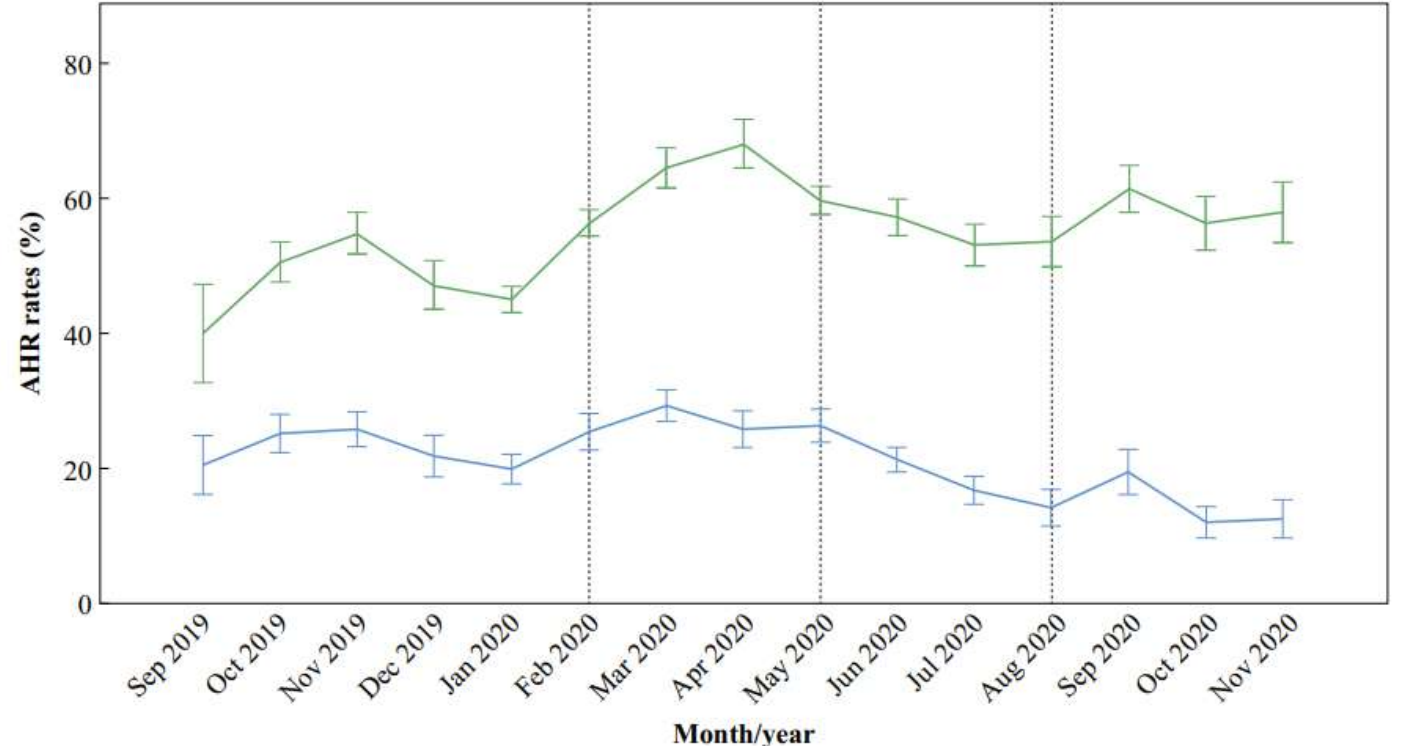
<sup>a</sup> Aix Marseille Université, IRD, MEPHI, IHU Méditerranée Infection, Marseille, France

<sup>b</sup> Aix Marseille Université, CNRS, Laboratory of Cognitive Psychology (UMR 7290), Marseille, France

<sup>c</sup> AP-HM, IHU Méditerranée Infection, Marseille, France

- Pandemi koşullarında bile el hijyeni performansındaki iyileşmeleri sürdürmek zor görünüyor.

- Fransa, Eylül 2019- Kasım 2020; Salgın eğrisi ile paralel davranış değişiklikleri



# SBI COVID-19

Review > Antimicrob Resist Infect Control. 2021 Jan 6;10(1):7. doi: 10.1186/s13756-020-00875-7.

## Nosocomial transmission and outbreaks of coronavirus disease 2019: the need to protect both patients and healthcare workers

Mohamed Abbas<sup>1 2</sup>, Tomás Robalo Nunes<sup>3 4</sup>, Romain Martischang<sup>3</sup>, Walter Zingg<sup>3 4 5</sup>, Anne Iten<sup>3</sup>, Didier Pittet<sup>3 4 5</sup>, Stephan Harbarth<sup>3 4 5</sup>

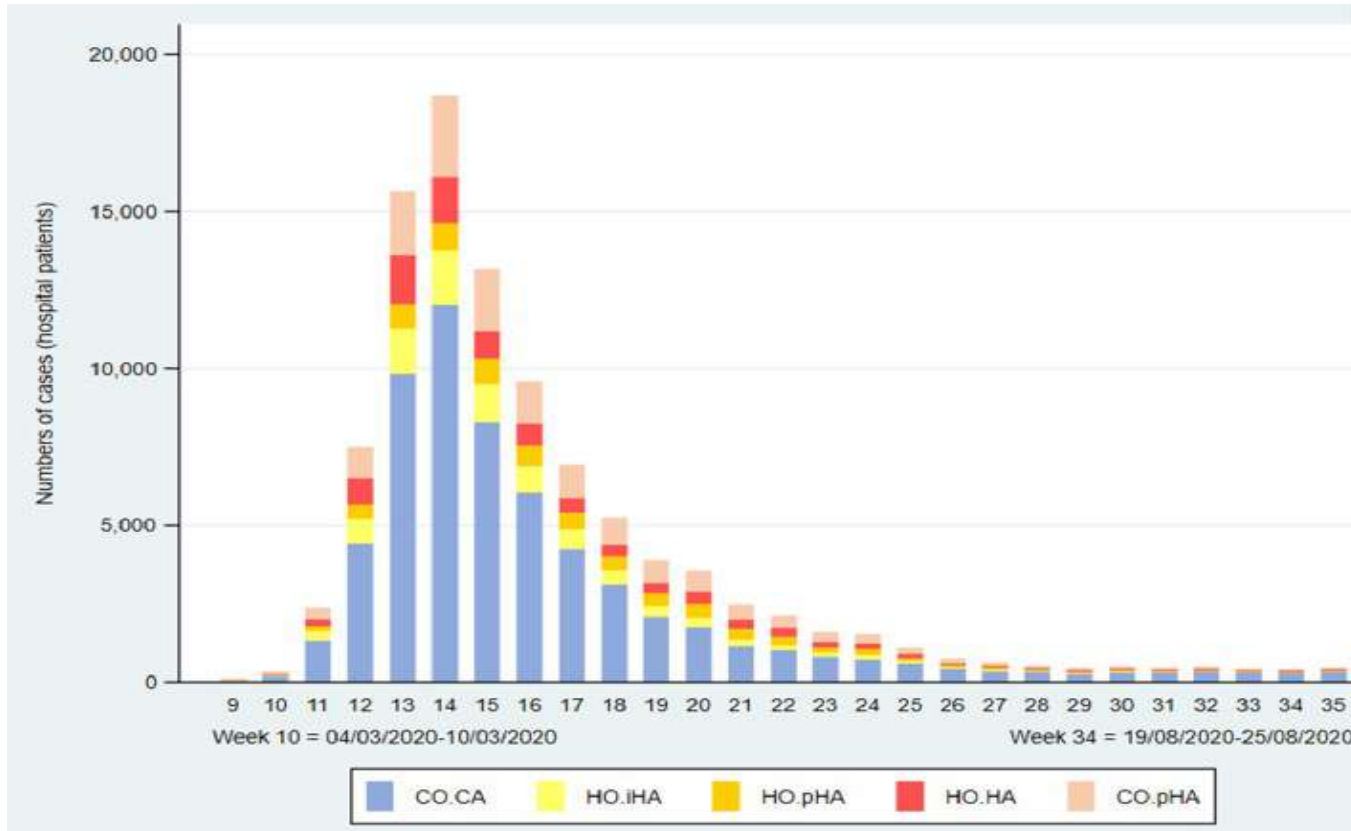
- Salgının önemli bir yönünü oluşturmaktadır
  - COVID-19 hastalarından sağlık çalışanlarına bulaş
  - Sağlık çalışanlarından non-COVID hastalara bulaş

# SBI COVID-19

First author, year	Site	Number of infections	Reported timeline (2020)	Events	Patient outcomes
Schwierzeck <i>et al</i> , 2020	Münster, Germany	48	N/A	48 cases including 28 HCPs, 13 patients and 7 accompanying persons	N/A
Carter <i>et al</i> , 2020	11 hospitals in UK and Italy	196	Feb 27-Apr 28	27.0% of patients with nosocomial infection died, and the median survival time was 14 days	53 died
Wang <i>et al</i> , 2020	Zhongnan Hospital, Wuhan, China	57	Jan 1-28	57 people were confirmed with COVID-19, including 17 inpatients and 40 HCPs	N/A
Luong-Nguyen <i>et al</i> , 2020	Ile-de-France, France	15	Mar 1-Apr 5	15 patients developed nosocomial COVID-19 infection (all of them had co-morbidities)	2 died, 7 hospitalized and 6 discharged
Vanhems, 2020	Lyon area, France	8	Mar 10-13	6 cases were infected by 2 potential index cases, including one HCP	2 died
Elkrief <i>et al</i> , 2020	Canada	47	Mar 3-May 23	The nosocomial infection rate was 19% among 252 patients with cancer and COVID-19	22 died, 7 hospitalized, 3 critically-ill, 15 outpatients
Lai <i>et al</i> , 2020	Tongji Hospital, Wuhan, China	77	Jan 1-Feb 9	The infection rate of HCPs was 1.1%; 70 HCPs were infected in general clinics or wards, 7 in fever clinics or wards	N/A
Ji <i>et al</i> , 2020	South Korea	119	Feb 11-Mar 2	The first patient was diagnosed with COVID-19 two days after his death; 119 patients were confirmed with COVID-19	7 died
Ji <i>et al</i> , 2020	Wuhan Mental Health Center, Wuhan, China	80	Jan 12-Feb 8	~50 patients and 30 HCPs were confirmed with COVID-19	N/A

## Healthcare-associated COVID-19 in England: A national data linkage study

Alex Bhattacharya<sup>1</sup>, Simon M Collin<sup>1</sup>, James Stimson<sup>1</sup>, Simon Thelwall<sup>1</sup>, Olisaeloka Nsonwu<sup>1</sup>, Sarah Gerver<sup>2</sup>, Julie Robotham<sup>2</sup>, Mark Wilcox<sup>3</sup>, Susan Hopkins<sup>4</sup>, Russell Hope<sup>5</sup>



### Pandeminin ilk 6 ayında;

- Konfirme vakaların %5.3'ü SBI (15.564/293.204)
- Konfirme yatan hastaların %15.4'ü SBI (15.564/100.859)
- Mayıs ve haziranda pik (%21 ve %21.9)

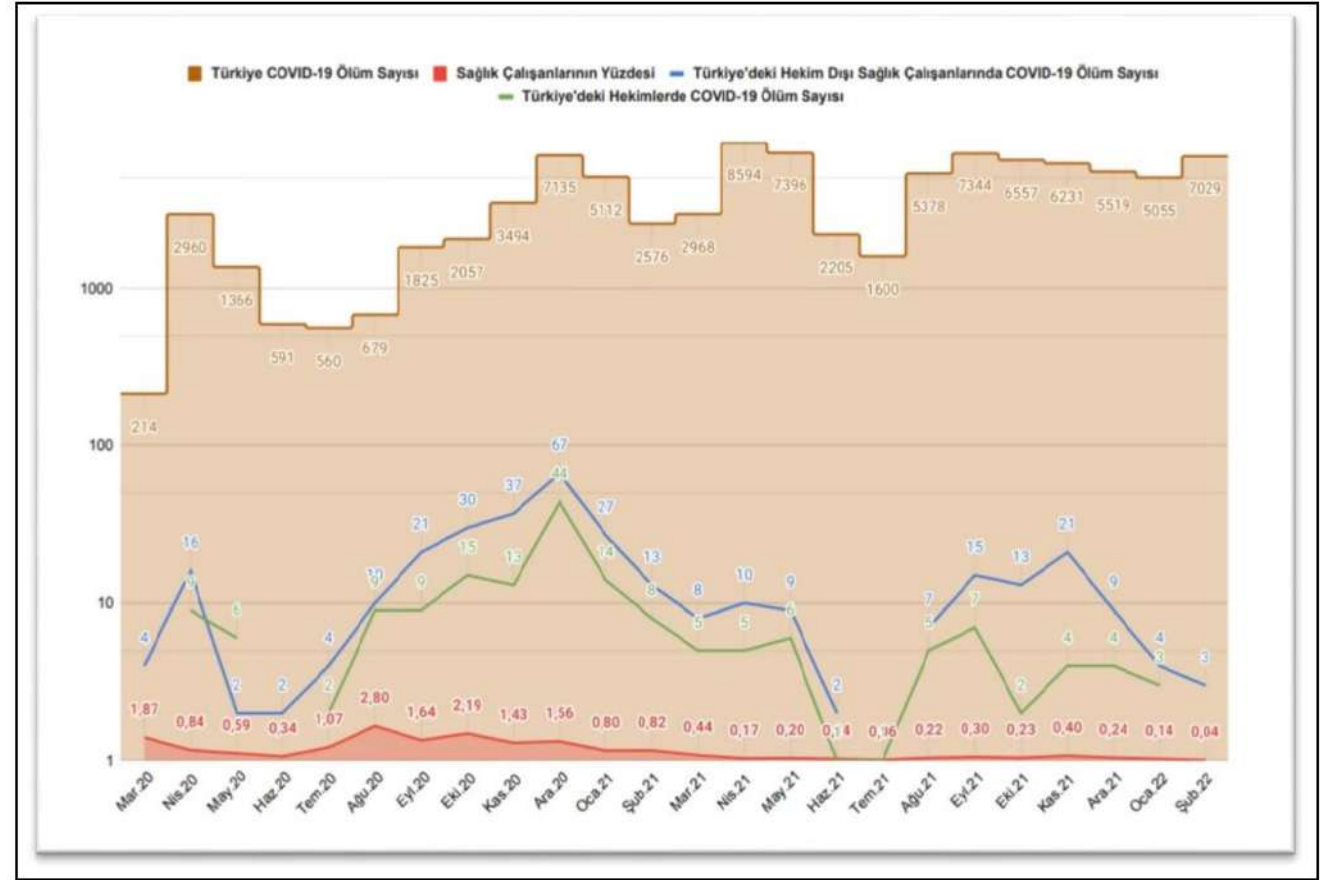


# Sağlık çalışanlarında COVID-19

- Türkiye'de CoV ilişkili ölümler içinde sağlık çalışanlarının yüzdesi  
**Ağustos 2020: %2.8**

- Pandeminin ilk iki senesindeki en düşük seviye  
**Şubat 2022'de: %0.04**

**Şekil 5.** Türkiye Nüfusunun, Hekim Dışı Sağlık Çalışanlarının ve Hekimlerin COVID-19'a Bağlı Ölüm Sayılarının Aylara Göre Dağılımı ve Türkiye Nüfusunda Meydana Gelen Ölümler İçinde Sağlık Çalışanlarının Yüzdesi



# Pandemi dneminde yařanan salgınlar



The challenge of preventing and containing outbreaks of multidrug-resistant organisms and *Candida auris* during the coronavirus disease 2019 pandemic: report of a carbapenem-resistant *Acinetobacter baumannii* outbreak and a systematic review of the literature

[Reto Thoma](#),<sup>#1</sup> [Marco Seneghini](#),<sup>#1</sup> [Salomé N. Seiffert](#),<sup>2</sup> [Danielle Vuichard Gysin](#),<sup>3</sup> [Giulia Scanferla](#),<sup>1</sup> [Sabine Haller](#),<sup>1</sup> [Domenica Flury](#),<sup>1</sup> [Katia Boggian](#),<sup>1</sup> [Gian-Reto Kleger](#),<sup>4</sup> [Miodrag Filipovic](#),<sup>4</sup> [Oliver Nolte](#),<sup>2</sup> [Matthias Schlegel](#),<sup>1</sup> and [Philipp Kohler](#)<sup>1</sup>

- İsviçre'de 700 yataklı üçüncü basamak bir hastane
- YB'de CRAB salgını

## • Aralık 2019- Mart 2021

- Toplam 17 salgın

- Avrupa
- ABD
- Güney Amerika

- 218 YBÜ hastası

- En sık *A.baumannii* ve *C.auris*

- Hastane mortalitesi %35

**Table 2** Summary of the outbreak characteristics in the included studies

Article	Type of article	Time span of outbreak	SARS-CoV-2	Setting	Type of MDR Strain	Size	Patient outcome (hosp. mortality)
Farfour et al. (2020)—France	Original article	03/20–04/20	Positive	ICU	<i>E. Coli</i> NDM-5, CTX-M-15	6	0/6
Artega-Livias et. Al. (2021) – Peru	Letter to the Editor	08/20–09/20	Positive	ICU	<i>K. pneumoniae</i> NDM, CTX-M	4	3/4
Kampmeier et al. (2020) – Germany	Original article	03/20–04/20	3/5 positive	ICU	<i>E. faecium</i> VRE Van B	5	Unknown
Gottesman et al. (2021) Israel	Original article	03/20–04/20	Positive	ICU/Ward	CRAB <i>A. baumannii</i> (bla OXA-24-like carbapenemase)	5	2/5
Prestel et al. (2021) – USA (FL)	Original article	07/20–08/20	Positive	ICU/Ward	<i>C. auris</i>	35	8/35
Patel et al. (2021) – USA (MD)	Original article	05/20–06/20	Positive	ICU/IMCU	<i>E. coli</i> ESBL CTX-M	20	Unknown
Nori et al. (2020) – USA (NYC)	Letter to the editor	03/20–04/20	Positive	ICU	<i>E. cloacae</i> Class B carbapenemase gene (blaNDM)	5	4/5
Allaw et al. (2021) – Lebanon	Original article	10/20–12/20	7/14 positive	ICU	<i>C. auris</i>	14	5/14
Shinohara et al. (2021) – Brasil	Letter to the editor	09/20–12/20	Positive	ICU	CRAB <i>A. baumannii</i>	14	7/14
Villanueva-Lozano et al. (2021) – Mexico	Letter to the editor	05/20–08/20	11/12 positive	ICU	<i>C. auris</i>	12	5/12
Garcia-Menino et al. (2020) – Spain	Original article	Not specified	Positive	ICU	<i>K. pneumoniae</i> (OXA-48, CTX-M-15)	7	1/7
Perez (2020) – USA (NJ)	Original article	02/20–07/20	17/34 positive	ICU/Ward	CRAB <i>A. baumannii</i> OXA-23 (26 isolates, 2 with Additional NDM-Metallo-beta lactamase)	34	10/34
Magnasco et al. (2021) – Italy	Original article	03/20–04/20	Positive	ICU	<i>C. auris</i>	6	3/6
Chowdhary et al. (2020) – India	Original article	04/20–07/20	Positive	ICU	<i>C. auris</i>	10	6/10
Duployez et al. (2021) – France	Short communication	03/20–05/20	Positive	ICU	CRAB <i>A. baumannii</i> (OXA-23)	21	5/21
De Almeida et al. (2021) -Brasil	Original article	12/20 (cross-sectional study)	8/10 positive	ICU/SICU	<i>C. auris</i>	10	3/10
Thoma et al. (2021) – Switzerland	Original article	09/20 – 11/20	7/10 positive	ICU	CRAB <i>A. baumannii</i> (OXA-23)	10	6/10

ICU Intensive care unit, SICU Semi-ICU, NR not reported, Beta-L Beta-lactam, NDM New Delhi metallo-beta lactamase, VRE Vancomycin-resistant enterococci, CRAB Carbapenem-resistant *A. baumannii*, PPE personal protective equipment, AB antibiotic



› [Infect Prev Pract.](#) 2021 Mar;3(1):100113. doi: 10.1016/j.infpip.2021.100113. Epub 2021 Jan 9.

## **An outbreak of carbapenem-resistant *Acinetobacter baumannii* in a COVID-19 dedicated hospital**

Tamar Gottesman <sup>1 2</sup>, Rina Fedorowsky <sup>1</sup>, Rebecca Yerushalmi <sup>3</sup>, Jonathan Lellouche <sup>4</sup>,  
Amir Nutman <sup>2 4</sup>

Affiliations + expand

PMID: 34316574 PMID: PMC7794049 DOI: 10.1016/j.infpip.2021.100113

› [Infect Control Hosp Epidemiol.](#) 2022 Jun;43(6):815-817. doi: 10.1017/ice.2021.98. Epub 2021 Mar 9.

## **Outbreak of endemic carbapenem-resistant *Acinetobacter baumannii* in a coronavirus disease 2019 (COVID-19)-specific intensive care unit**

Danielle Rosani Shinohara <sup>1</sup>, Silvia Maria Dos Santos Saalfeld <sup>1 2</sup>, Hilton Vizzi Martinez <sup>2</sup>,  
Daniela Dambroso Altafini <sup>1 2</sup>, Bruno Buranello Costa <sup>2</sup>, Nayara Helisandra Fedrigo <sup>1</sup>,  
Maria Cristina Bronharo Tognim <sup>1</sup>

Letter to the Editor

## Outbreak of *Candida auris* infection in a COVID-19 hospital in Mexico

Hiram Villanueva-Lozano <sup>1,\*</sup>, Rogelio de J. Treviño-Rangel <sup>1,\*</sup>, Gloria M. González <sup>1,\*</sup>,  
María Teresa Ramírez-Elizondo <sup>2,3</sup>, Reynaldo Lara-Medrano <sup>2</sup>,  
Mary Cruz Aleman-Bocanegra <sup>2</sup>, Claudia E. Guajardo-Lara <sup>4</sup>, Natalia Gaona-Chávez <sup>2</sup>,  
Fernando Castilleja-Leal <sup>3</sup>, Guillermo Torre-Amione <sup>3</sup>, Michel F. Martínez-Reséndez <sup>2,3,\*</sup>

<sup>1)</sup> Universidad Autónoma de Nuevo León, School of Medicine, Department of Microbiology, Monterrey, Nuevo León, Mexico

<sup>2)</sup> Hospital San José-Tec Salud, Epidemiological Surveillance Unit, Monterrey, Nuevo León, Mexico

<sup>3)</sup> Instituto Tecnológico y de Estudios Superiores de Monterrey, School of Medicine and Health Sciences, Monterrey, Nuevo León, Mexico

<sup>4)</sup> Laboratory of Clinical Microbiology, Hospital San José-TecSalud, Monterrey, Nuevo León, Mexico

➤ **C.auris, SBİİ ve salgınlara yol açan, antifungal dirençli yeni bir patojen**

Morbidity and Mortality Weekly Report

## ***Candida auris* Outbreak in a COVID-19 Specialty Care Unit — Florida, July–August 2020**

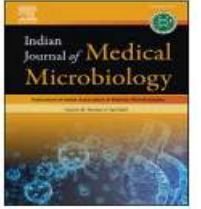
Christopher Prestel, MD<sup>1,2</sup>; Erica Anderson, MPH<sup>2</sup>; Kaitlin Forsberg, MPH<sup>3</sup>; Meghan Lyman, MD<sup>3</sup>; Marie A. de Perio, MD<sup>4,5</sup>; David Kuhar, MD<sup>1</sup>; Kendra Edwards<sup>6</sup>; Maria Rivera, MPH<sup>2</sup>; Alicia Shugart, MA<sup>1</sup>; Maroya Walters, PhD<sup>1</sup>; Nychie Q. Dotson, PhD<sup>2</sup>



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## Indian Journal of Medical Microbiology

journal homepage: [www.journals.elsevier.com/indian-journal-of-medical-microbiology](http://www.journals.elsevier.com/indian-journal-of-medical-microbiology)



Original Research Article

### *Candida auris* Fungemia and a local spread taken under control with infection control measures: First report from Turkey

Ahmet Furkan Kurt<sup>a</sup>, Mert Ahmet Kuskucu<sup>b</sup>, Ilker Inanc Balkan<sup>a</sup>, Ayse Baris<sup>c</sup>, Zeynep Yazgan<sup>b</sup>, Ayşe Serife Oz<sup>b</sup>, Ayse Istanbulu Tosun<sup>d</sup>, Bilgul Mete<sup>a,\*</sup>, Fehmi Tabak<sup>a</sup>, Gokhan Aygun<sup>b</sup>

<sup>a</sup> Istanbul University-Cerrahpasa, Cerrahpasa School of Medicine, Department of Infectious Diseases and Clinical Microbiology, Istanbul, Turkey

<sup>b</sup> Istanbul University-Cerrahpasa, Cerrahpasa School of Medicine, Department of Medical Microbiology, Istanbul, Turkey

<sup>c</sup> Health Sciences University, Hamidiye Sisli Etfal Educating and Training Hospital, Department of Medical Microbiology, Istanbul, Turkey

<sup>d</sup> Istanbul Medipol University, Medical Faculty, Department of Medical Microbiology, Istanbul, Turkey



## CASE REPORT / OLGU SUNUMU

DOI: 10.4274/mjima.galenos.2021.2021.48

Mediterr J Infect Microb Antimicrob 2021;10:48

Erişim: [http://dx.doi.org/10.4274/mjima.galenos.2021.:](http://dx.doi.org/10.4274/mjima.galenos.2021.)

## The Second Case of *Candida auris* Candidemia from Turkey: An Impending Threat to the Global Health

Türkiye'den İkinci *Candida auris* Sepsisi Olgu Sunumu: Küresel Sağlık için Yaklaşan Bir Tehdit

© Leyla TEKE<sup>1</sup>, © Elif SARGIN ALTUNOK<sup>2</sup>, © Döndü GENÇ MORALAR<sup>3</sup>



› Euro Surveill. 2022 Oct;27(43):2200795. doi: 10.2807/1560-7917.ES.2022.27.43.2200795.

# Nosocomial outbreak by NDM-1-producing *Klebsiella pneumoniae* highly resistant to cefiderocol, Florence, Italy, August 2021 to June 2022

Marco Coppi <sup>1 2</sup>, Alberto Antonelli <sup>1 2</sup>, Claudia Niccolai <sup>1</sup>, Andrea Bartolini <sup>1</sup>, Laura Bartolini <sup>2</sup>, Maddalena Grazzini <sup>3</sup>, Elisabetta Mantengoli <sup>3 4</sup>, Alberto Farese <sup>4</sup>, Filippo Pieralli <sup>5</sup>, Maria Teresa Mechi <sup>3</sup>, Vincenzo Di Pilato <sup>2 6</sup>, Tommaso Giani <sup>1 2</sup>, Gian Maria Rossolini <sup>1 2</sup>

Affiliations + expand

PMID: 36305334 PMCID: PMC9615416 DOI: 10.2807/1560-7917.ES.2022.27.43.2200795

- Ağustos 2021-Haziran 2022, Floransa, 3.basamak bir hastane
- FDC-dirençli NDM-Kp'nın neden olduğu bir salgın: **21 hasta**



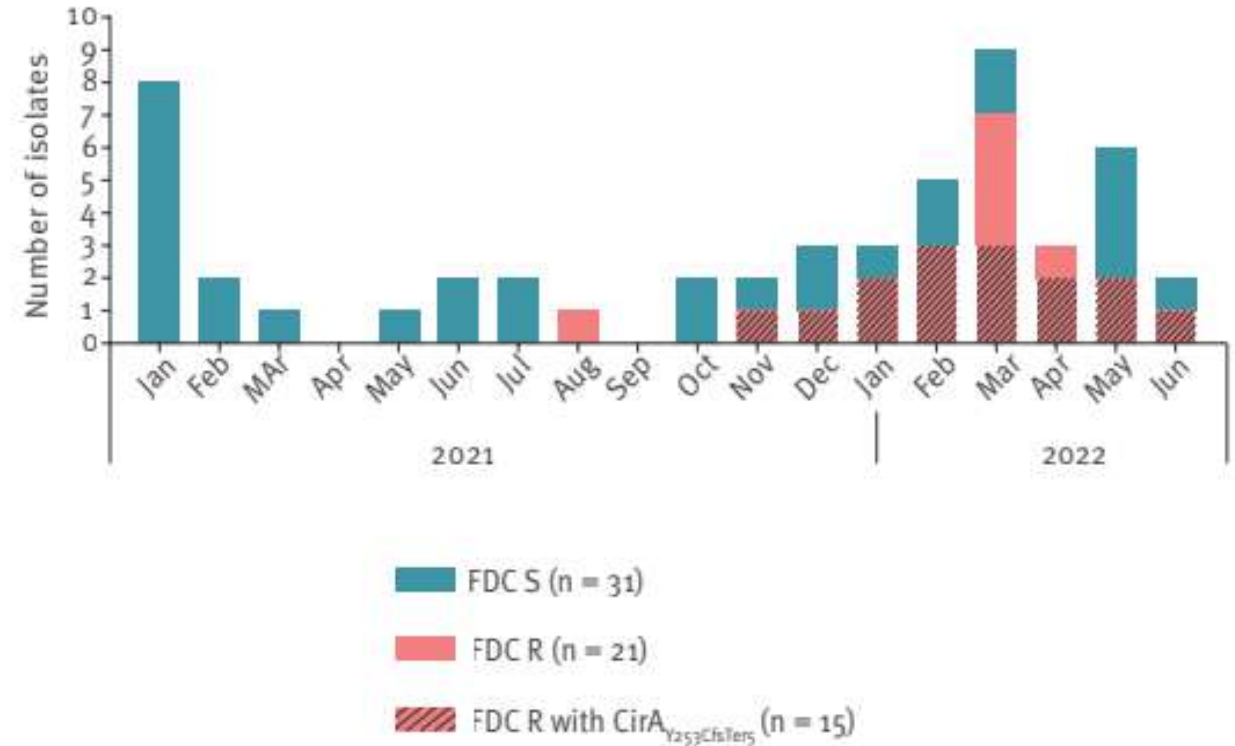
- **Toskana 2018: Cefiderocol duyarlı**  
NDM-Kp suşu ile birkaç hastaneyi kapsayan bilinen büyük bir salgın
  - Sonrasında 2019'dan bu yana bu hastanede NDM-Kp vakaları görülmekte
- Haziran 2022'de, bir EHU'nın talebi üzerine yapılan duyarlılık testinde **FDC'e dirençli bir NDM-Kp izolatu saptanmış**



- Bunun üzerine geriye dönük olarak yapılan analizde,
  - Ocak 2021-Haziran 2022 arasında 52 vakada NDM-Kp izolatının 21'inin Cefiderocol dirençli olduğu saptanmış.
- 12'i Ocak-Mart 2022'de gözlenmiş

**FIGURE 1**

Number of retrospectively analysed non-replicate NDM-1-producing *Klebsiella pneumoniae* isolates by month of detection from a tertiary care hospital outbreak in Florence, Italy, January 2021–June 2022 (n = 52 isolates)



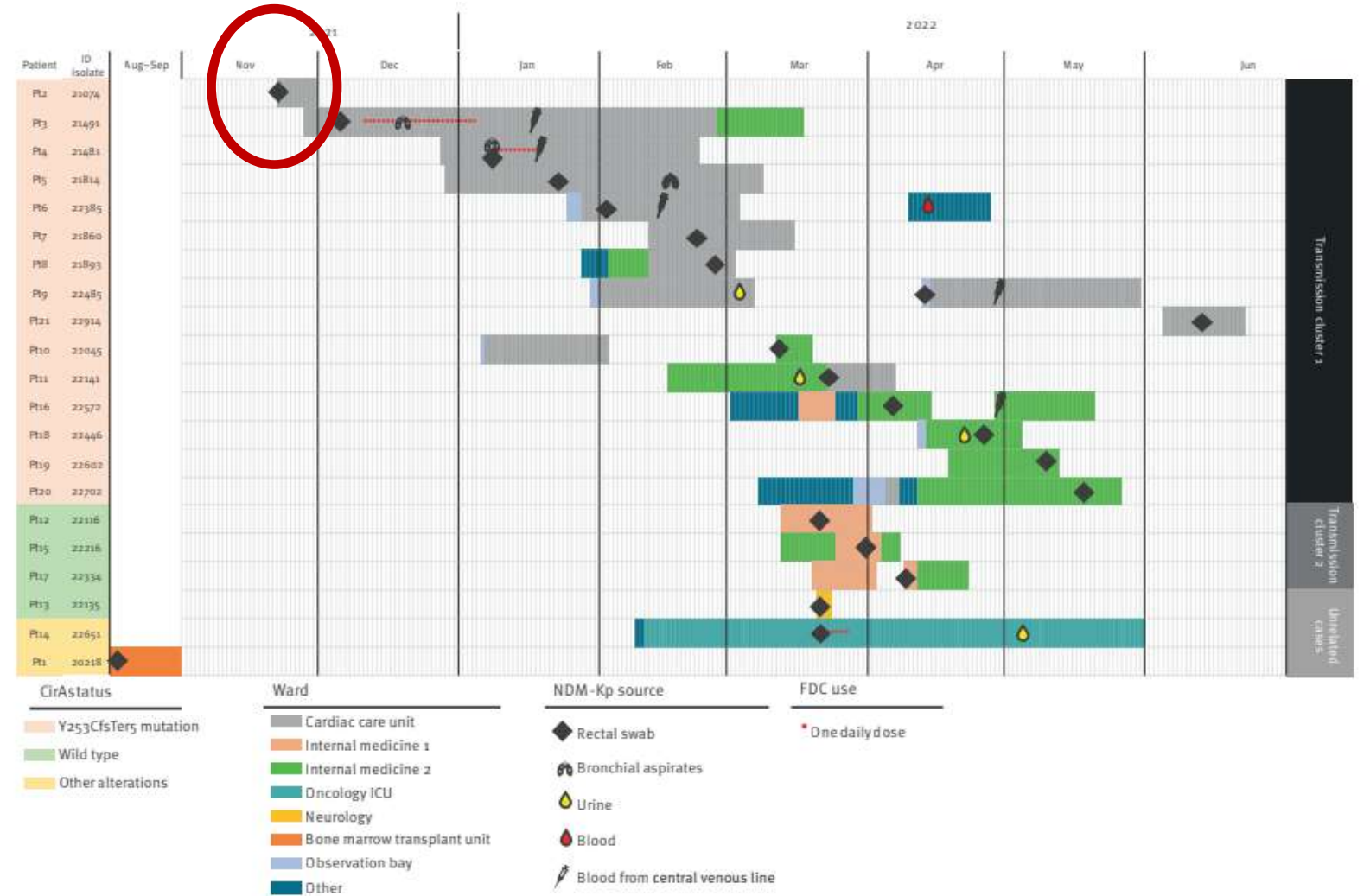
- 11 erkek, 12 kadın;  
medyan yaş: 67  
(range: 45–91)

- Cefiderocol dirençli NDM-Kp'nin izolasyonundan önce FDC tedavi öyküsü olan hasta yok.

- Toplam 9 enfeksiyon gelişmiş;
  - KI-KDE; n=5
  - İYE; n=4
  - VİP; n=3

**FIGURE 2**

Timeline of cefiderocol-resistant NDM-1-producing *Klebsiella pneumoniae*-positive cultures during a tertiary care hospital outbreak in Florence, Italy, August 2021–June 2022 (n = 21 patients)



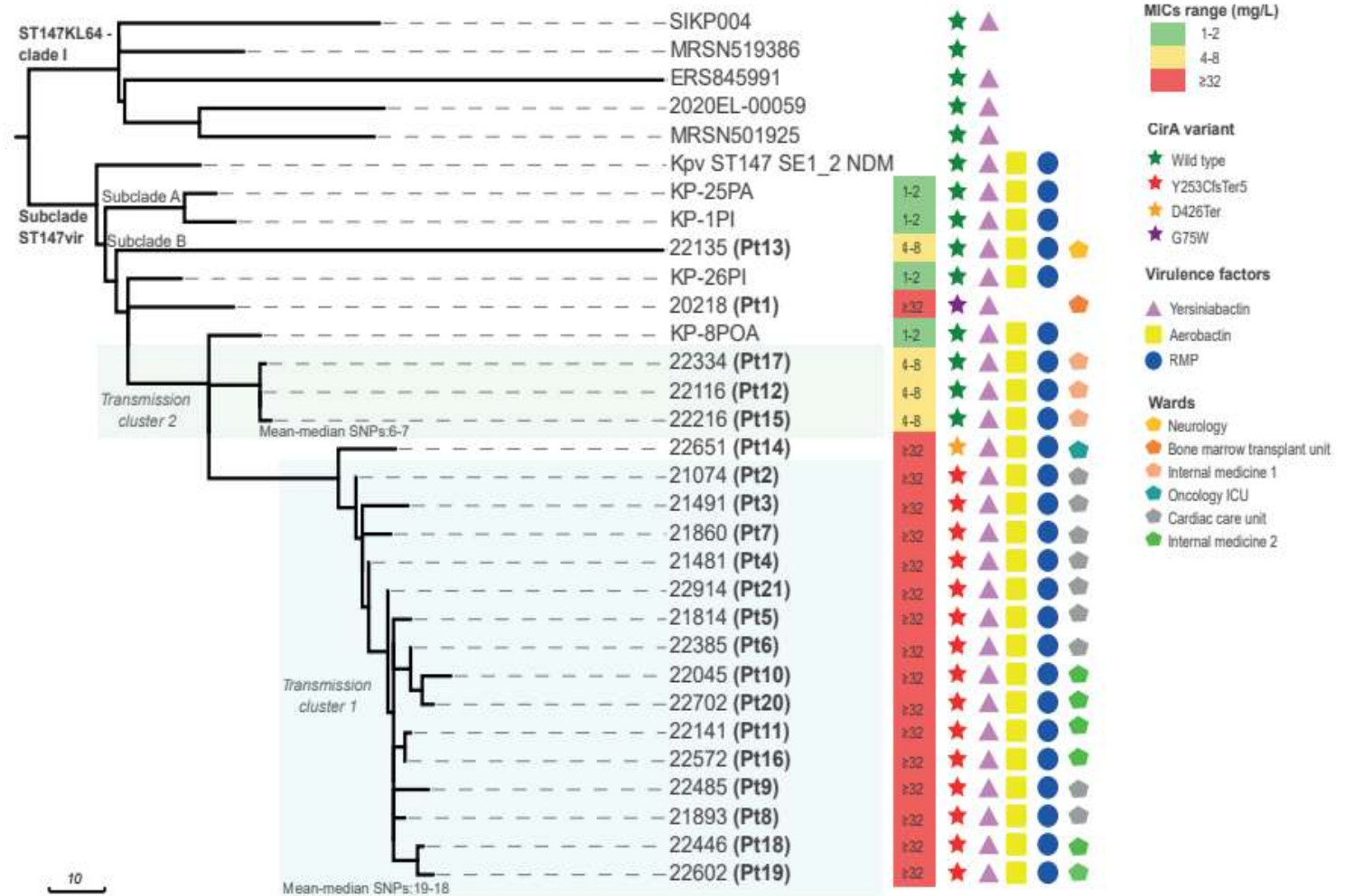


**FIGURE 3**

Phylogenetic analysis of cefiderocol-resistant NDM-1-producing ST147 *Klebsiella pneumoniae* from tertiary care hospital outbreak in Florence, Italy, August 2021–June 2022 (n=21)

## Genomik analizde;

- 21 Cefiderocol dirençli NDM-Kp izolatının tümü 2018’de ortaya çıkan ve hala devam eden Toskana salgınında dolaşan ST147-vir klonu ile ilişkili
- 17 izolat, cirA varyantı; yüksek düzeyde FDC direnci gösterdi (MİK:  $\geq 32$  mg/L)





› Euro Surveill. 2022 Oct;27(43):2200795. doi: 10.2807/1560-7917.ES.2022.27.43.2200795.

## **Nosocomial outbreak by NDM-1-producing *Klebsiella pneumoniae* highly resistant to cefiderocol, Florence, Italy, August 2021 to June 2022**

- **Gram negatif bakterilerin yayılmasının önlenmesi ve yeni antimikrobiyallere direnç gelişmesinin önlenmesi için;**
  - **Hem genomik sürveyans hem aktif sürveyans önemli yer tutuyor**
  - **Enfeksiyon önleme ve kontrol önlemlerine tam uyum sağlanmalı**
  - **Klinik ve laboratuvar arasındaki sıkı işbirliği geliştirilmeli**



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journal homepage: [www.elsevier.com/locate/jic](http://www.elsevier.com/locate/jic)

Original Article

### An outbreak of *Ralstonia insidiosa* bloodstream infections caused by contaminated heparinized syringes

Nazmiye Ülkü Tüzemen<sup>a,\*</sup>, Uğur Önal<sup>b</sup>, Esra Kazak<sup>b</sup>, Nergiz Tezgeç<sup>c</sup>, Hale Eren<sup>c</sup>, Hüsniye Şimşek<sup>d</sup>, Zekiye Bakkaloğlu<sup>d</sup>, Özlem Ünalı<sup>d</sup>, Solmaz Çelebi<sup>e</sup>, Emel Yılmaz<sup>b</sup>, Mustafa Hacımustafaoğlu<sup>e</sup>, Emin Halis Akalın<sup>b</sup>, Cüneyt Özakin<sup>a</sup>

- **Eylül - Aralık 2021**
- Kan gazı enjektörü
- 13 hastanın kan kültürlerinde 17 *Ralstonia insidiosa*

- **Şubat 2020 - Aralık 2021**
- 67 hastada *Sphingomonas paucimobilis*

> *Am J Infect Control*. 2022 Nov 10;S0196-6553(22)00782-9. doi: 10.1016/j.ajic.2022.10.012.

Online ahead of print.

### A long-lasting *Sphingomonas paucimobilis* outbreak: A potential for pathogens to persist on environmental devices despite disinfection measures

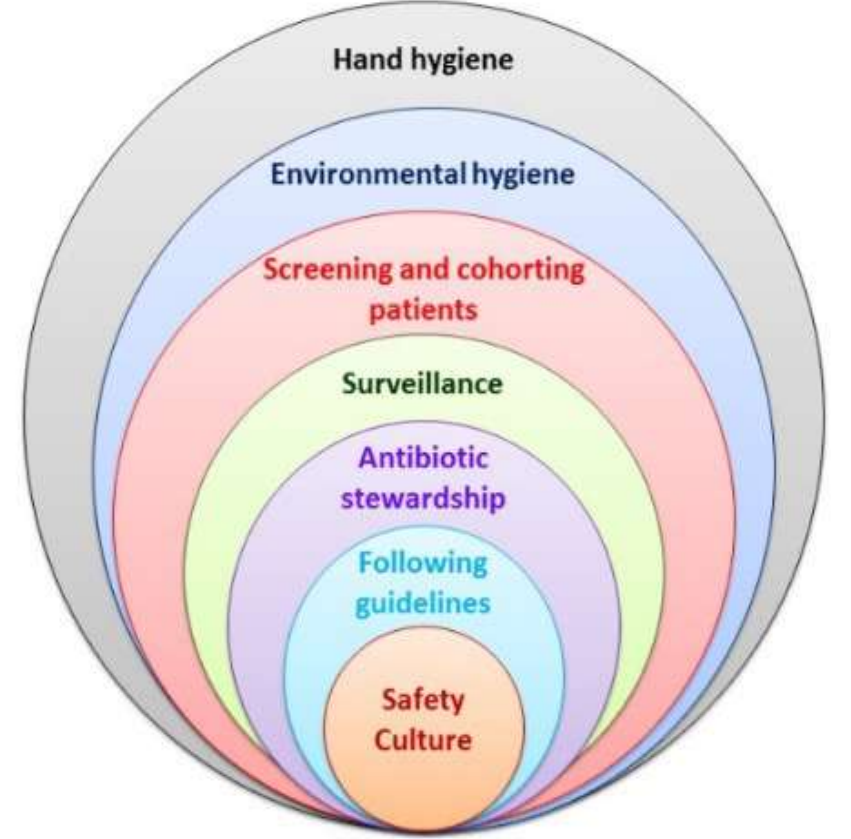
Şirin Menekşe<sup>1</sup>, Elif Seren Tanrıverdi<sup>2</sup>, Ece Altınay<sup>3</sup>, Halide Oğuş<sup>3</sup>, Arzu Ateşoğlu Aydoğan<sup>4</sup>, Duygu Sağlam<sup>4</sup>, Özge Çelik<sup>4</sup>, Barış Otlu<sup>2</sup>, Mehmet Kaan Kırallı<sup>5</sup>

Affiliations + expand

PMID: 36370866 DOI: 10.1016/j.ajic.2022.10.012

# Sonuç olarak;

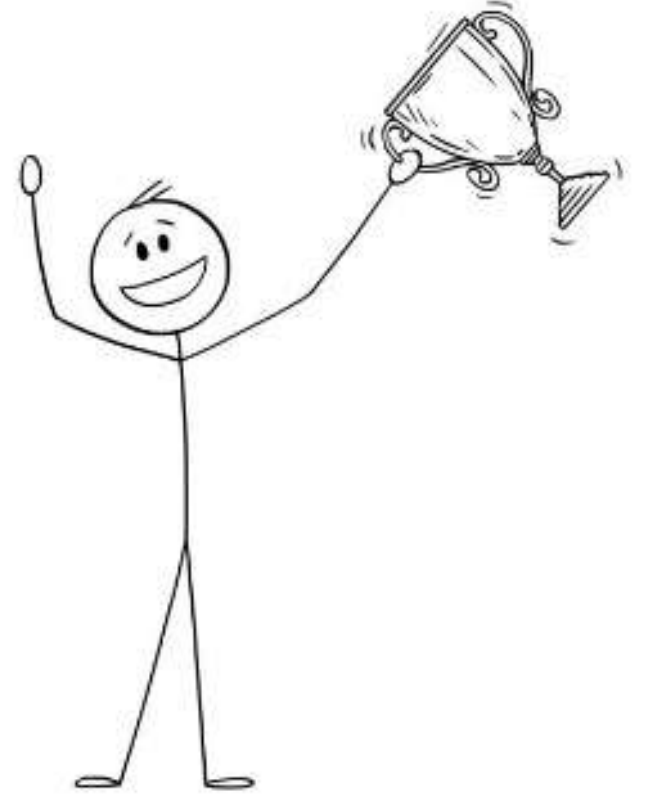
➤ Bu salgın raporları enfeksiyon kontrolü ve önleme programlarının daha iyi desteklenmesinin önemi ve gelecekte yaşanması olası salgınlarda nasıl uygulanabileceği konularında bizlere ışık tutmaktadır



**'Pandemi: Beklenmedik ve çok zor bir sınavdı'**

**En büyük gücümüz;**

- **Sağlık çalışanlarının özverili çalışmaları.....**
- **BİLİM.....**





**14 Mart Tıp  
Bayramımız  
kutlu olsun**

Beni Türk Hekimlerine  
Emanet Ediniz...

Mustafa Kemal  
**ATATÜRK**

*M. Atatürk*

