

Yoğun Bakımda Candida Sıklığı ve Risk Faktörleri



Dr. Kürşat Uzun

SUNUM PLANI

- Candidanın özellikleri
- Epidemiyolojik veriler
- Risk Faktörler
- Sonuç

Neden Aklımıza Gelmiyor ???



Olgu

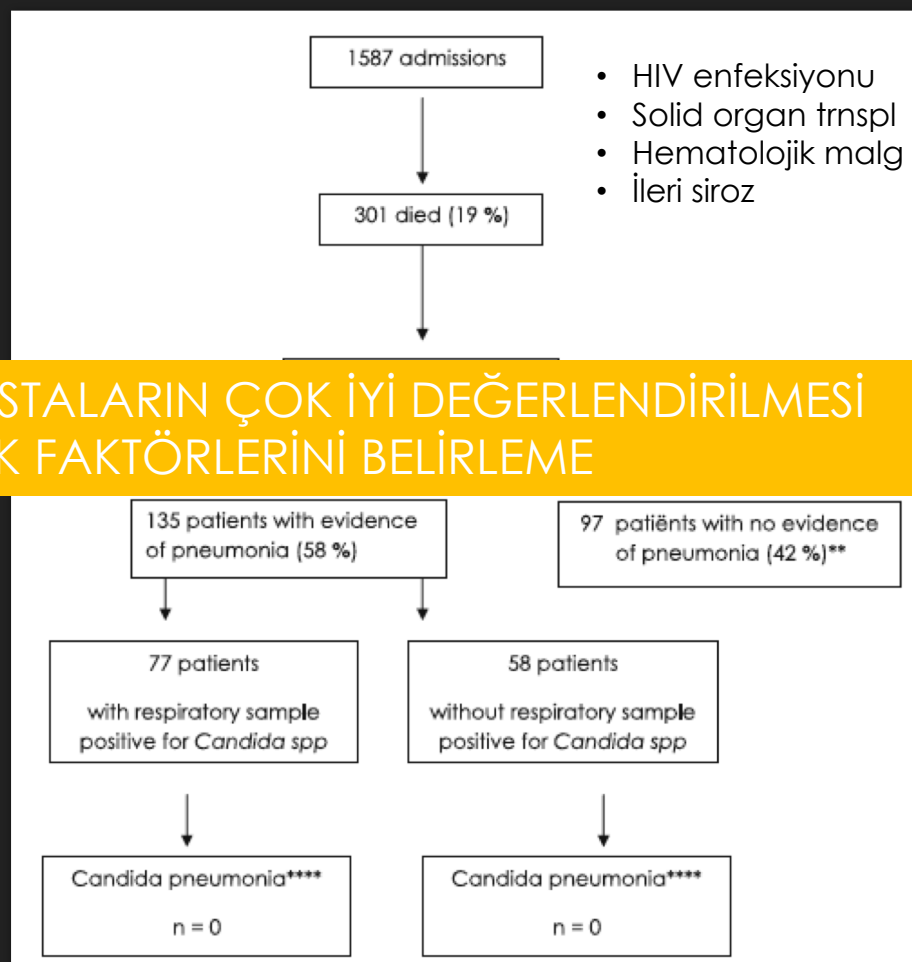
- A.C.
- 67 y
- Erkek
- Emek
- Şikay
- Ö.G.:
Sülfas
-
-
- 1 yıl önce renal operasyonu
- Sigara: 20 paket/yıl, 20 yıldır
exsmoker

AML



W. Meersseman
K. Lagrou
I. Spriet
J. Maertens
E. Verbeken
W. E. Peetermans
E. Van Wijngaerden

Significance of the isolation of *Candida* species from airway samples in critically ill patients: a prospective, autopsy study



Özellikleri



Candida spp

- Normal olarak deri ve ağız mukozası, GİS florasında bulunur.
- Sağlık personelinin %20'sinde balgamında candida spp
- Antibiyotik alan hastanede yatan hastaların %55'inde balgamda candida spp
- Kolonizasyon/enfeksiyon ayırımı zor
- Balgam kültürü Negatif prediktif değer yüksek, pozitif prediktif değer düşük
- Yoğun bakım hastalarında havayolu candida spp kolonizasyonu
 - Geniş spektrumlu antibiyotik kullanımı
 - Nötrofil ve alveolar makrofaj fonksiyonunda bozulma

Yoğun bakımda Candida

- Yoğun bakım hastalarında havayolu candida spp kolonizasyonu
 - Geniş spektrumlu antibiyotik kullanımı
 - Nötrofil ve alveolar makrofaj fonksiyonunda bozulma
- Kolonizasyon %50-86
- Şiddetli kandidiyazis gelişme %5-30

Candida spp

- Histopatolojik maya mantar veya psödohifaların gösterilmesi ile
 - Klinik pratikte zor (YBÜ)
- Kesin tanı Kan kültürü ile
- BAL sıvısında candida üremesi tedavi gerektirmiyor (kolonizasyon/enfeksiyon)
- YBÜ doktorlarının %24'ü trakeal aspiratdaki candida izolasyonu nedeni ile antibiyotik kullanıyor

Tanı

- Kesin Tanı
 - Histopatolojik
 - Kan Kültürü
- Olası Tanı (NPV %99, PPV %23)
 - Candida skoru

○ TPN	1 puan	} >3 puan
○ Yeni Cerrahi	1 puan	
○ Şiddetli sepsis	2 puan	
○ Multifokal kolonizasyon	1 puan	

Neden Sıklık Artıyor

- Çok ağır hastaların yaşam süreleri uzuyor
- Çok ağır cerrahilerin kullanılması
- Transplantasyon
- İnvaziv işlemlerin ve cihazların kullanılması
- İmmünosupresif tedaviler
- Geniş spektrumlu antibiyotikler

Sağlık hizmeti sunumunda artmanın bir sonucu

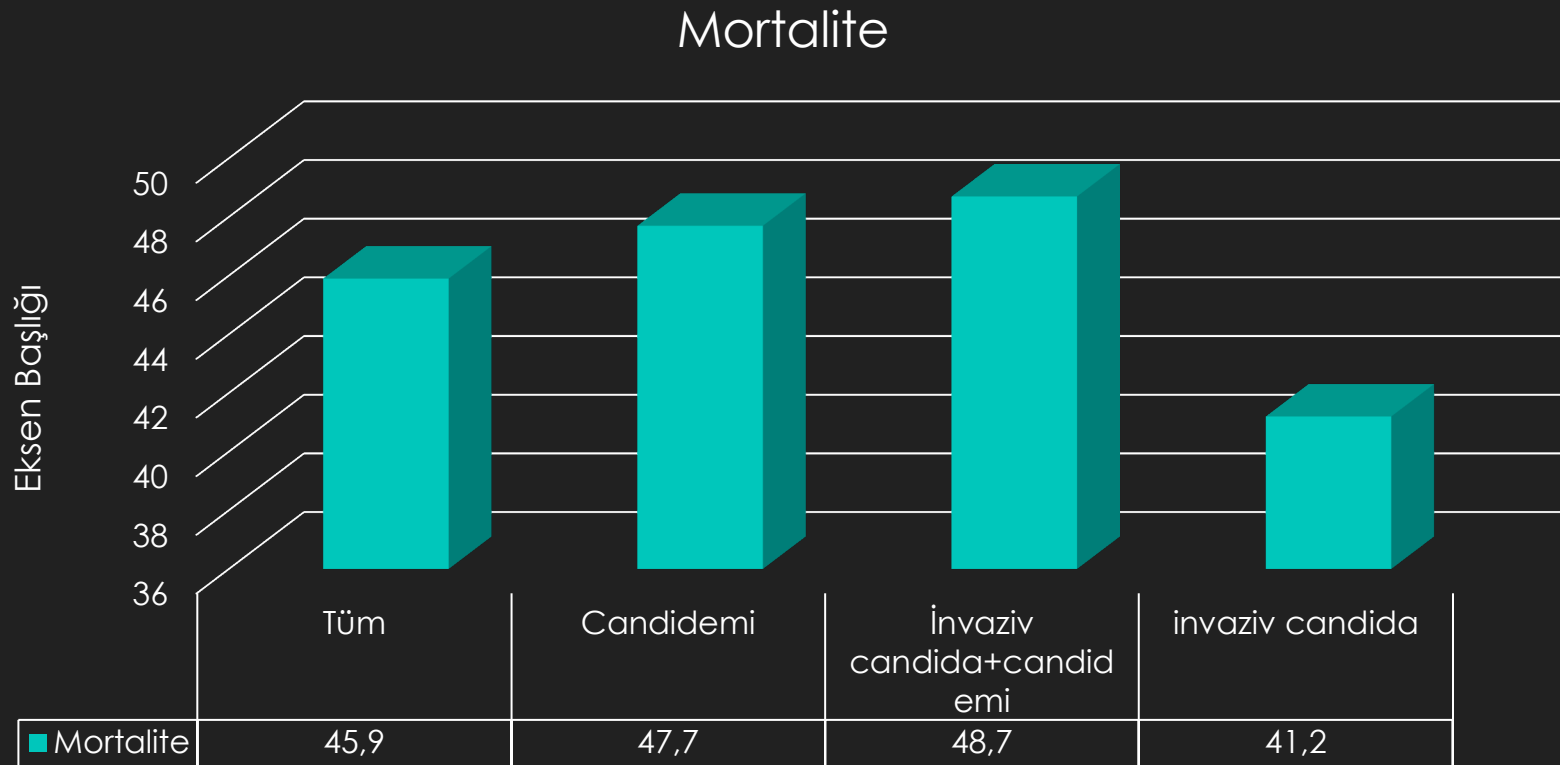
Candida-Mortalite

- Candideminin erişkinlerde mortaliteye katkısı
 - %15-35
- Kaba Mortalite Oranı
 - %40-60
- Erken mortalite (uygun antifungal tedavi ve kateterin çekilmesi)
 - %13
- Geç mortalite (Altındaki hastaki hastalık)
 - %30

Epidemiology, management, and risk factors for death of invasive *Candida* infections in critical care: A multicenter, prospective, observational study in France (2005–2006)

Crit Care Med 2009 Vol. 37, No. 5

Candida-Mortalite



Fark yok

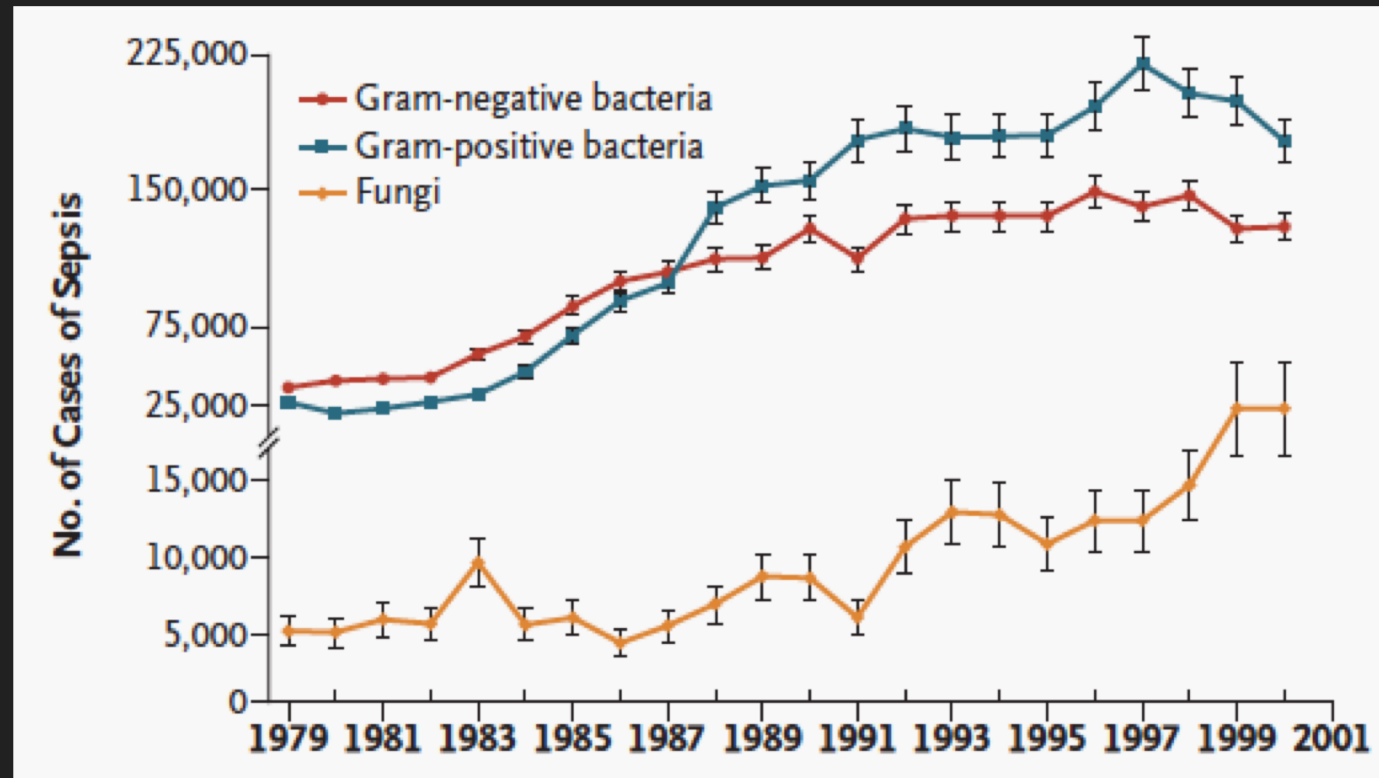
EPİDEMİYOLOJİK VERİLER



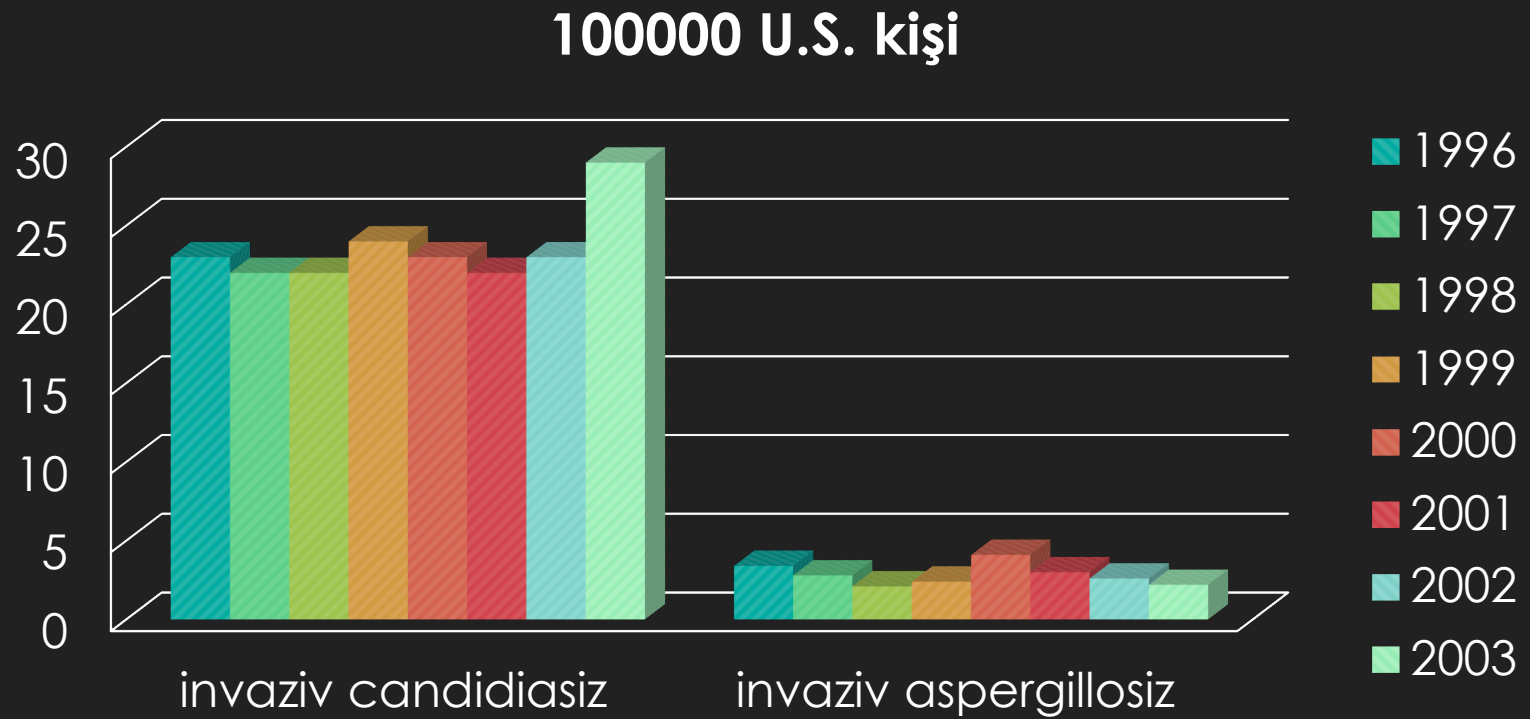
ORIGINAL ARTICLE

The Epidemiology of Sepsis in the United States from 1979 through 2000

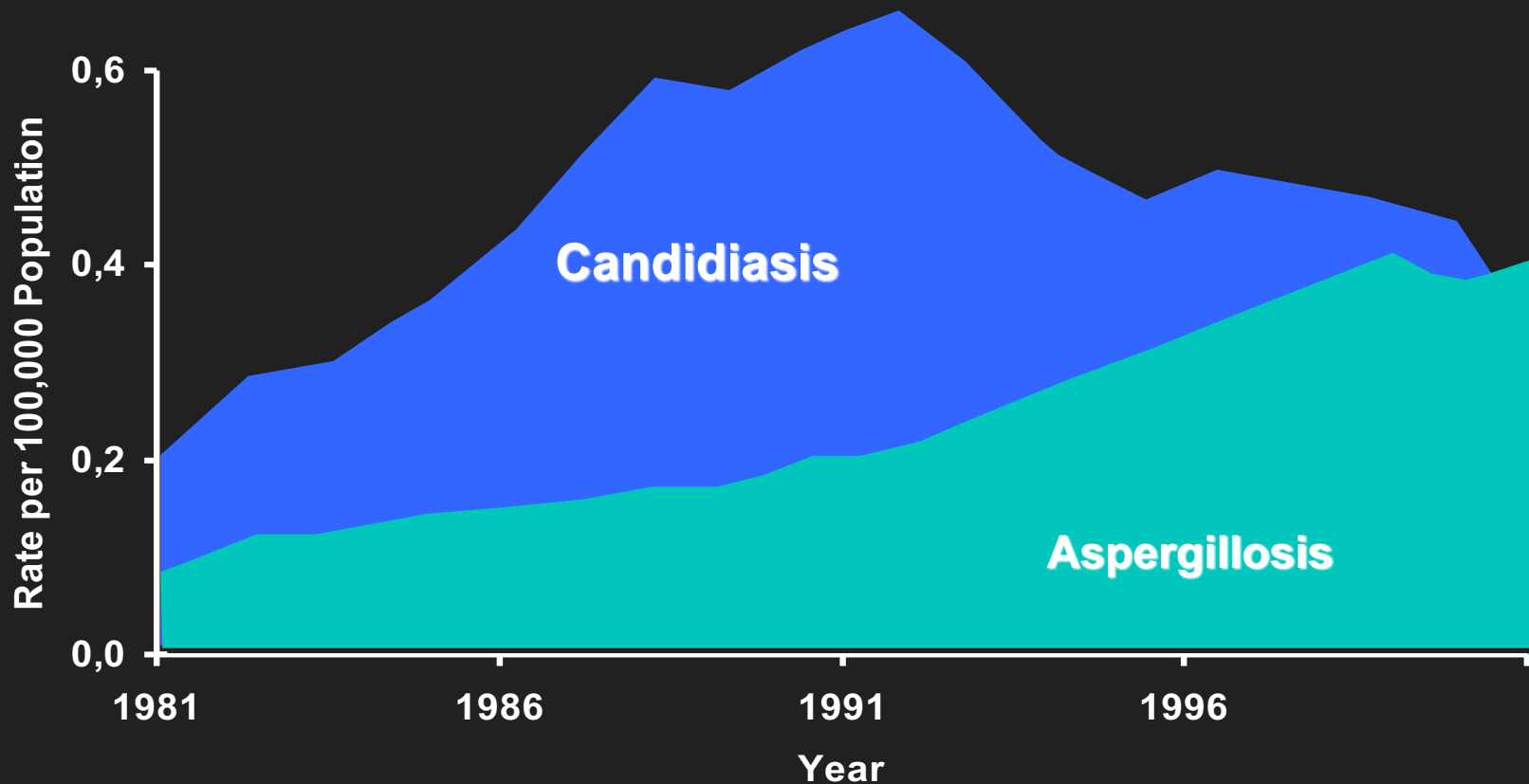
Greg S. Martin, M.D., David M. Mannino, M.D., Stephanie Eaton, M.D.,
and Marc Moss, M.D.



Epidemiyoloji



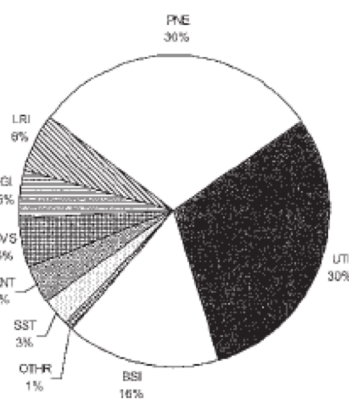
Ölümcül Mantar Hastalığı USA



NOSOCOMIAL INFECTIONS IN COMBINED MEDICAL-SURGICAL INTENSIVE CARE UNITS IN THE UNITED STATES

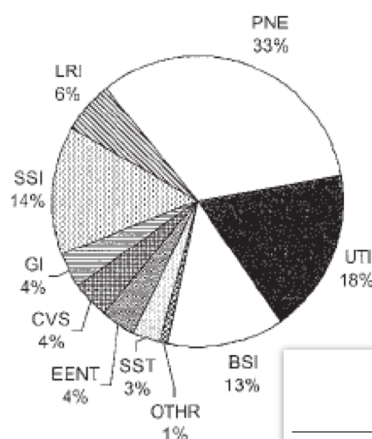
Michael J. Richards, MBBS, FRACP; Jonathan R. Edwards, MS; David H. Culver, PhD; Robert P. Gaynes, MD;
the National Nosocomial Infections Surveillance System

Medical Patients



(N = 13,592)

Surgical Patients



(N = 15,449)

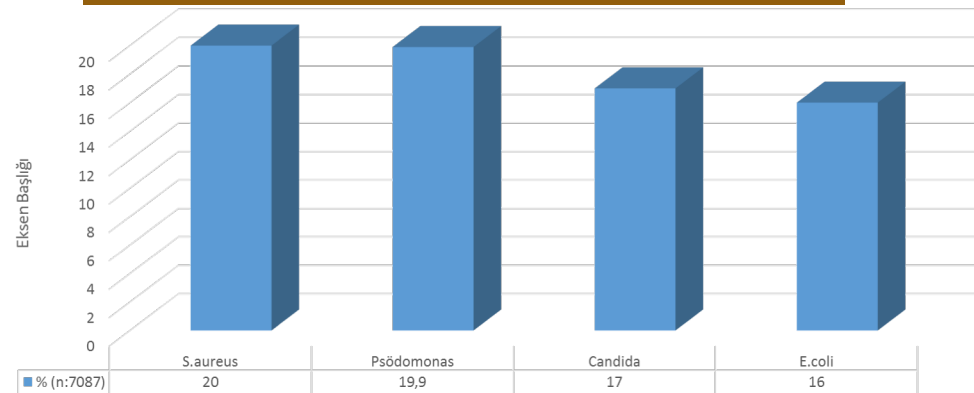
	BSI Pathogens	Pneumonia Pathogens	UTI Pathogens	SSI Pathogens	Cardiovascular Infection Pathogens
Total number of pathogens*	4,394	9,877	7,574	3,315	1,651
Coagulase-negative <i>Staphylococcus</i> , %	38.7	2.5	3.1	11.7	54.2
<i>Staphylococcus aureus</i> , %	11.5	17.0	1.4	8.8	8.6
<i>Enterococcus</i> species, %	11.3	1.8	14.3	17.1	8.7
Other gram-positive organisms, %	6.6	5.0	1.3	9.2	6.3
<i>Streptococcus pneumoniae</i> , %	0.4	1.6	0	0.1	0
<i>Enterobacter</i> species, %	3.8	10.9	4.0	8.4	3.0
<i>Pseudomonas aeruginosa</i> , %	3.7	15.6	10.3	9.6	4.0
<i>Klebsiella pneumoniae</i> , %	2.3	7.0	5.2	3.9	2.1
<i>Escherichia coli</i> , %	2.2	4.4	18.5	8.5	1.8
<i>Acinetobacter</i> species, %	1.5	2.9	0.7	0	0
<i>Citrobacter</i> species, %	0.7	1.4	2.0	1.9	1.1
<i>Serratia marcescens</i> , %	1.4	4.3	0.9	1.5	1.5
Other gram-negative organisms, %	4.0	15.7	7.1	9.2	2.0
<i>Candida albicans</i> , %	6.1	5.7	15.3	5.9	3.8
<i>Candida glabrata</i> , %	1.8	0.2	3.5	1.3	0.6
Other <i>Candida</i> species, %	3.6	1.0	6.0	1.7	1.5
<i>Aspergillus</i> , %	0	0.5	0	0.1	0
Other fungi (not <i>Candida</i> species), %	0.7	2.5	6.4	1.1	0.8

International Study of the Prevalence and Outcomes of Infection in Intensive Care Units

JAMA. 2009;302(21):2323-2329

	All	Western Europe	Eastern Europe	South America	North America	Oceania	Africa	Asia
No. (%)	7087 (51.4)	3683 (49)	426 (56.4)	1290 (60.3)	607 (48.4)	285 (48.2)	89 (46.1)	707 (52.6)
Site of infection								
Respiratory tract	4503 (63.5)	2332 (63.3)	305 (71.6) ^b	851 (66)	345 (56.8) ^b	165 (57.9)	41 (46.1) ^b	464 (65.6)
Abdominal	1392 (19.6)	778 (21.1)	93 (21.8)	228 (17.7) ^b	101 (16.6)	50 (17.5)	16 (18)	126 (17.8)
Bloodstream	1071 (15.1)	546 (14.8)	53 (12.4)	139 (10.8) ^b	157 (25.9) ^b	49 (17.2)	16 (18)	111 (15.7)
Renal/urinary tract	1011 (14.3)	411 (11.2)	84 (19.7) ^b	222 (17.2) ^b	135 (22.2) ^b	33 (11.6)	15 (16.9)	111 (15.7) ^b
Skin	467 (6.6)	242 (6.6)	37 (8.7)	73 (5.7)	26 (4.3)	30 (10.5)	8 (9.0)	51 (7.2)
Catheter-related	332 (4.7)	171 (4.6)	21 (4.9)	73 (5.7)	16 (2.6)	15 (5.3)	4 (4.5)	32 (4.5)
CNS	226 (3.2)	100 (2.7)	20 (4.7)	40 (3.1)	11 (1.8)	11 (3.9)	4 (4.5)	19 (2.7)
Others	226 (3.2)	100 (2.7)	20 (4.7)	40 (3.1)	11 (1.8)	11 (3.9)	14 (15.7) ^b	35 (5.0) ^b

Yoğun bakımda nazokomiyal enfeksiyonlarda 3. neden



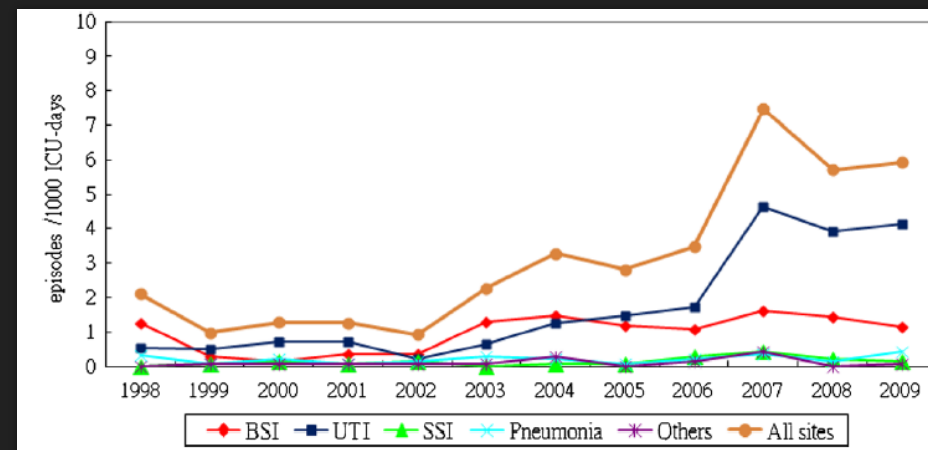
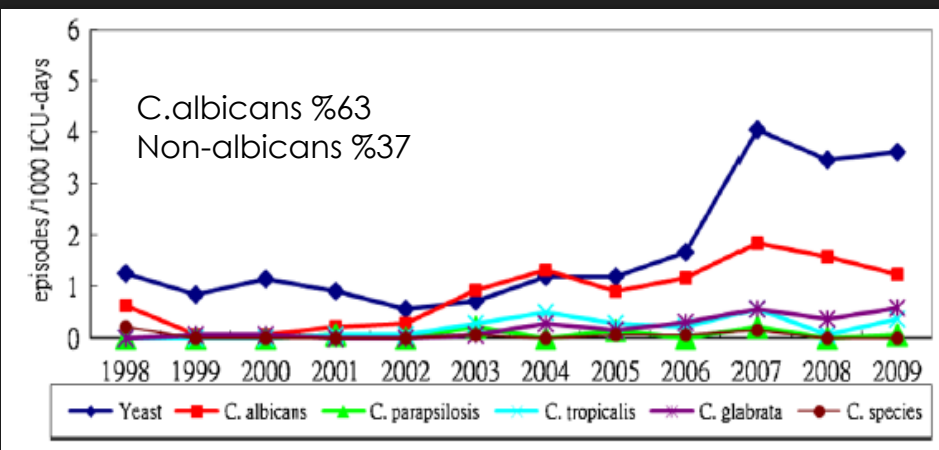
EPIC II çalışması, 75 ülke

A risk factor analysis of healthcare-associated fungal infections in an intensive care unit: a retrospective cohort study

Su-Pen Yang^{1,4}, Yin-Yin Chen^{2,5}, Han-Shui Hsu^{3,4}, Fu-Der Wang^{1,6}, Liang-yu Chen^{6,7} and Chang-Phone Fung^{1,4*}

BMC Infect Dis 2013;13:1-10

Toplam 506 atak/1500 kabul
1998-2006: 2.1 atak/1000 gün
2007 7.5 atak/1000 gün



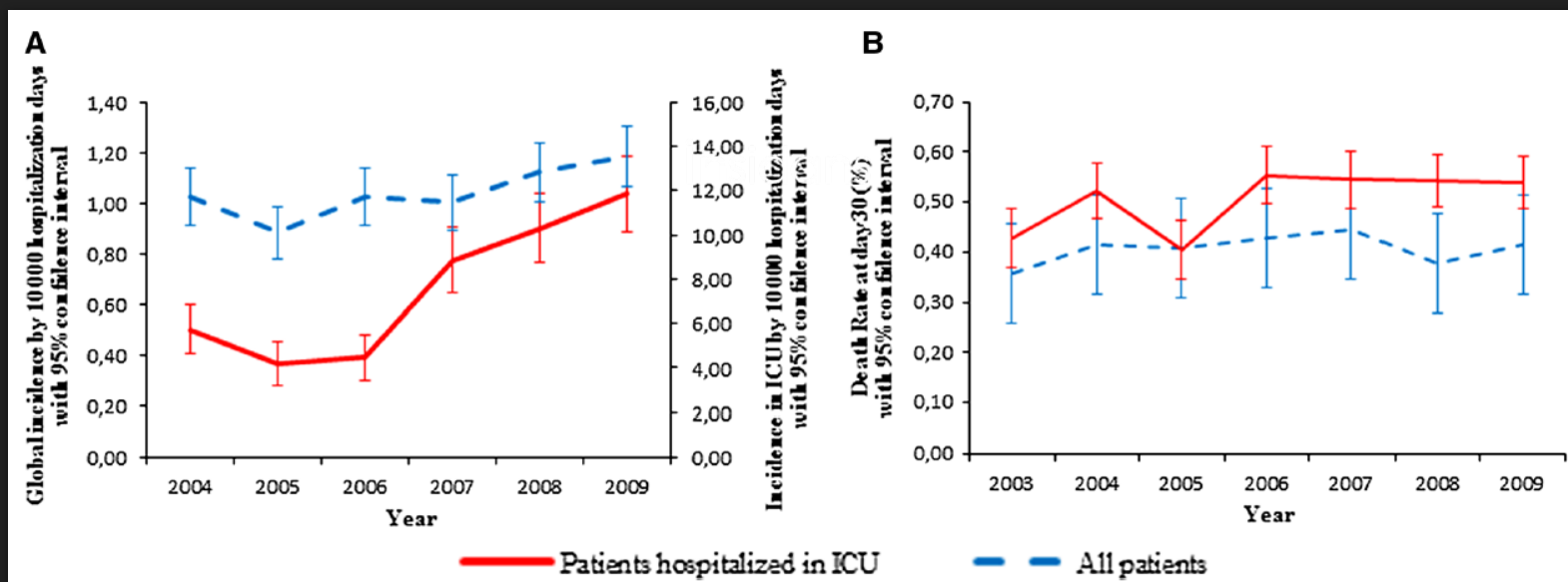
Maya mantarı %54.8 ←
C.albicans %27.3 →
C.tropicalis %6.6
C.glabrata %6.6
C.parapsilosis %1.9

UTI %54.8
BSI %30.6
SSI %6.6
Pnömoni %4.5
Diğer %3.5

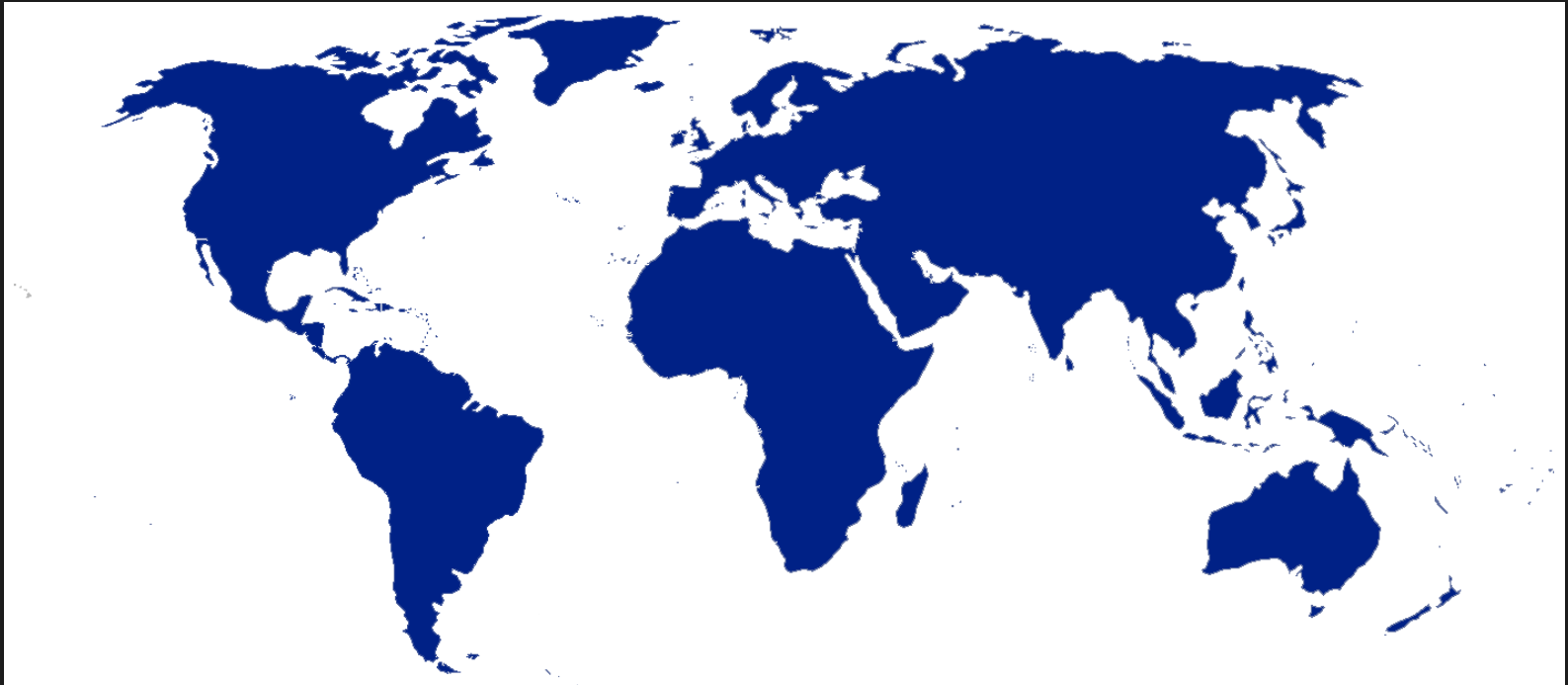
Worrisome trends in incidence and mortality of candidemia in intensive care units (Paris area, 2002–2010)

Olivier Lortholary
Charlotte Renaudat
Karine Sitbon
Yoann Madec
Lise Denoeud-Ndam
Michel Wolff
Arnaud Fontanet
Stéphane Bretagne
Françoise Dromer
The French Mycosis Study Group

İnsidans



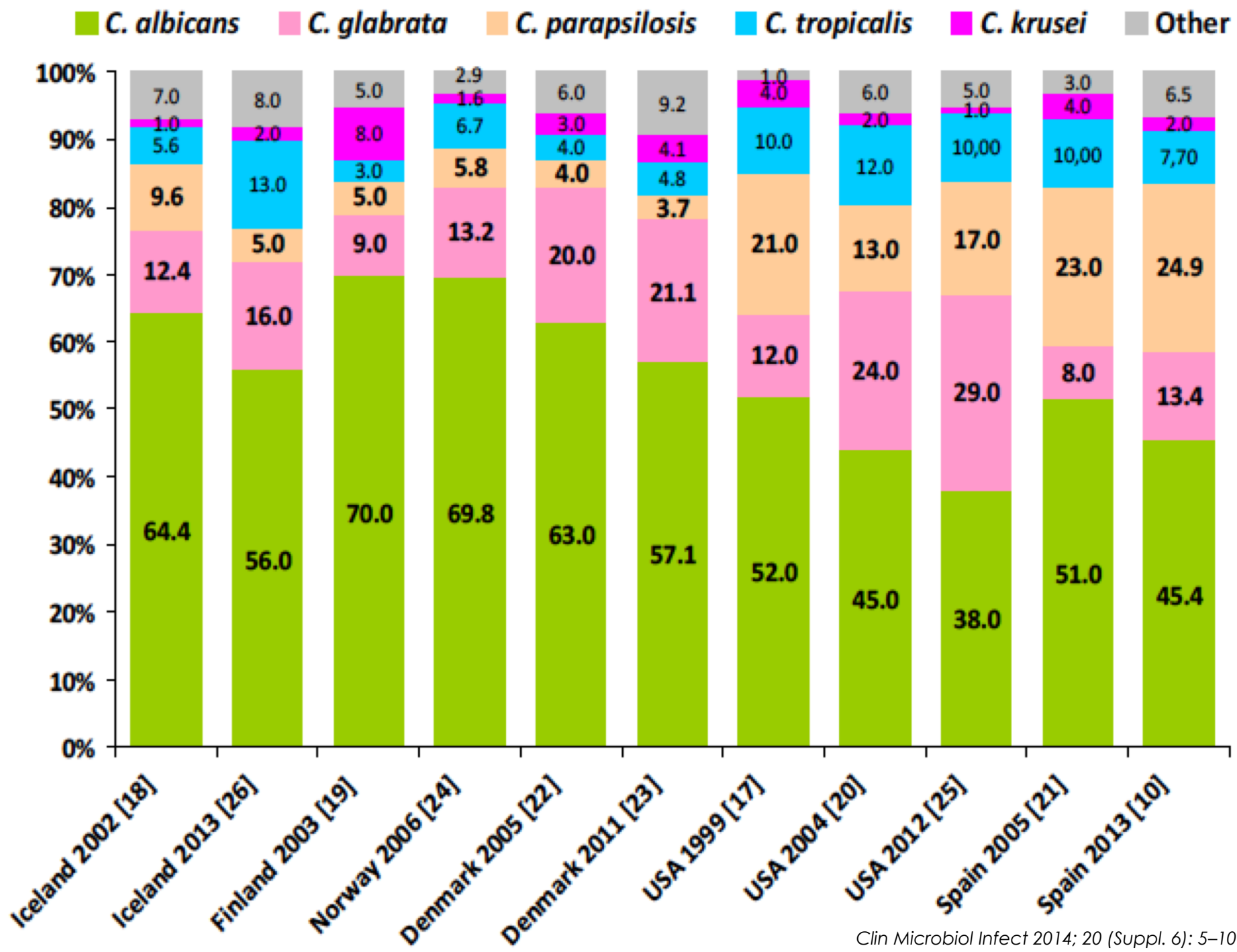
Sıklık

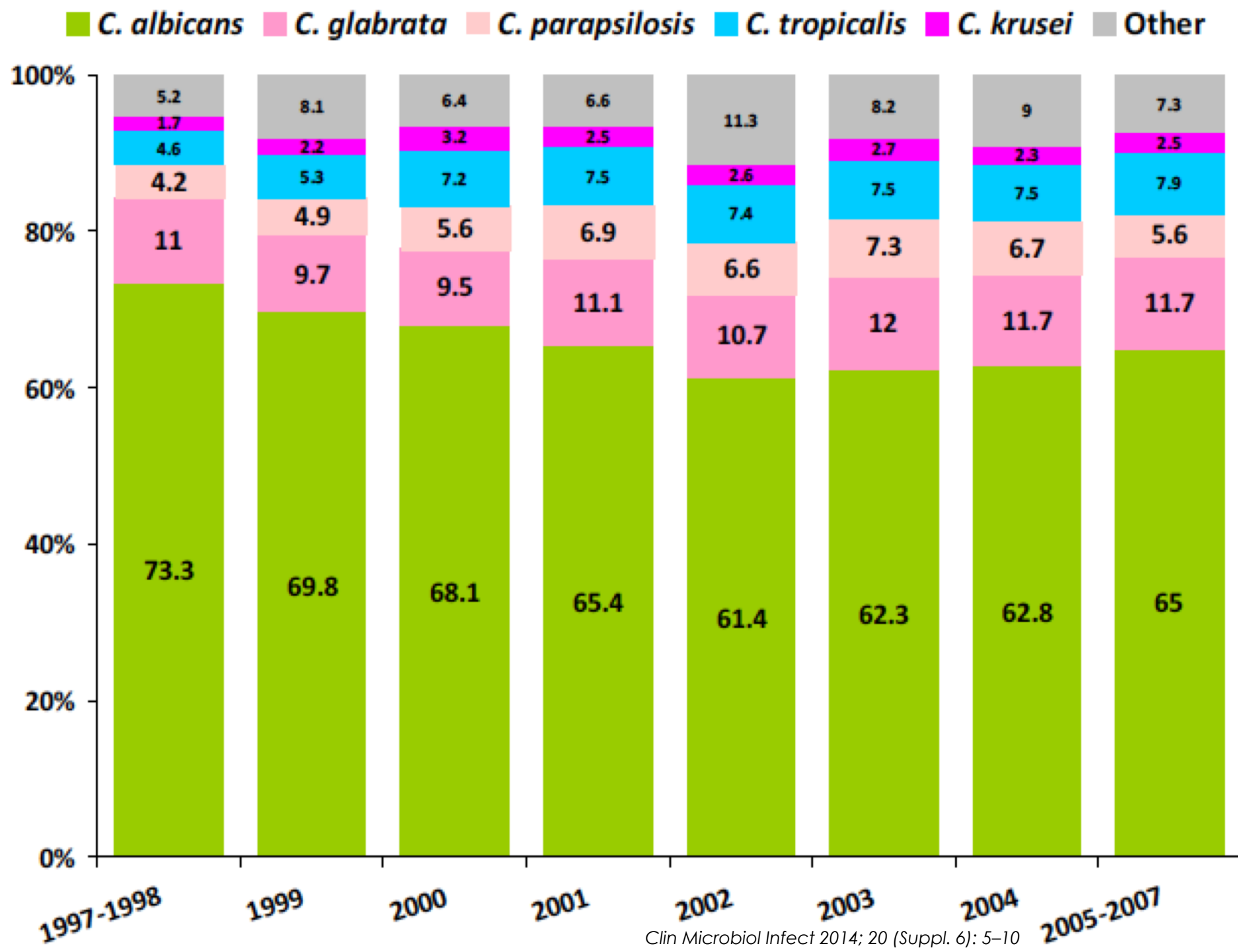


Candidemi sıklığı

- Her yıl 72.8/1000000
- İskandinav ülkelerinde (Norveç, İsveç, Finlandiya)
 - 3/100000
- Danimarka
 - 11/100000
- Orta ve Güney Avrupa (UK, İskoçya, İspanya, İsviçre, İtalya)
 - 1.2-6.4/100000
- USA (Iowa, San Francisco, Atlanta, Connecticut)
 - 6-14/100000
- Brezilya
 - 1-8/100000
- USA (Baltimore)
 - 25/100000

En yüksek sıklık ileri yaşlarda gözlenmektedir.
Sıklık 65 yaşında üstünde ve 1 yaş küçük olandan 5-10 kez daha fazladır.

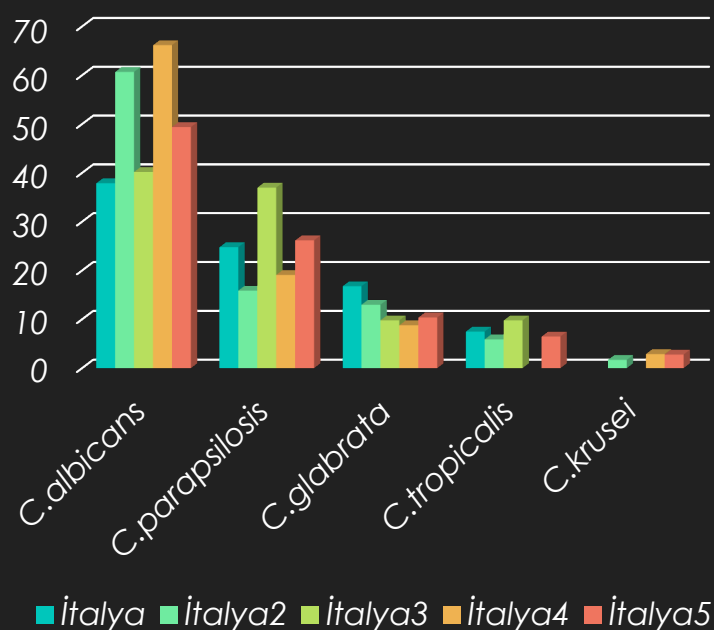




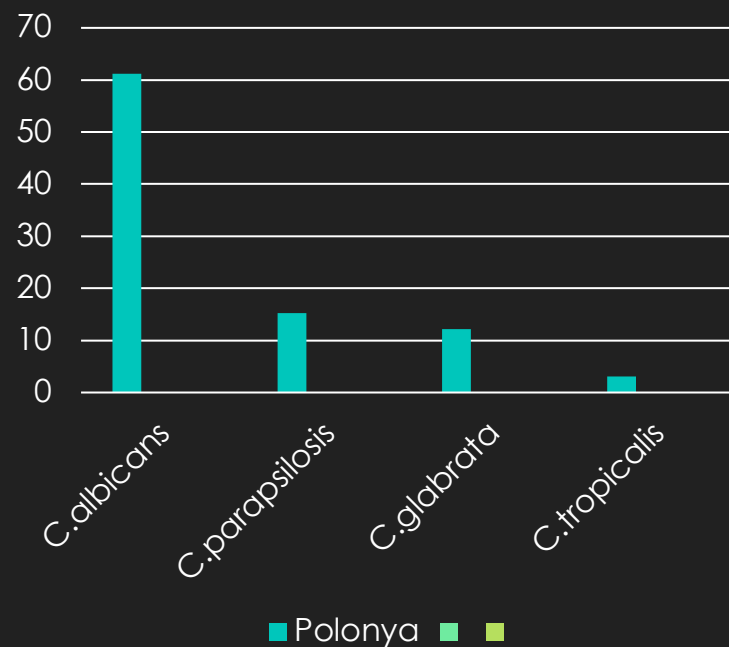
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Grafik Başlığı



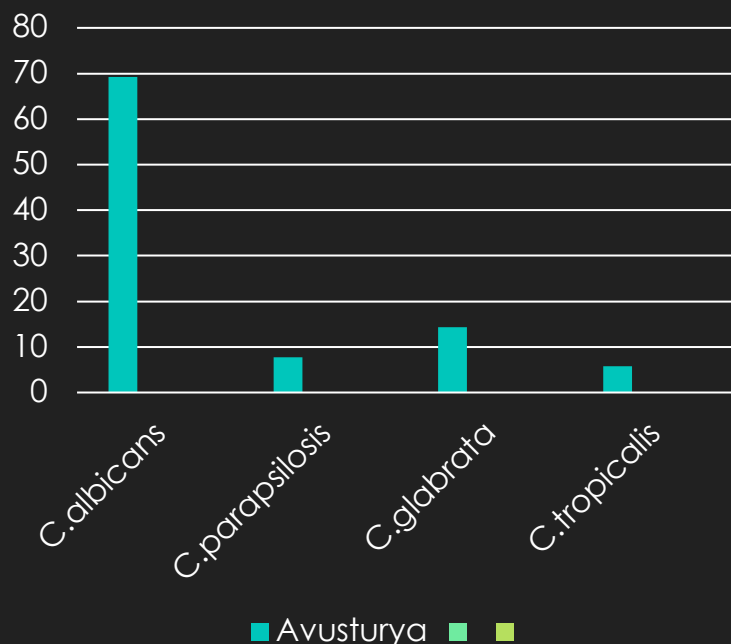
Grafik Başlığı



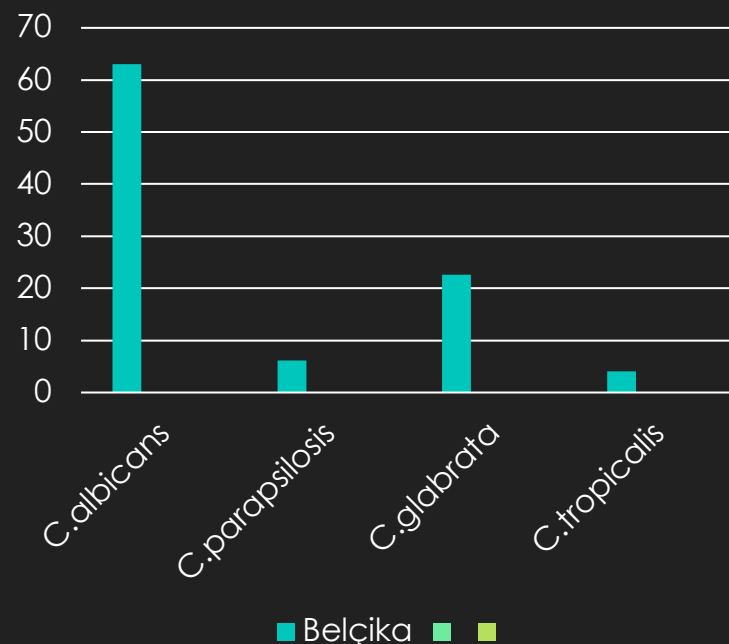
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Grafik Başlığı



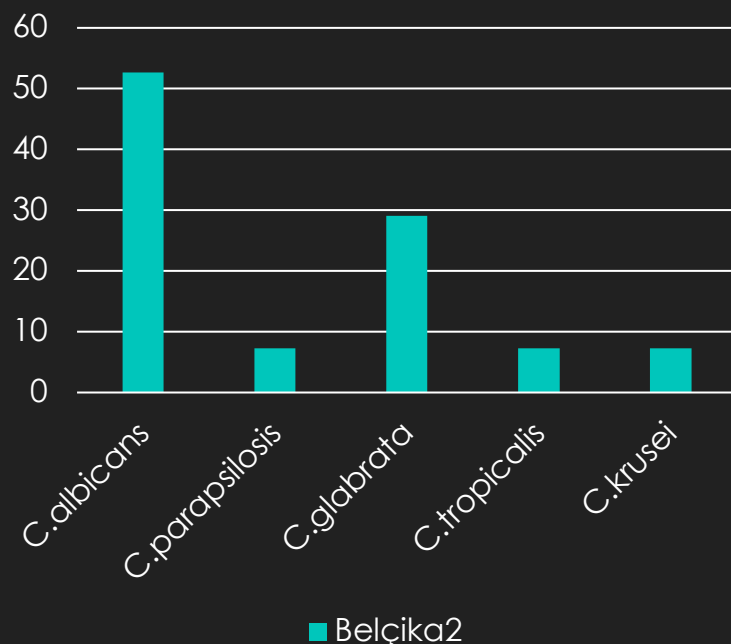
Grafik Başlığı



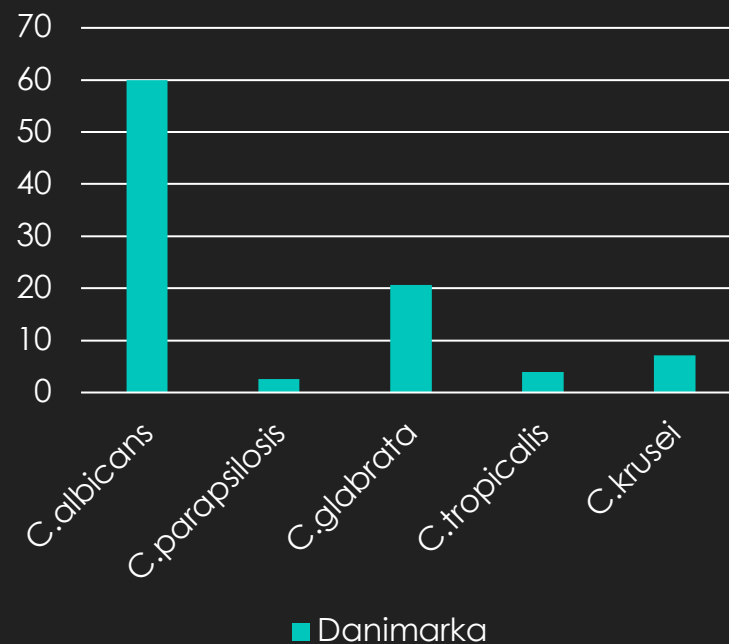
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Belçika2



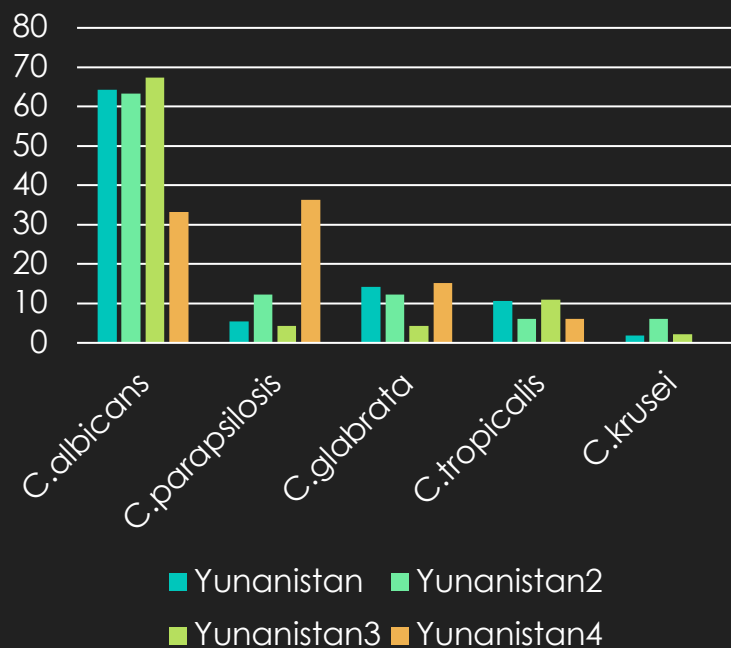
Danimarka



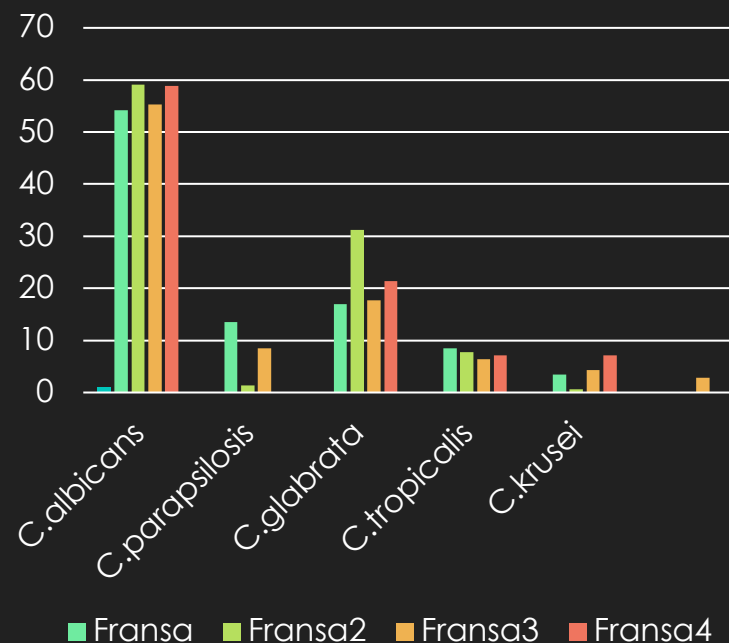
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Grafik Başlığı



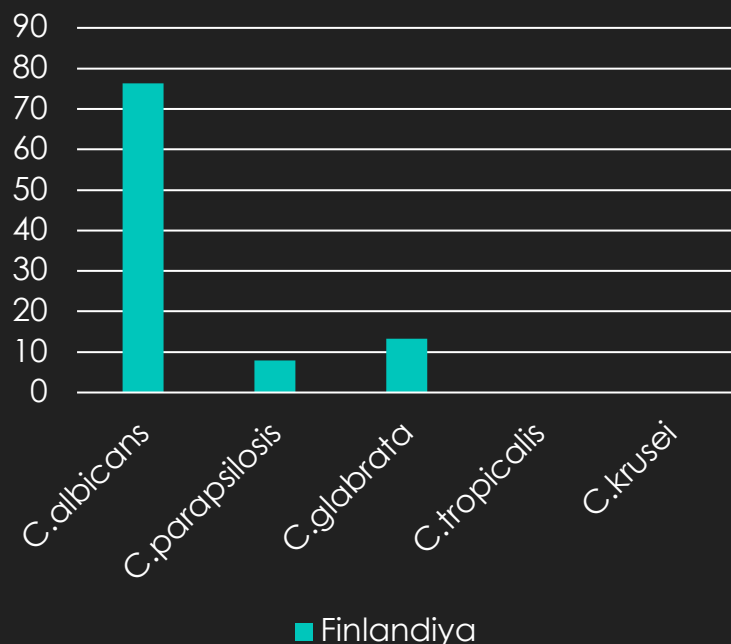
Grafik Başlığı



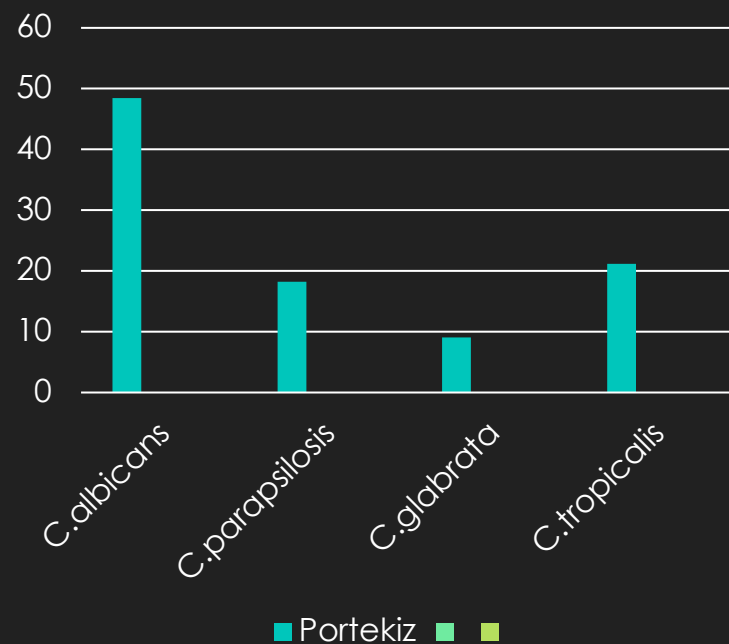
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Finlandiya



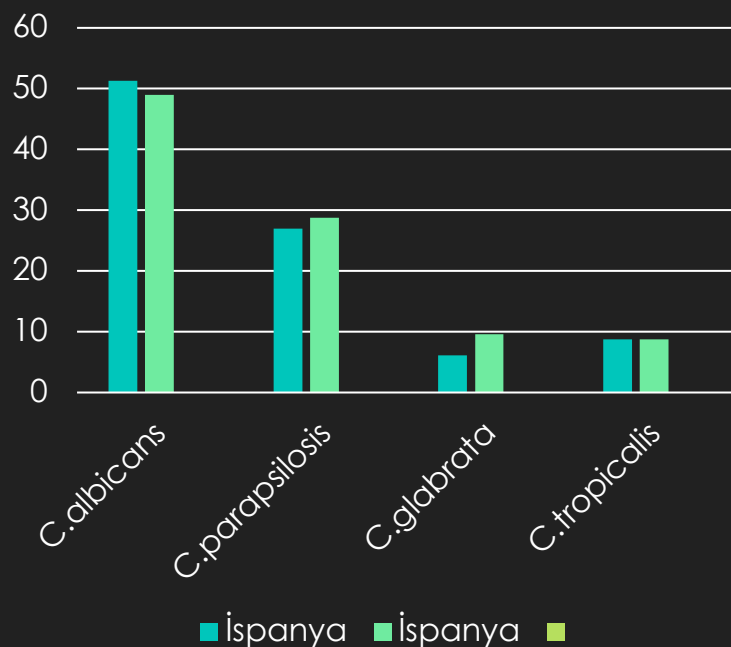
Portekiz



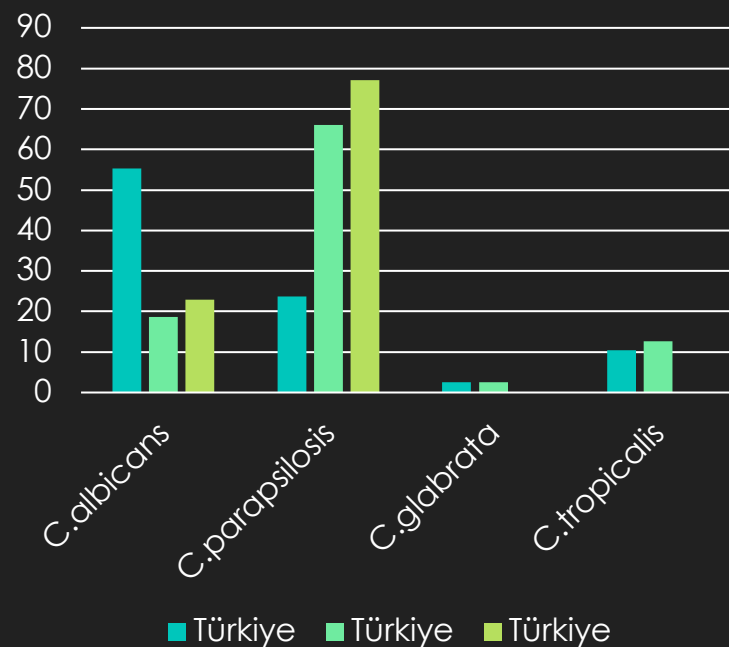
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHINI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Grafik Başlığı



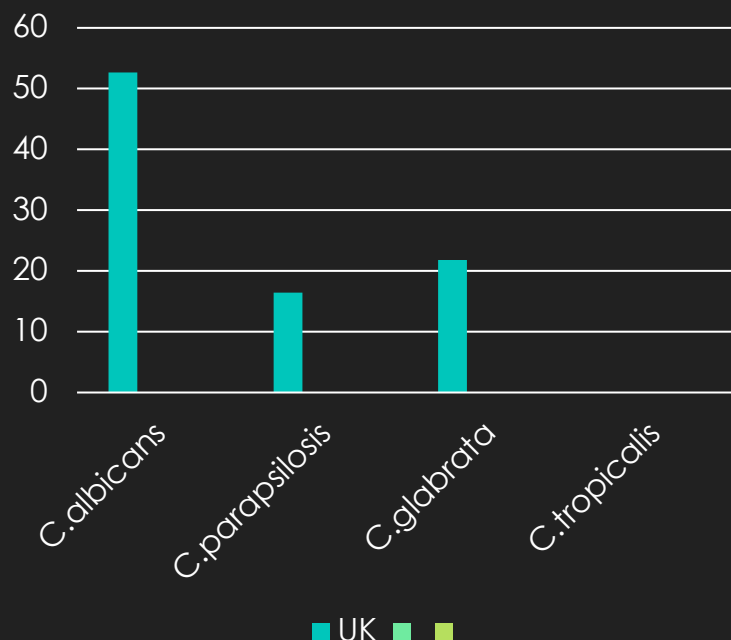
Grafik Başlığı



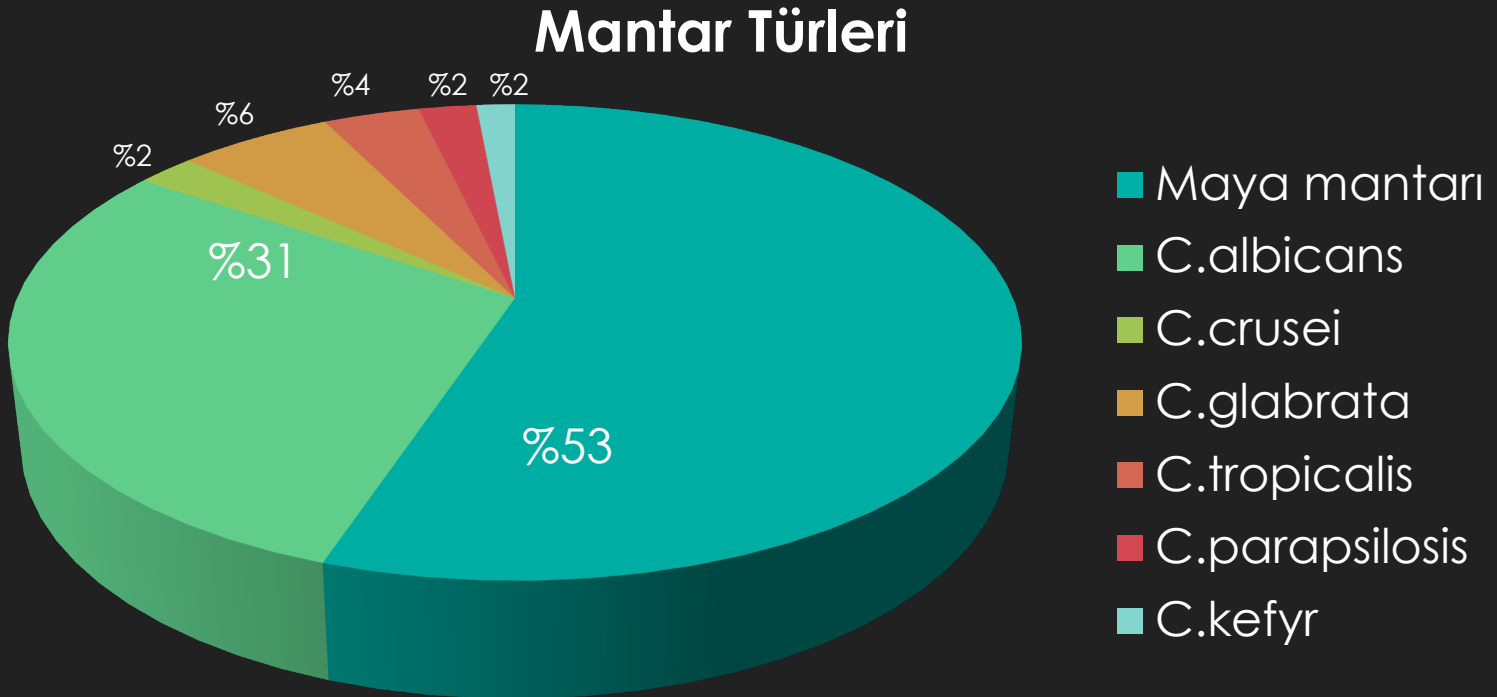
Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHINI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Grafik Başlığı



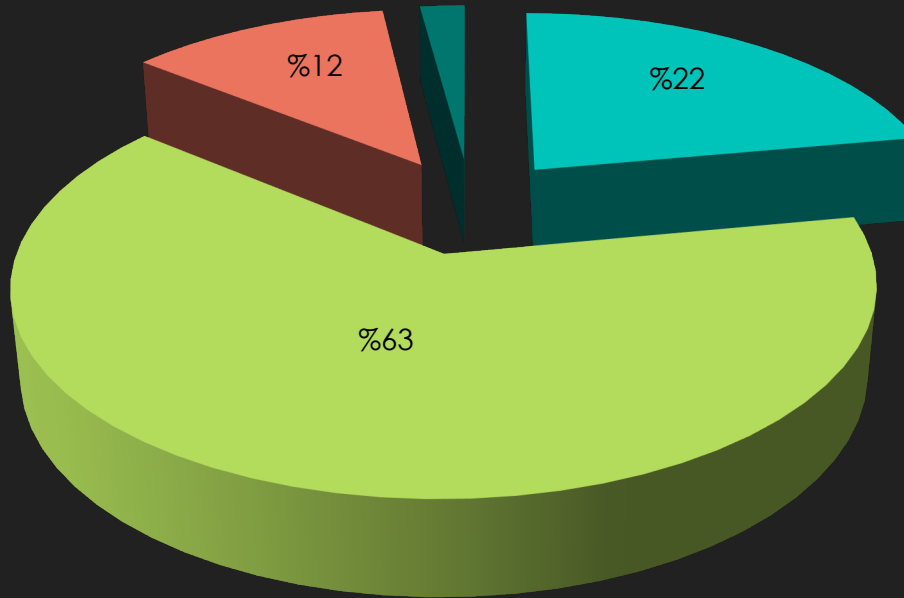
NE Ü. Meram Tıp F. Göğüs H. AD YBÜ



117 hasta
142 kültür
2010-2014
Yaş:70.47

NE Ü. Meram Tıp F. Göğüs H. AD YBÜ

Kültür Şekli



- Kan
- İdrar
- BAL
- Balgam

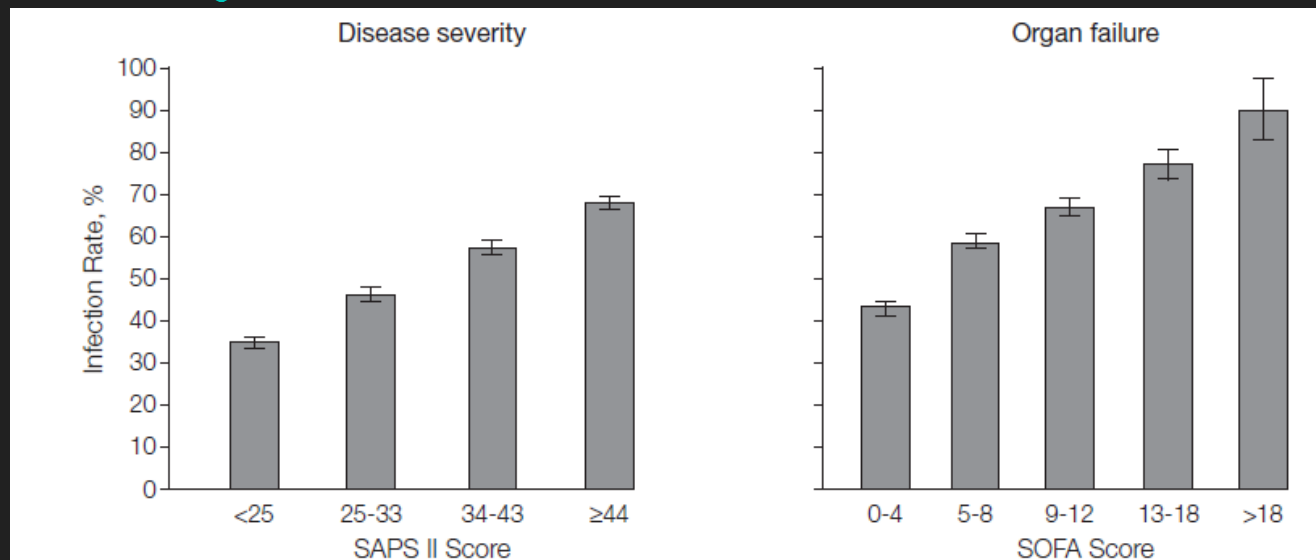
Geldiği klinikte ort: 5.43 gün
YBÜ: ortalama 26.2 gün
18 hasta diyaliz

Risk Faktörleri



International Study of the Prevalence and Outcomes of Infection in Intensive Care Units

JAMA. 2009;302(21):2323-2329



EPIC II çalışması, 75 ülke

We also noted a significant relationship between the time spent in the ICU prior to the study day and the development of infection, particularly for infections due to methicillin-resistant *Staphylococcus aureus*, *Acinetobacter*, *Pseudomonas* species, and Candida species.

Candidemia in intensive care unit: a nationwide prospective observational survey (GISIA-3 study) and review of the European literature from 2000 through 2013

M.T. MONTAGNA¹, G. LOVERO¹, E. BORGHINI², G. AMATO³, S. ANDREONI⁴, L. CAMPION⁵, G. LO CASCIO⁶, G. LOMBARDI⁷, F. LUZZARO⁸, E. MANSO⁹, M. MUSSAP¹⁰, P. PECILE¹¹, S. PERIN¹², E. TANGORRA¹³, M. TRONCI¹⁴, R. IATTA¹⁵, G. MORACE²

Risk factor	Study	Univariate analysis OR (95% CI)	p-value	Multivariate analysis OR (95% CI)	p-value	Comment
C. Albicans;			< 0.05	2		C. Non-albicans
Abdominal cerrahi			< 0.05			Yaş
Antifungal profilaksi			< 0.05	0.		Candidüri
DM			0.001	16.		CVC
Yatış süresi			0.02	26.		CVC gün
SAPS II			0.004	1.		Kadın
SOFA			< 0.05	4.		Steroid
Solid Tümör cerrahisi			0.010	2		Nötropeni
Travma			0.005	4.		TPN
			< 0.05			Solid Tm cerrahisi
Trauma	Montagna et al, present study	NS	0.02			Ventilatör gün sayısı
Ventilator days	Holley et al, 2009 ²⁶	8.9 (1.1 to 71.3)	0.014			Mortalite
Mortality rate	Holley et al, 2009 ²⁶	...	0.024			
	Dimopoulos et al, 2008 ²⁴	NS	0.005	6.		

Epidemiology, clinical characteristics, and outcome of candidemia: experience in a tertiary referral center in the UK[☆]

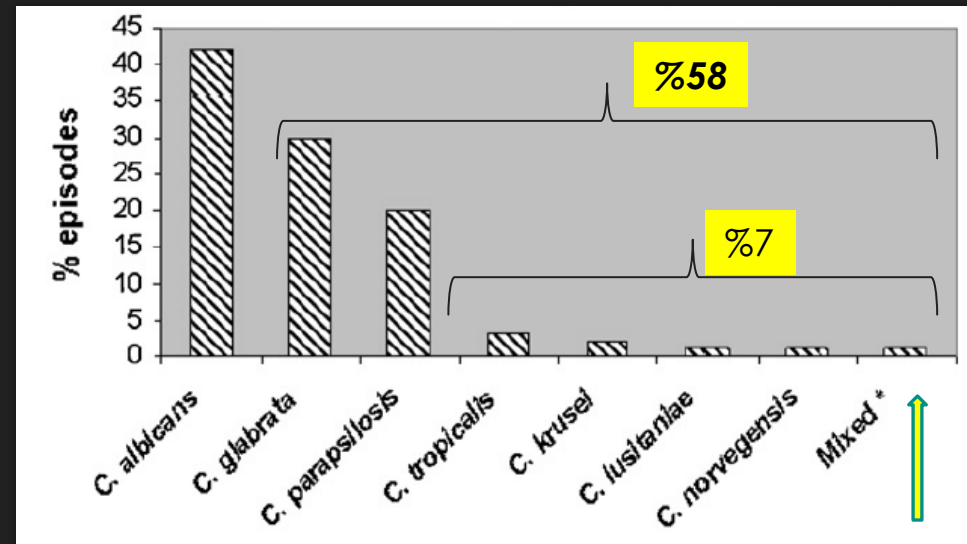
I. Das^{a,*}, P. Nightingale^b, M. Patel^a, P. Jumaa^a

^aDepartment of Clinical Microbiology and Infection Control, University Hospitals Birmingham NHS Foundation Trust, Birmingham B15 2TH, UK

^bWellcome Trust Clinical Research Facility, Birmingham, UK



- 2005-2008 (33 ay)
- 10.9 atak/100.000 yatış gün
 - 102 hastada
- Hastaneye yatışının 14.gününde candidemi saptanmış
- Ortalama yaş:55
- %94.88 Hastane kökenli candidemi
- **%51 YBÜ kökenli**
- Atakların çokluğu cerrahi hastalarında (%63) (n:67)
 - GIS cerrahisi, %27 (n:18)
 - Kardiak cerrahi, %22 (n:15)
- **%98.92 Hastalarda Geniş spektrumlu antibiyotik kullanımı**
- Türler arasında yaş, CVP, cinsiyet, cerrahi tipi, sepsis şiddeti açısından fark yok
- C.albicans YBÜ, C.glabrata GIS hast, yanık



- %13 hastada septik şok nedeni
- Hiçbirinde uygun antibiyotik başlanılmamış

Epidemiology, clinical characteristics, and outcome of candidemia: experience in a tertiary referral center in the UK[☆]

I. Das^{a,*}, P. Nightingale^b, M. Patel^a, P. Jumaa^a

^aDepartment of Clinical Microbiology and Infection Control, University Hospitals Birmingham NHS Foundation Trust, Birmingham B15 2TH, UK

^bWellcome Trust Clinical Research Facility, Birmingham, UK



○ Candida türleri arasında

- Yaş, Cinsiyet
- CVP
- Yeni cerrahi hikayesi
- Sepsisin şiddeti

FARK YOK

○ C.albicans YBÜ'de daha sık

○ C.glabrata

- GIS hastalıklarında sık
- CVP az sıklıkta
- Yanıklarda az sıklıkta

○ Direnç oranları düşük

○ 30 günlük mortalite %37

- Candidemi mortalite ve morbidite nedeni
- Non-albicans türleri daha sık
- Kateter, YBÜ ve cerrahi risk faktörü
- Lokal veriler önemli

Worrisome trends in incidence and mortality of candidemia in intensive care units (Paris area, 2002–2010)

Olivier Lortholary
Charlotte Renaudat
Karine Sitbon
Yoann Madec
Lise Denoeud-Ndam
Michel Wolff
Arnaud Fontanet
Stéphane Bretagne
Françoise Dromer
The French Mycosis Study Group

24 adet 3. basamak hastane, 2507 hasta ve 2571 izolat, 65y
Candidemi olguların %48.1'inde YBÜ'de

	ICU (N = 1,206)	Outside ICU (N = 1,301)	p
Central venous catheter	936 (77.6 %)	919 (70.6 %)	<0.0001
Arterial catheter	401 (33.3 %)	40 (3.1 %)	
Surgery within 30 days	580 (48.1 %)	389 (29.9 %)	
Digestive tract ^a	262/580 (45.2 %)	190/389 (48.8 %)	<0.0001
Malignancy			
No malignancy	828 (68.7 %)	418 (32.1 %)	<0.0001
Solid organ transplantation	127 (10.5 %)	35 (2.7 %)	
Previous antifungal treatment			
All	128 (10.6 %)	109 (8.4 %)	0.0559
Fluconazole	79 (6.6 %)	56 (4.3 %)	0.0127
Caspofungin	25 (2.1 %)	28 (2.2 %)	0.8904

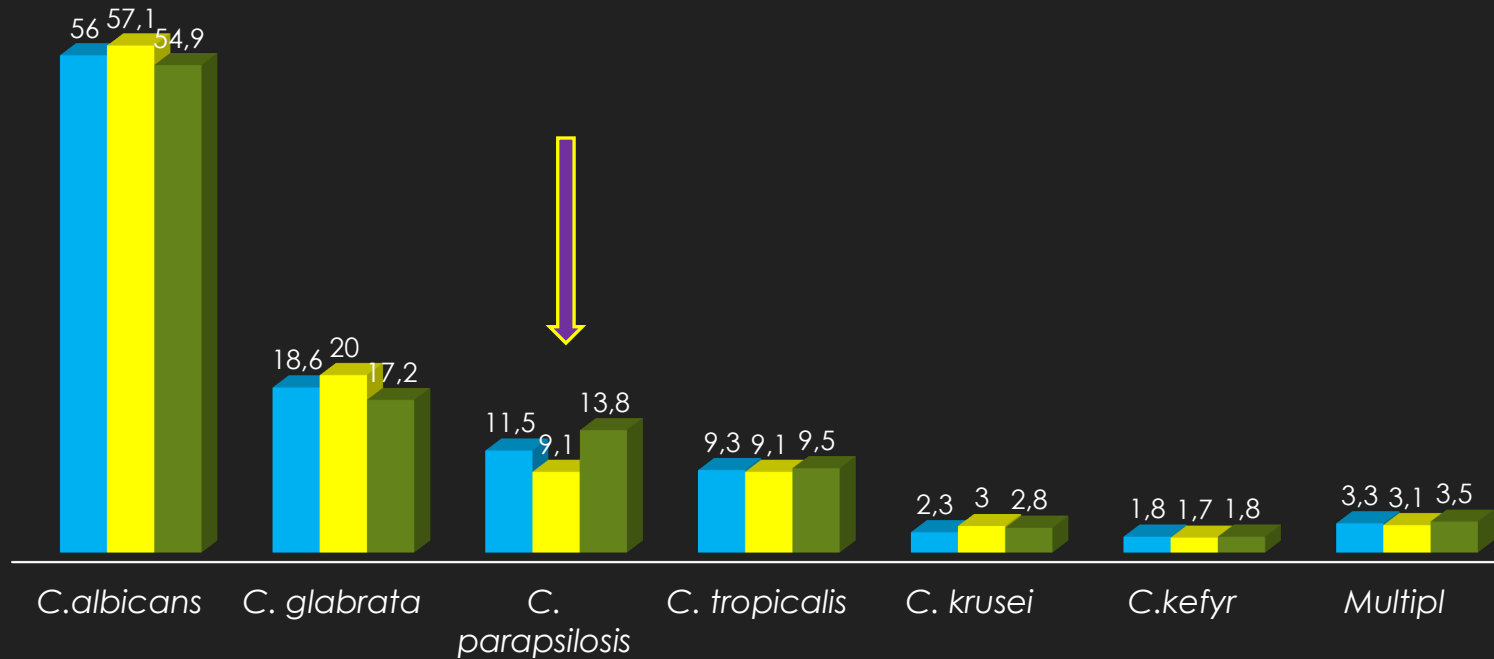
YBÜ hastalarının %19.3'ünde ilk 48 saat içinde candidemi gelişmiş.
Sonradan gelişenler ile yaş, malignite, cinsiyet transplantasyon, kateter
ve antifungale önceden maruziyet açısından fark yok

Worrisome trends in incidence and mortality of candidemia in intensive care units (Paris area, 2002–2010)

Olivier Lortholary
Charlotte Renaudat
Karine Sitbon
Yoann Madec
Lise Denoeud-Ndam
Michel Wolff
Arnaud Fontanet
Stéphane Bretagne
Françoise Dromer
The French Mycosis Study Group

Grafik Başlığı

■ Tüm ■ YBÜ ■ YB-dışı



Worrisome trends in incidence and mortality of candidemia in intensive care units (Paris area, 2002–2010)

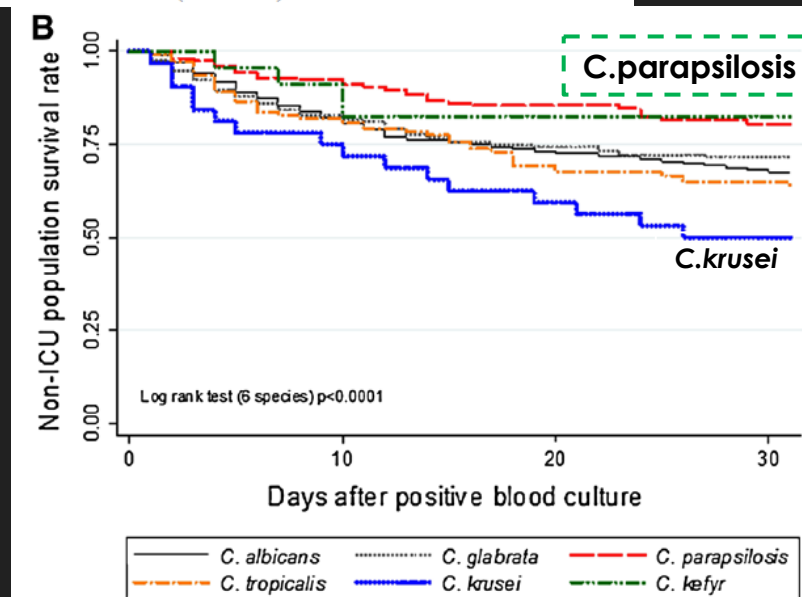
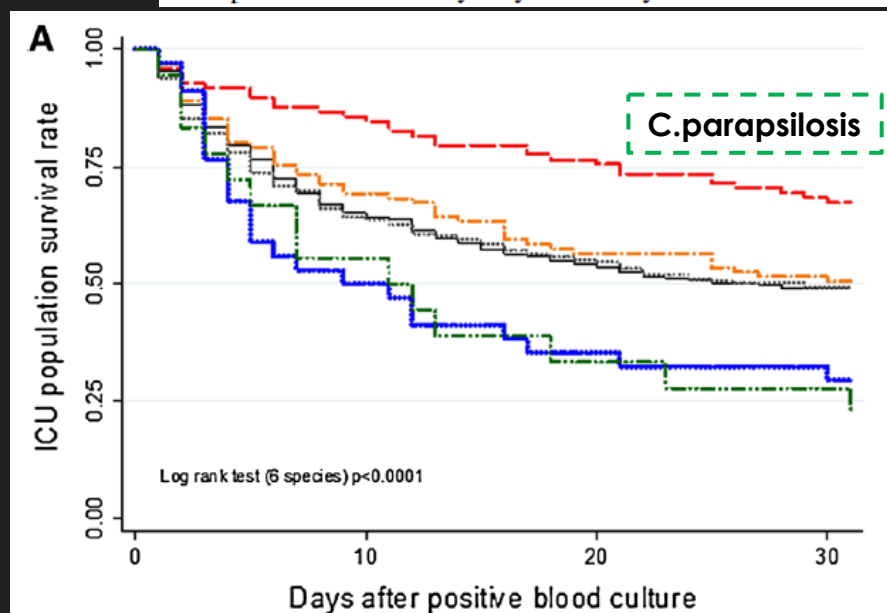
Olivier Lortholary
Charlotte Renaudat
Karine Sitbon
Yoann Madec
Lise Denoeud-Ndam
Michel Wolff
Arnaud Fontanet
Stéphane Bretagne
Françoise Dromer
The French Mycosis Study Group

First-line treatment after diagnosis^b

Fluconazole	506/914 (55.4 %)	665/1,111 (59.9 %)	0.0415	0.0013
Echinocandins	239/914 (26.2 %)	212/1,111 (19.1 %)	0.0001	
Others (including combination)	115/914 (12.6 %)	148/1,111 (13.3 %)	0.6224	
No treatment	54/914 (5.9 %)	86/1,111 (7.7 %)	0.1057	

Death rate

Overall death at day 30	591/1,158 (51.0 %)	371/1,210 (30.7 %)	<0.0001
Before day 8	367/1,151 (31.9 %)	182/1,204 (15.1 %)	<0.0001
Proportional mortality day 8/day 30	367/584 (62.8 %)	182/365 (49.9 %)	<0.0001
Between days 8 and 30	217/1,151 (18.9 %)	183/1,204 (15.2 %)	0.0183
Proportional mortality day 8–30/day 30	217/584 (37.2 %)	183/365 (50.1 %)	<0.0001



Worrisome trends in incidence and mortality of candidemia in intensive care units (Paris area, 2002–2010)

Olivier Lortholary
Charlotte Renaudat
Karine Sitbon
Yoann Madec
Lise Denoeud-Ndam
Michel Wolff
Arnaud Fontanet
Stéphane Bretagne
Françoise Dromer
The French Mycosis Study Group

	Death before day 30			Death before day 8			Death between day 8 and day 30		
	Adj. OR	95 % CI	<i>p</i>	Adj. OR	95 % CI	<i>p</i>	Adj. OR	95 % CI	<i>p</i>
Male gender							0.71	0.51–0.99	0.043
Age categories									
<45 years	1		0.0001				1		0.0003
45–64 years	1.66	1.09–2.53					2.32	1.38–3.89	
65–79 years	2.49	1.60–3.56					3.19	1.88–5.43	
≥80 years	3.09	1.73–5.49					2.91	1.45–5.83	
Arterial catheter	1.39	1.01–1.92	0.0430				1.47	1.02–2.11	0.0371
Surgery within 30 days	0.62	0.46–0.84	0.0017				0.54	0.39–0.76	0.0004
Species									
<i>C. albicans</i>	1		0.0013	1		0.0031			
<i>C. grabrata</i>	0.65	0.43–0.98		0.58	0.34–1.02				
<i>C. parapsilosis</i>	0.43	0.25–0.76		0.18	0.06–0.52				
<i>C. tropicalis</i>	0.99	0.61–1.63		1.00	0.53–1.86				
<i>C. krusei</i>	1.78	0.71–4.47		1.55	0.57–4.23				
<i>C. kefyr</i>	3.88	1.14–13.26		2.79	0.84–9.21				
Preexposure to caspofungin	3.83	1.29–11.35	0.0153	3.54	1.09–11.53	0.0357			
First-line treatment									
Fluconazole	1		0.0003	1		<0.0001			
Echinocandin	1.23	0.85–1.80		0.98	0.59–1.61				
Other treatment	1.11	0.69–1.79		0.81	0.42–1.56				
No treatment	4.34	2.23–8.45		11.04	5.72–21.30				

Worrisome trends in incidence and mortality of candidemia in intensive care units (Paris area, 2002–2010)

Olivier Lortholary
Charlotte Renaudat
Karine Sitbon
Yoann Madec
Lise Denoeud-Ndam
Michel Wolff
Arnaud Fontanet
Stéphane Bretagne
Françoise Dromer
The French Mycosis Study Group

	<i>C. glabrata</i>			<i>C. parapsilosis</i>			<i>C. tropicalis</i>		
	Adj. OR ^a	95 % IC ^b	<i>p</i>	Adj. OR ^a	95 % IC ^b	<i>p</i>	Adj. OR ^a	95 % IC ^b	<i>p</i>
Male gender	1.07	0.78–1.48	0.660	1.10	0.71–1.69	0.683	1.27	0.81–1.99	0.294
Age less than 45 years	1			1			1		
Between 45–64 years	1.60	0.96–2.67	0.074	0.77	0.45–1.32	0.340	1.09	0.59–2.02	0.788
Between 65–79 years	2.02	1.19–3.43	0.009	0.55	0.30–1.01	0.055	1.54	0.81–2.90	0.187
80 years and more	2.68	1.43–5.01	0.002	0.73	0.33–1.60	0.428	0.95	0.38–2.38	0.916
Central venous catheter	1.00	0.69–1.45	0.988	1.36	0.79–2.32	0.263	1.25	0.73–2.14	0.413
Arterial catheter			0.545				0.92		0.861
Surgery			0.596				1.17		0.300
No malignancy							1.17		0.300
Hematological malignancy			0.771				2.01		0.030
Solid tumor			0.658				0.92		0.861
Solid organ transplantation	0.74	0.42–1.31	0.305				0.75	0.35–1.62	0.469
HIV infection	0.51	0.19–1.39	0.188	1.08	0.39–3.05	0.879	0.92	0.34–2.45	0.861
Intravenous drug addiction	2.01	0.34–11.90	0.444	NC			NC		
Caspofungin pre-exposure	16.63	3.51–78.76	<0.001	17.86	3.27–97.46	0.001	3.42	0.29–39.68	0.326
Fluconazole pre-exposure	4.09	2.26–7.41	<0.001	1.02	0.33–3.09	0.976	3.48	1.63–7.46	0.001
	<i>C. krusei</i>			<i>C. kefyr</i>			“Mixed” infections		
	Adj. OR ^a	95 % IC ^b	<i>p</i>	Adj. OR ^a	95 % IC ^b	<i>p</i>	Adj. OR ^a	95 % IC ^b	<i>p</i>
Male gender	1.65	0.74–3.71	0.222	0.74	0.29–1.88	0.532	1.06	0.52–2.19	0.865
Age less than 45 years	1			1			1		
Between 45–64 years	0.73	0.28–1.90	0.513	1.90	0.39–9.38	0.429	1.27	0.39–4.07	0.691
Between 65–79 years			0.811	2.07	0.50–14.86	0.184	1.46	0.43–5.00	0.543
80 years and more			0.632			0.990			0.300
Central venous catheter			0.849			0.577			0.412
Arterial catheter			0.136			0.480			0.832
Surgery within 30 days			0.032			0.291			0.528
No malignancy						0.270			0.757
Hematological malignancy			0.177			0.536			0.215
Solid tumor			0.012	1.42	0.47–4.29	0.536	1.66	0.74–3.85	0.215
Solid organ transplantation			0.028	0.54	0.07–4.45	0.569	1.45	0.45–4.64	0.530
HIV infection			0.452	NC			1.19	0.21–6.84	0.848
Intravenous drug addiction	NC			NC			13.71	1.77–106.28	0.012
Caspofungin pre-exposure	51.86	8.44–318.52	<0.001	16.93	1.29–221.63	0.031	12.51	1.05–149.70	0.046
Fluconazole pre-exposure	6.43	2.32–17.83	<0.001	4.33	0.88–21.24	0.071	0.77	0.10–6.02	0.800

C. glabrata
Yaş (65-80 ve >80)
Caspofungine önce maruziyet

C. Parapsilosis
Caspofungine önce maruziyet

C. tropicalis
Flukanazole önceden maruziyet

C. krusei
Flukanazole ve caspofungine önceden maruziyet
Solid tm >80y

C. kefyr
caspofungine önceden maruziyet >80y

Mixed
caspofungine önceden maruziyet >80y

Türlere göre risk faktörleri

- C.parapsilosis
 - Genç yaş
 - Santral venöz kateter
 - Ekinokandin kullanımı
 - Kötü enfeksiyon kontrolü
- C.tropicalis
 - Nötropenik hematolojik hastalıklar

Nosocomial Candidemia; Risk Factors and Prognosis Revisited; 11 Years Experience from a Norwegian Secondary Hospital

Jan-Erik Berdal^{1*}, Rolf Haagensen², Trond Ranheim³, Jørgen V. Bjørnholt⁴

2002-2012 yıl
110 hasta, candidemi

30 günlük mortalite %49, Bir yıllık mortalite %64

	Survivors	Non-survivors
Number	54	51
Age (years)*	65 (24–92)	74 (31–93)
Terminal event:	NA	28 (55)
- Culture positive on day of death or later	NA	20 (39)
- Treatment refrained 	NA	8 (16)
- Advanced incurable cancer	NA	15 (29)
- ICUadmittance	NA	14 (27)
Advanced incurable cancer (all)	5 (9)	16 (31)
Not recognised before discharge	7 (13)	NA
ICUadmittance	22 (41)	24 (47)

Nosocomial Candidemia; Risk Factors and Prognosis Revisited; 11 Years Experience from a Norwegian Secondary Hospital

Jan-Erik Berdal^{1*}, Rolf Haagenzen², Trond Ranheim³, Jørgen V. Bjørnholt⁴

	Gastrosurgery	Urological	Pneumonia	Haematological	IDU	Othermedical	Othersurgery	All
N (%)	37 (35)	14 (13)	14 (13)	8 (7,6)	4 (3,8)	16 (15)	12 (11)	105 (100)
Age (years) [#]	74 (24–84)	77 (71–82)	73 (47–88)	64 (58–76)	43 (31–63)	68 (25–82)	61 (31–87)	70 (24–78)
Male sex (%)	59,5	85,7	78,6	50,0	100	62,5	41,7	64,8
Antibiotics*	33 (89)	12 (86)	14 (100)	8 (100)	1 (25)	11 (69)	10 (83)	91 (87)
Antibiotics(days) [#]	22 (0–108)	16 (0–70)	17 (3–32)	13 (1–67)	2 (0–2)	11 (0–88)	15 (0–42)	15 (0–108)
ICUadmittance*	20 (54)	0 (0)	6 (43)	3 (37)	0 (0)	5 (31)	9 (75)	46 (44)
CVC*	29 (78)	1 (7)	10 (71)	5 (62)	1 (25)	11 (69)	11 (92)	68 (64)
TPN*	31 (81,6)	1 (7)	10 (71)	4 (50)	0 (0)	11 (69)	10 (83)	65 (62)
RRT*	6 (16)	0 (0)	2 (14)	0 (0)	0 (0)	2 (12)	6 (50)	16 (15)
Steroids*	10(27)	2 (14)	6 (43)	4 (50)	0 (0)	16 (37)	7 (58)	33 (32)
Immune supp.*	11 (30)	2 (14)	3 (21)	8 (100)	0 (0)	9 (56)	4 (33)	37 (35)
Leucopenia*	0 (0)	0 (0)	0 (0)	6 (75)	0 (0)	2 (12)	0 (0)	8 (7,6)
Diabetes*	3 (8,1)	3 (21,4)	3 (21,4)	2 (25)	1 (25)	4 (25)	1 (8,3)	17 (16)

- Tüm candidemi'lerin %46'sı YBÜ
- Ortalama SAPS skoru 49
- YBÜ hastaları yüksek mortalite ve morbidite

- Flukanazol ampirik olarak en sık
- Ekinokandinler ampirik kullanımı artmakta
- Stabil hastalarda hızlı bir şekilde de-eskalasyon flukanazol'e

Arnaldo L. Colombo
Thais Guimarães
Teresa Sukienik
Alessandro C. Pasqualotto
Ricardo Andreotti
Flavio Queiroz-Telles
Simone A. Nouér
Marcio Nucci

Prognostic factors and historical trends in the epidemiology of candidemia in critically ill patients: an analysis of five multicenter studies sequentially conducted over a 9-year period

- 2003-2007 dönemi:1
- 2008-2012 dönemi:2
- Brezilya'da 22 hastane
- 1392 atak
- Ort yaş: 62
- C.albicans en sık %42
- C.tropicalis %20
- C.parapsilosis %19
- C.glabrata %9
- Mortalite: %62.4

Arnaldo L. Colombo
 Thais Guimarães
 Teresa Sukienik
 Alessandro C. Pasqualotto
 Ricardo Andreotti
 Flavio Queiroz-Telles
 Simone A. Nouér
 Marcio Nucci

Prognostic factors and historical trends in the epidemiology of candidemia in critically ill patients: an analysis of five multicenter studies sequentially conducted over a 9-year period

Intensive Care Med (2014) 40:1489–1498

Variable	In the ICU (N = 647)	Outside the ICU (N = 745)	p
Gender (N, male:female)	328:319	390:355	0.54
Age (years)	66 (18–97)	58 (18–97)	<0.001
Time (days) from admission to candidemia diagnosis	20 (0–188)	20 (0–159)	0.83
Cancer	174 (26.9)	283 (38.0)	<0.001
Hematologic	29 (4.5)	95 (12.8)	<0.001
Solid tumor	145 (22.4)	188 (25.2)	0.22
Diabetes	154 (24.4)	170 (22.8)	0.48
Renal failure	262 (40.5)	217 (29.1)	<0.001
Chronic renal failure	81 (12.5)	113 (15.2)	0.15
Dialysis	183 (28.3)	118 (15.8)	<0.001
Liver disease	74 (11.4)	91 (12.2)	0.65
Auto-immune disease	28 (4.3)	52 (7.0)	0.03
Neurologic disease	160 (24.7)	141 (18.9)	0.009
Transplant	3 (0.5)	27 (3.6)	<0.001
Cardiac disease	227 (35.1)	163 (21.9)	<0.001
Lung disease	185 (28.6)	120 (16.1)	<0.001
Surgery	336 (51.9)	328 (44.0)	0.003
Abdominal surgery	194 (30.0)	189 (25.4)	0.05
Mechanical ventilation	480 (74.2)	120 (16.1)	<0.001
Total parenteral nutrition	140 (21.6)	157 (21.1)	0.80
Central venous catheter	605 (93.5)	591 (79.3)	<0.001
Neutropenia	16 (2.5)	51 (6.8)	<0.001
Prior drug/treatment exposure			
Antibiotics	622 (96.1)	653 (87.7)	<0.001
Corticosteroids	338 (52.2)	223 (29.9)	<0.001
Other immunosuppressive drugs	38 (5.9)	67 (9.0)	0.03
Chemotherapy	22 (3.4)	76 (10.2)	<0.001
Fluconazole prior to candidemia	102 (15.8)	108 (14.5)	0.51
<i>Candida</i> spp.			
<i>C. albicans</i>	285 (44.0)	300 (40.3)	0.15
<i>C. parapsilosis</i>	111 (17.2)	162 (21.7)	0.03
<i>C. tropicalis</i>	141 (21.8)	140 (18.8)	0.16
<i>C. glabrata</i>	64 (9.9)	68 (9.1)	0.63
<i>C. krusei</i>	16 (2.5)	21 (2.8)	0.69
<i>C. guilliermondii</i>	12 (1.9)	22 (3.0)	0.19
Treatment received	482 (74.5)	577 (77.4)	0.20
Fluconazole	295/482 (61.2)	395/577 (68.5)	0.01
Deoxycholate AMB	106/482 (22.0)	106/577 (18.4)	0.14
Lipid AMB	21/482 (4.4)	8/577 (1.4)	0.003
Echinocandins	52/482 (10.8)	33/577 (5.7)	0.002
30-day crude mortality	450/640 (70.3) ^a	389/740 (52.6) ^b	<0.001

- Yaş
- Kanser (hematolojik)
- Böbrek yetmezliği
- Diyaliz
- Otoimmün
- Nörolojik hast
- Transplant
- Kalp hast
- Akciğer Hast
- Cerrahi
- MV
- CVP
- KS
- Antibiyotikler
- İmmünosprs
- Kemoterapi
- Mortalite
- *C.parapsilosis*

Arnaldo L. Colombo
 Thais Guimarães
 Teresa Sukienik
 Alessandro C. Pasqualotto
 Ricardo Andreotti
 Flavio Queiroz-Telles
 Simone A. Nouér
 Marcio Nucci

Prognostic factors and historical trends in the epidemiology of candidemia in critically ill patients: an analysis of five multicenter studies sequentially conducted over a 9-year period

Intensive Care Med (2014) 40:1489–1498

Variable	Period 1 (N = 396)	Period 2 (N = 251)	p
Gender (N, male:female)	206:190	122:129	0.40
Age (years)	67 (18–97)	63 (19–97)	0.67
Time (days) from admission to candidemia diagnosis	21 (0–142)	16 (0–188)	0.01
Private hospital	340 (37.8)	242 (49.3)	<0.001
APACHE II score, median (range) ^a	27 (0–46)	22 (3–42)	0.08
Cancer	102 (25.8)	72 (28.7)	0.41
Hematologic	14 (3.5)	15 (6.0)	0.14
Solid tumor	88 (22.2)	57 (22.7)	0.88
Diabetes	96 (24.2)	62 (24.7)	0.89
Renal failure	162 (40.9)	100 (39.8)	0.79
Chronic renal failure	57 (14.4)	24 (9.6)	0.07
Dialysis	112 (28.3)	71 (28.3)	1.00
Liver disease	32 (8.1)	42 (16.7)	0.001
Auto-immune disease	18 (4.5)	10 (4.0)	0.73
Neurologic disease	83 (21.0)	77 (30.7)	0.005
Transplant	2 (0.5)	1 (0.4)	1.00
Cardiac disease	142 (35.9)	85 (33.9)	0.60
Lung disease	106 (26.8)	79 (31.5)	0.20
Surgery	205 (51.8)	131 (52.2)	0.92
Abdominal surgery	129 (32.6)	66 (25.9)	0.07
Mechanical ventilation	296 (74.7)	184 (73.3)	0.68
Total parenteral nutrition	83 (21.0)	57 (22.7)	0.60
Central venous catheter	364 (91.9)	241 (96.0)	0.04
Neutropenia	9 (2.3)	7 (2.8)	0.68
Prior drug/treatment exposure			
Antibiotics	377 (95.2)	245 (97.6)	0.12
Corticosteroids	202 (51.0)	136 (54.2)	0.43
Other immunosuppressive drugs	23 (5.8)	15 (6.0)	0.93
Chemotherapy	7 (1.8)	15 (6.0)	0.004
Fluconazole prior to candidemia	46 (11.6)	56 (22.3)	<0.001
<i>Candida</i> spp.			
<i>C. albicans</i>	177 (44.7)	108 (43.0)	0.68
<i>C. parapsilosis</i>	72 (18.2)	39 (15.5)	0.38
<i>C. tropicalis</i>	90 (22.7)	51 (20.3)	0.47
<i>C. glabrata</i>	31 (7.8)	33 (13.1)	0.03
<i>C. krusei</i>	5 (1.3)	11 (4.4)	0.01
<i>C. guilliermondii</i>	9 (2.3)	3 (1.2)	0.38
Treatment received	288 (72.7)	194 (77.3)	0.19
Fluconazole	174/288 (60.4)	121/194 (62.4)	0.67
Deoxycholate AMB ^b	80/288 (27.8)	26/194 (13.4)	<0.001
Lipid AMB ^b	9/288 (3.1)	12/194 (6.2)	0.11
Echinocandin	17/288 (5.9)	35/194 (18.0)	<0.001
30-day crude mortality	298/390 (76.4) ^c	152/250 (60.8) ^d	<0.001

2003–2007

Kabül-tanı süresi (1)
 APACHE II (1)
 KBY (1)
 Abdominal cerrahi (1)
 Deoksi AMB (1)
 Mortalite (1)

2008–2012

Özel hastane
 Karaciğer
 Nörolojik hast
 CVP
 Kemoterapi
 Kandidemi öncesi Flukanazol
 C.Glabrata
 C.Krusei
 Ekinokandidin

Arnaldo L. Colombo
 Thais Guimarães
 Teresa Sukienik
 Alessandro C. Pasqualotto
 Ricardo Andreotti
 Flavio Queiroz-Telles
 Simone A. Nouér
 Marcio Nucci

Prognostic factors and historical trends in the epidemiology of candidemia in critically ill patients: an analysis of five multicenter studies sequentially conducted over a 9-year period

Intensive Care Med (2014) 40:1489–1498

Variable	Public (N = 321)	Private (N = 326)	p
Gender (N, male:female)	169:152	159:167	0.32
Age (years)	60 (18–97)	64 (18–97)	<0.001
Time (days) from admission to candidemia	20 (0–188)	19 (0–159)	0.62
Cancer	79 (24.6)	95 (29.1)	0.19
Hematologic	10 (3.1)	19 (5.8)	0.09
Solid tumor	69 (21.5)	76 (23.3)	0.58
Diabetes	69 (21.5)	89 (27.3)	0.09
Renal failure	126 (39.3)	136 (41.7)	0.52
Chronic renal failure	45 (14.0)	36 (11.0)	0.25
Dialysis	88 (27.4)	95 (29.1)	0.63
Liver disease	34 (10.6)	40 (12.3)	0.50
Auto-immune disease	20 (6.2)	8 (2.5)	0.02
Neurologic disease	75 (23.4)	85 (25.1)	0.42
Transplant	1 (0.3)	2 (0.6)	1.00
Cardiac disease	113 (35.2)	114 (35.0)	0.95
Lung disease	106 (33.0)	79 (24.2)	0.01
Surgery	164 (51.1)	172 (52.8)	0.67
Abdominal surgery	96 (29.9)	98 (30.1)	0.97
Mechanical ventilation	247 (76.9)	233 (71.5)	0.11
Total parenteral nutrition	68 (21.2)	72 (22.1)	0.78
Central venous catheter	297 (92.5)	308 (94.5)	0.31
Neutropenia	3 (0.9)	13 (4.0)	0.01
Prior drug/treatment exposure			
Antibiotics	310 (96.6)	312 (95.7)	0.57
Corticosteroids	173 (53.9)	165 (50.6)	0.40
Immunosuppressive drugs	18 (5.6)	20 (6.1)	0.77
Chemotherapy	4 (1.2)	18 (5.5)	0.003
Fluconazole prior to candidemia	43 (13.4)	59 (18.1)	0.10
<i>Candida</i> spp.			
<i>C. albicans</i>	156 (48.6)	129 (39.6)	0.02
<i>C. parapsilosis</i>	61 (19.0)	50 (15.3)	0.22
<i>C. tropicalis</i>	64 (19.9)	77 (23.6)	0.26
<i>C. glabrata</i>	22 (6.9)	42 (12.9)	0.01
<i>C. krusei</i>	4 (1.2)	12 (3.7)	0.05
<i>C. guilliermondii</i>	7 (2.2)	5 (1.5)	0.54
Treatment received			
Fluconazole	239 (74.5)	243 (74.5)	0.98
Deoxycholate AMB	147/239 (61.5)	148/243 (60.9)	0.89
Lipid AMB	76/239 (31.8)	30/243 (12.3)	<0.001
Echinocandin	3/239 (1.3)	18/243 (7.4)	0.001
30-day crude mortality	7/239 (2.9)	45/243 (18.5)	<0.001
	241/320 (75.3) ^a	209/320 (65.3) ^b	0.006

Resmi Hast

Otoimmün
 Akciğer hast
 C.Albicans
 Deoksi AMB
 Mortalite

Özel Hast

Yaş
 Nötropeni
 C.Glabrata
 Lipid AMB
 Ekinokandin

Arnaldo L. Colombo
 Thais Guimarães
 Teresa Sukienik
 Alessandro C. Pasqualotto
 Ricardo Andreotti
 Flavio Queiroz-Telles
 Simone A. Nouér
 Marcio Nucci

Prognostic factors and historical trends in the epidemiology of candidemia in critically ill patients: an analysis of five multicenter studies sequentially conducted over a 9-year period

Intensive Care Med (2014) 40:1489–1498

Variable	Alive (N = 190)	Dead (N = 450)	p value
Gender (N, male:female)	94:96	233:217	0.59
Age (years)	60 (19–97)	68 (18–97)	<0.001
Time (days) from admission to candidemia	17 (0–151)	20.5 (0–188)	0.10
Period 2 (2008–2012)	98 (51.6)	152 (33.8)	<0.001
Private hospital	111 (58.4)	79 (41.6)	0.006
APACHE II score ^b	19 (3–37)	27 (0–46)	<0.001
Cancer	31 (16.3)	140 (31.1)	<0.001
Hematologic	7 (3.7)	21 (4.7)	0.58
Solid tumor	24 (12.6)	119 (26.4)	<0.001
Cardiac disease	62 (32.6)	161 (35.8)	0.44
Lung disease	42 (22.1)	141 (31.3)	0.02
Diabetes	49 (25.8)	107 (23.8)	0.59
Renal failure	61 (32.1)	199 (44.2)	0.004
Chronic renal failure	20 (10.5)	60 (13.3)	0.33
Dialysis	32 (16.8)	149 (33.1)	<0.001
Liver disease	13 (6.9)	56 (12.4)	0.20

Table 5 Factors associated with 30-day mortality^a among 640 ICU patients with candidemia by multivariate analysis

Variable	Odds ratio	95 % Confidence interval	p value
Receipt of corticosteroids	4.00	1.98–8.13	<0.001
Period 1	2.49	1.22–5.08	0.01
APACHE II score ^b	1.05	1.01–1.09	0.03
Age	1.03	1.01–1.05	0.003
Treatment with an echinocandin	0.20	0.07–0.58	0.003
Other immunosuppressive drugs	2 (4.7)	22 (4.9)	0.40
Chemotherapy	6 (3.2)	16 (3.6)	0.80
Fluconazole prior to candidemia	36 (18.9)	65 (14.4)	0.15
<i>Candida</i> spp.			
<i>C. albicans</i>	73 (38.4)	210 (46.7)	0.055
<i>C. parapsilosis</i>	43 (22.6)	67 (14.9)	0.02
<i>C. tropicalis</i>	39 (20.5)	99 (22.0)	0.68
<i>C. glabrata</i>	23 (12.1)	40 (8.9)	0.21
<i>C. krusei</i>	5 (2.6)	11 (2.4)	1.00
<i>C. guilliermondii</i>	2 (1.1)	10 (2.2)	0.52
Treatment received	176 (92.6)	301 (66.9)	<0.001
Fluconazole	106/176 (60.2)	185/301 (61.5)	0.79
Deoxycholate AMB	27/176 (15.3)	78/301 (25.9)	0.007
Lipid AMB	8/176 (4.5)	13/301 (4.3)	0.91
Echinocandin	31/176 (17.6)	21/301 (7.0)	<0.001
Time (days) from candidemia to treatment	2 (0–11)	2 (0–18)	0.12

Mortalite ile ilişkili

Yaş
 Dönem 1
 Cancer
 Solid tm
 APACHE II
 Akciğer Hast.
 Böbrek yetm
 Diyabetiz

Tedavi ile ilişkili

Dönem 2
 C.Parapsilosis
 Tedavi alanlar
 Ekinokandin

A risk factor analysis of healthcare-associated fungal infections in an intensive care unit: a retrospective cohort study

Su-Pen Yang^{1,4}, Yin-Yin Chen^{2,5}, Han-Shui Hsu^{3,4}, Fu-Der Wang^{1,6}, Liang-yu Chen^{6,7} and Chang-Phone Fung^{1,4*}

Variables	No HAI n = 1674(%)	Fungal HAI n = 186(%)	p value
Age, years mean $\pm$ SD,	67.5 $\pm$ 18.0	71.6 $\pm$ 16.0	0.001
APACHE II score, mean $\pm$ SD	Yaş		<0.001
ICU stay before infection, mean $\pm$ SD	APACHE II		<0.001
Length of ICU stay, mean $\pm$ SD	YBÜ'de kalmak		<0.001
Total parenteral nutrition use	YB yatış süresi		<0.001
Total parenteral nutrition use	TPN		<0.001
Gender (male)	Cerrahi servis		0.865
Service (surgical)	GİS		<0.001
Main diagnosis(yes)	Sepsis		0.939
Neoplasms	Antibiyotik		0.003
Digestive system	CVP		0.078
Respiratory system	MV		0.218
Genitourinary system	Ureter kateter		0.005
Sepsis	Yara drenajı		<0.001
7days before fungal infection	Hemodiyaliz		<0.001
Mortality in ICU			<0.001
Invasive procedures (yes)			<0.001
Central venous catheter			0.001
Mechanical ventilator			<0.001
Urinary catheter			<0.001
Wound drainage	1550(92.6)	178(95.7)	<0.001
Hemodialysis	417(24.9)	65(34.9)	0.003

A risk factor analysis of healthcare-associated fungal infections in an intensive care unit: a retrospective cohort study

Su-Pen Yang^{1,4}, Yin-Yin Chen^{2,5}, Han-Shui Hsu^{3,4}, Fu-Der Wang^{1,6}, Liang-yu Chen^{6,7} and Chang-Phone Fung^{1,4*}

Variables	Urinary tract infection		Blood stream infection		Pneumonia		Surgical site infection		All infection sites	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age (>65 years)	0.90	0.54-1.50	0.70	0.30-1.34	1.45	0.58-3.62	0.58	0.23-1.48	0.94	0.64-1.40
Gender (male)	0.78	0.48-1.27	0.77	0.41-1.45	1.78	0.69-4.62	1.03	0.38-2.79	0.95	0.65-1.40
Service (surgical)	1.52	0.92-2.51	1.62	0.81-3.23	3.46*	1.44-8.28	11.79*	2.49-55.74	1.89*	1.27-2.80
APACHE II score	1.01	0.98-1.04	1.06*	1.02-1.11	1.03	0.97-1.09	0.99	0.93-1.06	1.01	0.99-1.04
ICU stay before infection(days)	0.98	0.95-1.01	1.00	0.97-1.03	1.01	0.99-1.03	0.99	0.95-1.04	1.00	0.98-1.02
antibiotic therapy	0.82	0.47-1.42	0.64	0.31-1.32	0.60	0.23-1.60	1.42	0.52-3.87	0.87	0.57-1.31
TPN	3.51*	1.69-7.31	8.47*	4.07-17.63	8.07*	3.24-20.13	8.82*	3.27-23.81	4.83*	2.80-8.34
Neoplasms	0.88	0.46-1.69	0.81	0.33-1.98	1.13	0.36-3.51	1.59	0.44-5.79	0.96	0.57-1.61
Respiratory system	0.90	0.43-1.88	0.60	0.18-2.03	1.06	0.26-4.33	—	—	0.79	0.42-1.47
Digestive system	1.03	0.53-2.01	1.21	0.51-2.88	1.84	0.60-5.60	2.61	0.78-8.72	1.32	0.80-2.19
Genitourinary system	0.76	0.32-1.81	1.00	0.32-3.11	1.20	0.30-4.79	—	—	0.72	0.36-1.44
Sepsis	1.60	0.56-4.57	5.26*	1.70-16.27	3.18	0.53-18.98	2.89	0.22-37.77	2.71*	1.24-5.92
Central line	2.63	0.61-11.24	0.90	0.20-3.99	0.51	0.11-2.46	6.80	—	1.21	0.50-2.92
Mechanical ventilator	2.85*	1.73-4.69	1.71	0.89-3.26	1.67	0.76-3.69	1.45	0.53-3.98	2.05*	1.40-2.99
Hemodialysis	0.70	0.36-1.37	0.72	0.29-1.80	1.67	0.62-4.47	3.08	0.87-10.81	1.21	0.74-1.98
Foley catheter	1.64*	1.01-2.67	1.02	0.56-1.88	2.00	0.92-4.35	0.92	0.37-2.33	1.52*	1.06-2.20
Wound drainage	0.76	0.29-2.02	1.52	0.56-4.12	0.15	0.02-1.43	1.01	0.29-3.55	0.96	0.49-1.88

OR, Odds Ratio; CI, Confidence interval; APACHE, Acute Physiology and Chronic Health Evaluation;

TPN, Total Parenteral Nutrition.

* P value < 0.05; —: too few case numbers to calculate

Table 3 Predictors of ICU mortality

Variables

Fungal HAI (yes/no)

Service (surgical)

Digestive system(yes/no)

Sepsis(yes/no)

Neoplasms (yes/no)

Mechanical ventilator (yes/no)

Marie-Elisabeth Bougnoux
Guillaume Kac
Philippe Aegerter
Christophe d'Enfert
Jean-Yves Fagon
CandiRea Study Group

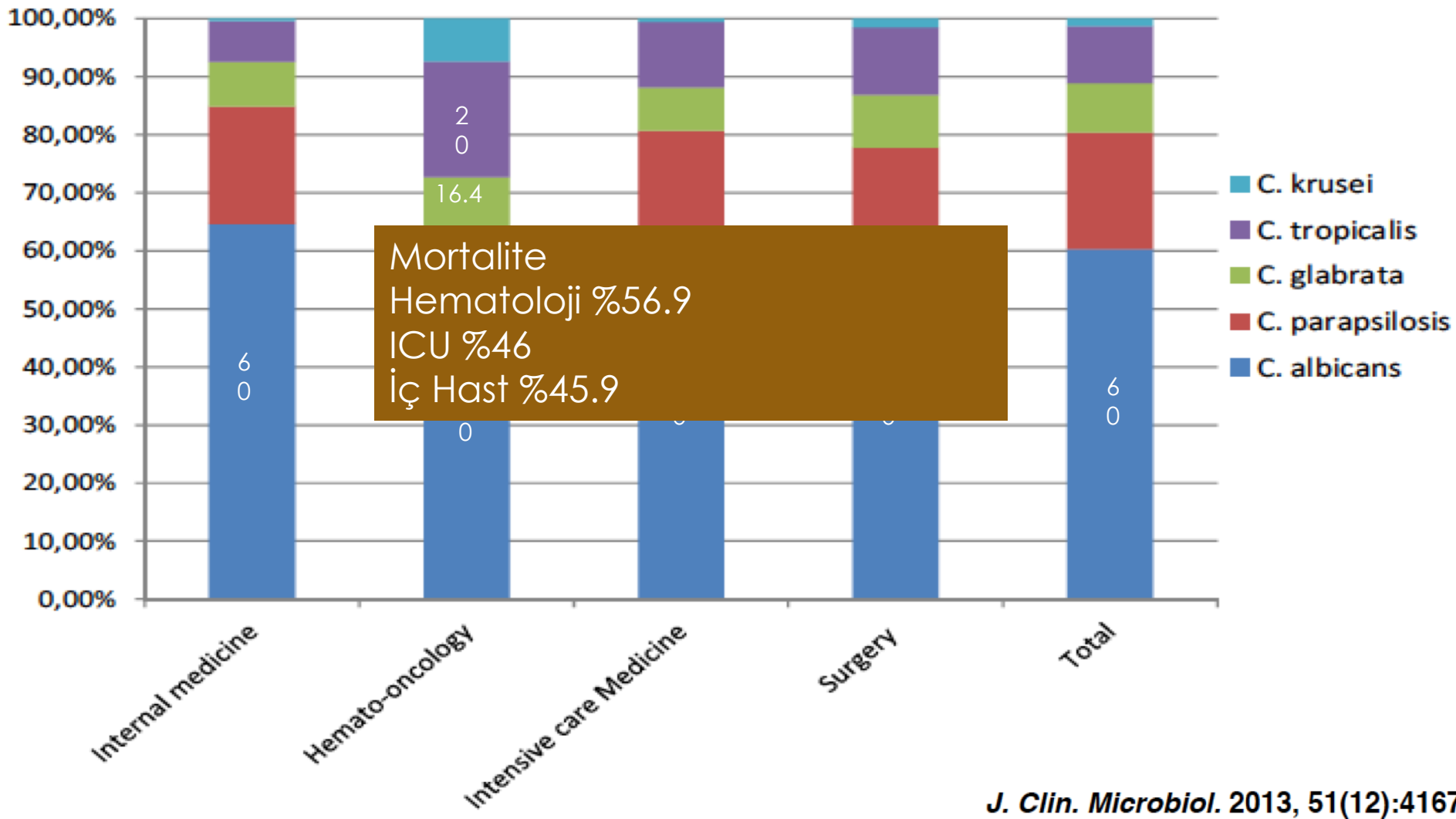
Candidemia and candiduria in critically ill patients admitted to intensive care units in France: incidence, molecular diversity, management and outcome

Table 1 Mean incidences of ICU-acquired candidemia and/or candiduria among the 24 participating ICUs

Unit	No. of admissions	No. of patient-days	ICU-acquired candidemia		ICU-acquired candiduria	
			Per 1000 admissions	Per 1000 patient-days	Per 1000 admissions	Per 1000 patient-days
MICUs (<i>n</i> = 12)	4,931	43,793	5.3 (0–15)	0.59 (0–2)	25.2 (10–58)	2.8 (1.5–4)
SICUs (<i>n</i> = 10)	2,745	29,016	7.3 (0–15)	0.60 (0–1.7)	29.5 (8.4–62)	2.8 (0.6–5.4)
HU (<i>n</i> = 1)	702	7,014	8.5	0.86	25.6	2.6
BU (<i>n</i> = 1)	131	3,229	38.2	1.55	76.3	3.1
Total	8,509	83,052	6.7	0.69	27.4	2.8

- ❑ YBÜ'ne kabul ile candidemi arasındaki gün sayısı 19 gün, candidüri için 17.2 gün
- ❑ Candidemilerde; *C.albicans* %54.2, *C.glabrata* %17
- ❑ Candidürilerde; *C.albicans* %66.5, *C.glabrata* %21.6
- ❑ Flukanazol en sık kullanılan
- ❑ Mortalite; candidemide %61.8, candidüri %31.3
- ❑ Candidemi geç başlangıçlı yüksek mortaliteye sahip bir enfeksiyon
- ❑ *Candida* türlerinin kan ve idrar arasında duyarlılık ve genetik farklılık yok

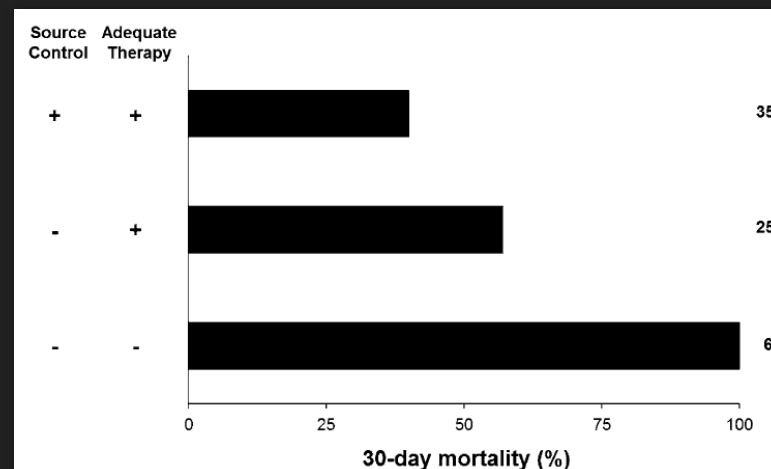
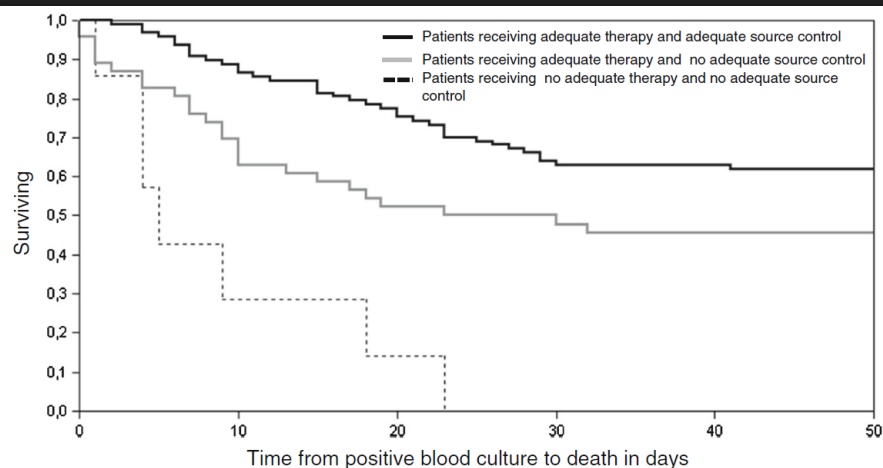
Epidemiology, Species Distribution, Antifungal Susceptibility, and Outcome of Candidemia across Five Sites in Italy and Spain



Matteo Bassetti
Elda Righi
Filippo Ansaldi
Maria Merelli
Trucchi Cecilia

A multicenter study of septic shock due to candidemia: outcomes and predictors of mortality

- 216 hasta
- İtalya ve İspanya
- $63.4 \pm 18.5y$
- %58.3 E
- %75'i YBÜ'e yatmış
- 30 günlük mortalite %54



Risk factor	Chi-square	Odds ratio	P value
APACHE II score (1-point increments)	12.79	0.93	<0.001*
Adequate antifungal therapy	3.9	5.99	0.048*
Source control	10.38	2.99	0.001*

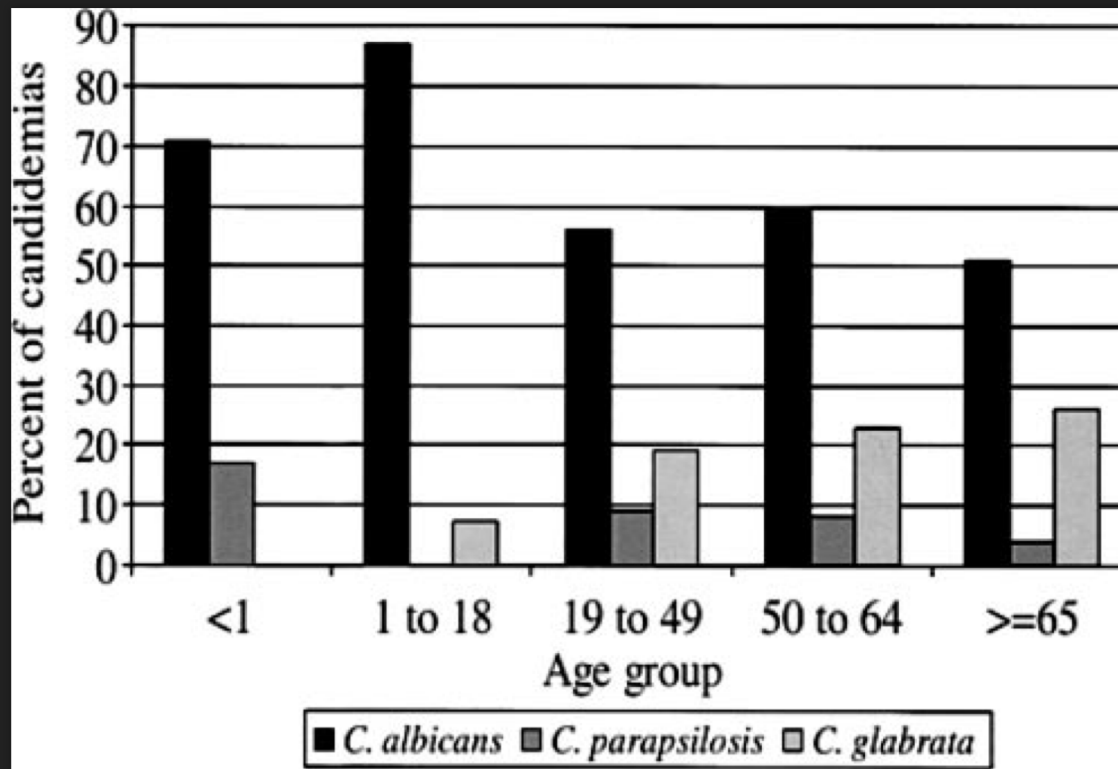
Risk factors for candida blood stream infection in medical ICU and role of colonization – A retrospective study

Setu Patolia, Eneh Kennedy, Mehjabin Zahir, Swati Patolia, Neerja Gulati, Dharani Narendra, Rakesh Vadde, Saurav Pokharel, Frances M. Schmidt, Danilo Enriquez and Joseph Quist

Characteristic	Candidaemia (total 56) N (% of candidaemia)	No candidaemia (total 1427) N (% of no candidaemia)	Chi Square
Previous or current antibiotic use	46 (82.1%)	565(39.6%)	0.00
Sepsis	40(71.4%)	436(30.6%)	0.000
Vasopressor support (Septic shock)	13(23.2%)	144(10.1%)	0.004
Steroid use	27(48.2%)	431(30.2%)	0.004
Central line	30(53.6%)	267(18.7%)	0.000
Total parenteral nutrition	7(12.5%)	29(2.0%)	0.000
Candida in endotracheal aspirate/sputum culture	13(23.2%)	112(7.8%)	0.000
Candida in urine culture	34(60.7%)	262(18.4%)	0.000

Effect	Co efficient (•)	Odds ratio	95 % Confidence limit		P value
			Lower	Upper	
TPN	1.186	3.274	1.263	8.486	0.015
CVP line	0.639	1.895	1.032	3.478	0.039
Antibiotic Use	1.184	3.268	1.532	6.972	0.002
Endotracheal/ sputum culture	0.760	2.150	1.078	4.289	0.030
Urine	1.255	3.508	1.926	6.388	0.000

Candida spp ve yaş



CRITICAL CARE

Management of fungal infections in the intensive care unit: a survey of UK practice[†]

C. M. Chalmers^{1,3*} and A. M. Bal²

Patient group	Ampirik ilaç kullanma grubu	No. (%) of responses
Immunocompromised		10 (26)
Other abdominal surgery or perforation, intra-abdominal sepsis		10 (26)
Upper GI surgery or perforation		7 (19)
Liver failure		7 (19)
Combination of factors leading to perceived high risk		7 (19)
Haematology or other oncology patients		4 (11)
Surgical patients		3 (8)
Prolonged or multiple antibiotics		3 (8)
Pancreatitis		2 (5)
Patients with suggestive clinical history or symptoms		2 (5)
GI perforation only if prolonged or untreated		2 (5)
Medical patients		1 (3)
Long-stay surgical patients		1 (3)
Military casualties		1 (3)
Transplant patients		1 (3)
Long term steroids		1 (3)
Chronic respiratory disease		1 (3)

Anket çalışması
236 YBÜ

Ampirik ilaç tercihi		
Antifungal agent	Empirical therapy	Proven candidaemia
Amphotericin: conventional	0	0
Amphotericin: liposomal	2 (3.4)	6 (9.4)
Caspofungin	4 (6.8)	11 (17.2)
Fluconazole	48 (81.4)	41 (64.1)
Voriconazole	2 (3.4)	0
Other	3 (4.2)	6 (9.4)
Total no. of responses	59	64

Ampirik tedaviye başlama gerekçesi

Factor	As a single factor	If combined with other factors
Fever with no response to antibiotics	6 (10.3)	46 (79.3)
Rising inflammatory markers	1 (1.7)	42 (72.4)
Prolonged ICU stay	3 (5.2)	33 (56.9)
Isolation of <i>Candida</i> from single site	1 (1.7)	28 (48.3)
Isolation of <i>Candida</i> from multiple sites	24 (41.4)	30 (55.2)
Other	3 (5.2)	6 (10.3)
Total no. of responses	58	58

Hangi bölgeleri tanyorsunuz

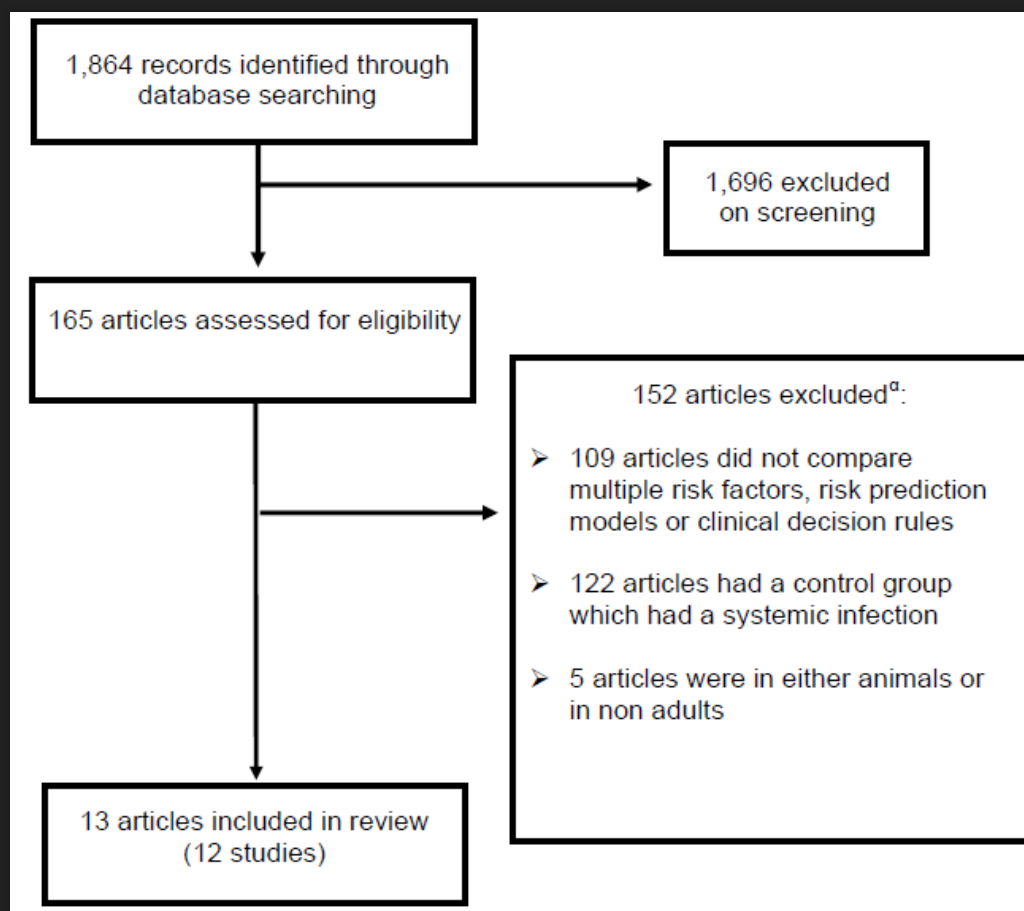
Site	No. (%) of responses
None: do not screen	27 (38)
Sputum/tracheal aspirate	41 (57.7)
Mouth	16 (22.5)
Urine	29 (40.8)
Central line site	23 (32.4)
Arterial line site	18 (25.4)
Wounds	31 (43.7)
Fluid (e.g. drain)	29 (40.8)
Other	6 (8.5)
Total no. of responses	71

RESEARCH

Open Access

Risk factors for invasive fungal disease in critically ill adult patients: a systematic review

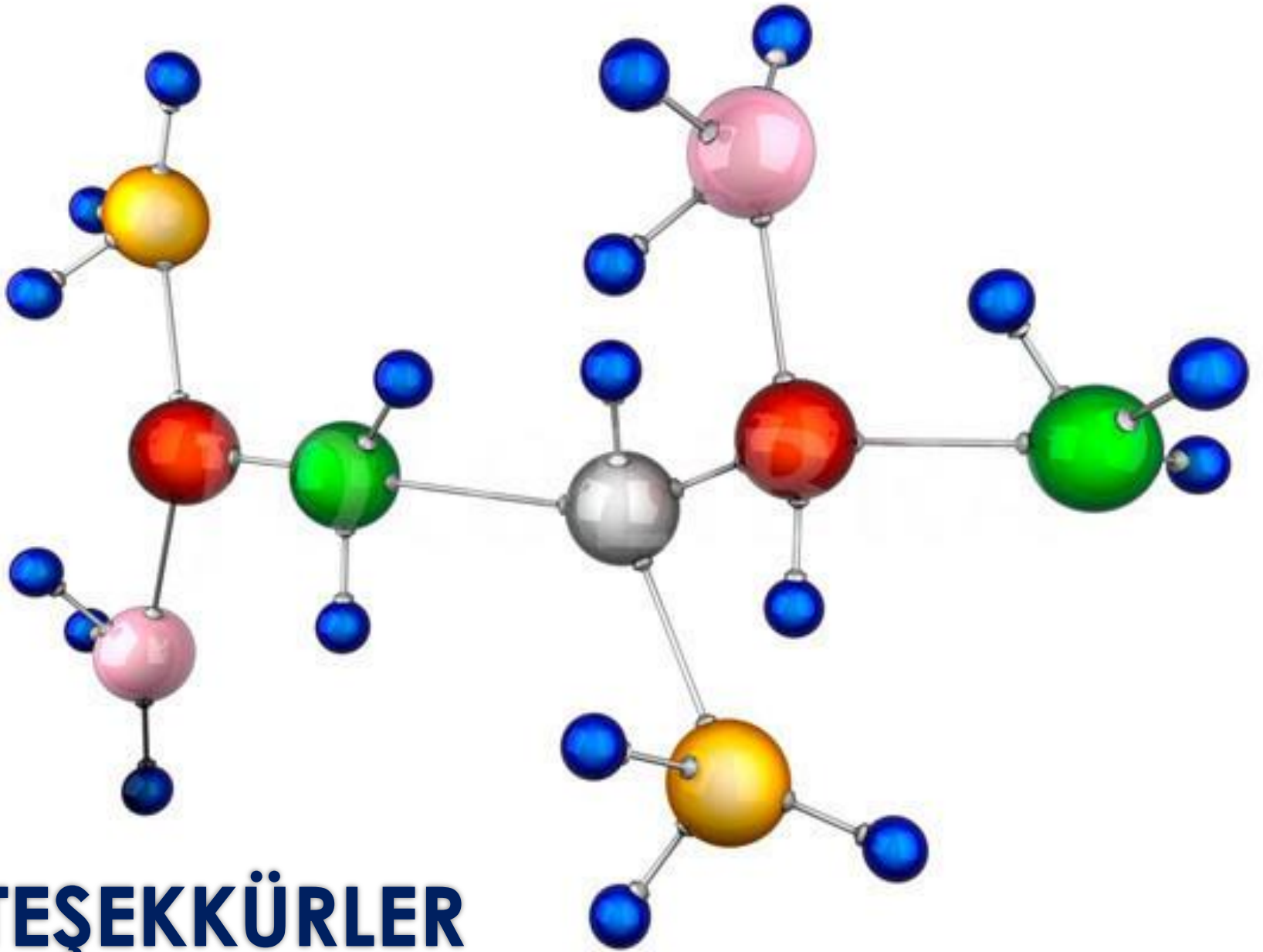
Hannah Muskett¹, Jason Shahin¹, Gavin Eyres¹, Sheila Harvey¹, Kathy Rowan^{1,2} and David Harrison^{1,3*}



Risk factors	Studies	OR (95% CI)	P-values
Surgery			
General abdominal surgery	Agvald-Ohman <i>et al.</i> , 2008 [28]	60.7 (7.3 to infinity)	0.0013
Any surgery	Blumberg <i>et al.</i> , 2001 [29]	7.3 (1 to 53.8)	0.05
Elective surgery	Jordà-Marcos <i>et al.</i> , 2007 [26] ^a	2.75 (1.17 to 6.45)	0.02
Surgery on ICU admission	León <i>et al.</i> , 2006 [27] ^a	2.71 (1.45 to 5.06)	< 0.001
Gastrointestinal procedure	Chow <i>et al.</i> , 2008 [30]	2.24 (1.49 to 3.38) ^B	< 0.001 ^B
Major pre-ICU operation	Chow <i>et al.</i> , 2008 [30]	2.12 (1.14 to 3.97) ^B	0.02 ^B
Major operation during ICU stay	Chow <i>et al.</i> , 2008 [30]	1.26 ^a	0.04 ^a
Multiple surgical procedures	McKinnon <i>et al.</i> , 2001 [32]	NR	≤ 0.05
Total parenteral nutrition			
Total parenteral nutrition duration/days at risk	Chow <i>et al.</i> , 2008 [30]	11 (5.52 to 21.7) ^a	< 0.01 ^a
		2.87 (1.4 to 5.9) ^B	< 0.01 ^B
Total parenteral nutrition	Jordà-Marcos <i>et al.</i> , 2007 [26] ^a	3.89 (1.73 to 8.78)	0.001
Total parenteral nutrition	Blumberg <i>et al.</i> , 2001 [29]	3.6 (1.8 to 7.5)	< 0.001
Total parenteral nutrition	León <i>et al.</i> , 2006 [27] ^a	2.48 (1.16 to 5.31)	< 0.001
Total parenteral nutrition	Borzotta & Beardsley, 1999 [34]	NR	< 0.001
Fungal Colonisation			
Digestive focus	Ibáñez-Nolla <i>et al.</i> , 2004 [31]	20.24 (6.11 to 67.03)	< 0.001
Colonisation Index ≥ 0.5	Agvald-Ohman <i>et al.</i> , 2008 [28]	19.1 (2.38 to 435)	0.017
Non- <i>Candida albicans</i> at screening	Ibáñez-Nolla <i>et al.</i> , 2004 [31]	11.68 (1.93 to 70.63)	0.007
Respiratory focus	Ibáñez-Nolla <i>et al.</i> , 2004 [31]	6.55 (1.25 to 34.3)	0.026
<i>Candida</i> colonisation	Jordà-Marcos <i>et al.</i> , 2007 [26] ^a	4.12 (1.82 to 9.33)	0.001
<i>Candida</i> colonisation	León <i>et al.</i> , 2006 [27] ^a	3.04 (1.45 to 6.39)	< 0.001
<i>Candida</i> species corrected colonisation index	Pittet <i>et al.</i> , 1994 [33]	4.01 (2.16 to 7.45)	< 0.001
Renal replacement therapy			
Haemodialysis duration/days at risk	Chow <i>et al.</i> , 2008 [30]	3.84 (1.75 to 8.4) ^a	< 0.001 ^a
		6.2 (2.67 to 14.4) ^B	< 0.0001 ^B
New-onset haemodialysis	Papaitou <i>et al.</i> , 2005 [35]	5.4 (2.5 to 11.8)	0.029
Haemofiltration	Jordà-Marcos <i>et al.</i> , 2007 [26] ^a	1.96 (1.06 to 3.62)	0.032
Infection/sepsis			
Hospital acquired	Michalopoulos <i>et al.</i> , 2003 [36]	9.4 (2.5 to 48.3)	< 0.001
Severe sepsis	León <i>et al.</i> , 2006 [27] ^a	7.68 (4.14 to 14.22)	< 0.001
Enteric bacteraemia	Chow <i>et al.</i> , 2008 [30]	3.45 (1.38 to 8.63) ^a	< 0.01 ^a
		3.43 (1.39 to 8.48) ^B	< 0.01 ^B
Mechanical ventilation			
Mechanical ventilation > 10 days	Michalopoulos <i>et al.</i> , 2003 [36]	28.2 (3.6 to 119.5)	< 0.001
Mechanical ventilation after day 3	McKinnon <i>et al.</i> , 2001 [32]	NR	≤ 0.05
Diabetes			
Diabetes	Papaitou <i>et al.</i> , 2005 [35]	2.8 (1.6 to 4.7)	0.053
Diabetes	Michalopoulos <i>et al.</i> , 2003 [36]	2.4 (1.3 to 4.3)	< 0.01
APACHE II or APACHE III score			
APACHE II score	Pittet <i>et al.</i> , 1994 [33]	1.03 (1.01 to 1.05)	0.007
APACHE III score	Ibáñez-Nolla <i>et al.</i> , 2004 [31]	1.03 (1.00 to 1.06)	0.004
Cardiopulmonary bypass time > 120 min	Michalopoulos <i>et al.</i> , 2003 [36]	8.1 (2.9 to 23.6)	< 0.01
Acute renal failure	Blumberg <i>et al.</i> , 2001 [29]	4.2 (2.1 to 8.3)	< 0.001
Broad spectrum antibiotics	Papaitou <i>et al.</i> , 2005 [35]	3.0 (1.8 to 5.0)	0.028
Red blood cell transfusion	Chow <i>et al.</i> , 2008 [30]	1.97 (0.98 to 3.99) ^a	0.06 ^a
		2.72 (1.33 to 5.58) ^B	< 0.01 ^B
Antifungal medication	Blumberg <i>et al.</i> , 2001 [29]	0.3 (0.1 to 0.6)	< 0.001
Central venous catheters	McKinnon <i>et al.</i> , 2001 [32]	NR	≤ 0.05
Diarrhoea	McKinnon <i>et al.</i> , 2001 [32]	NR	≤ 0.05
Peripheral catheter use	McKinnon <i>et al.</i> , 2001 [32]	NR	≤ 0.05

Sonuç

- Yoğun bakımda İnvaziv mantar hastalığı MORTALİTE ve MORBİDİTE nedeni
- Birden fazla risk faktörleri invaziv mantar hastalığı ile ilişkilidir
- Erken tedavi yaşam ile direkt ilişkili
- C.albians en sık etken
- Ampirik olarak en sık flukanazol kullanılmakta



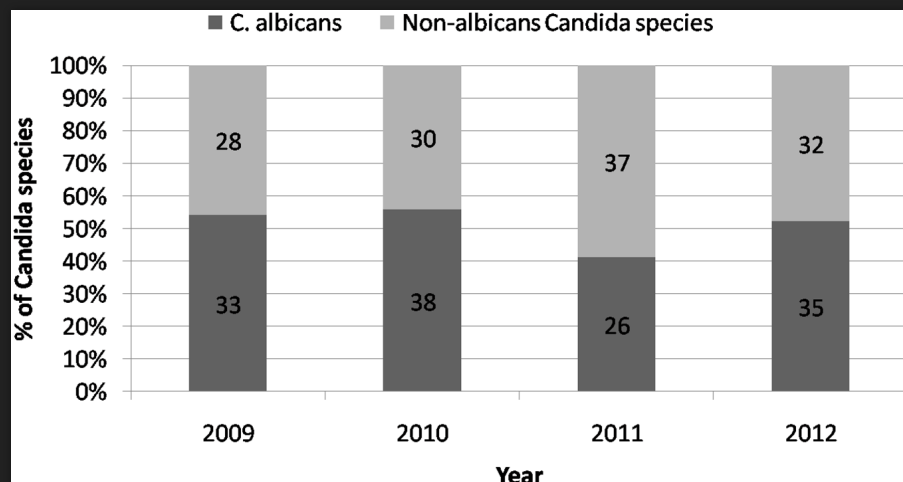
TEŞEKKÜRLER

Epidemiology and Prognostic Factors of Candidemia in Cancer Patients

Hung-Jen Tang^{1,2}, Wei-Lun Liu³, Hsin-Lan Lin⁴, Chih-Cheng Lai^{3*}

1 Department of Medicine, Chi Mei Medical Center, Tainan, Taiwan, **2** Department of Health and Nutrition, Chia Nan University of Pharmacy and Science, Tainan, Taiwan,

3 Department of Intensive Care Medicine, Chi Mei Medical Center, Liouying, Tainan, Taiwan, **4** Department of Nursing, Chi Mei Medical Center, Liouying, Tainan, Taiwan



	Number (%) of <i>Candida</i> species in each type of cancer			
	Head and neck cancer	Gastrointestinal tract cancer	Lung cancer	Hematological cancer
<i>C. albicans</i>	36 (46.2)	33 (50.8)	18 (51.4)	17 (63.0)
<i>C. tropicalis</i>	19 (24.4)	11 (16.9)	5 (14.3)	6 (22.2)
<i>C. parapsilosis</i>	13 (16.7)	10 (15.4)	8 (22.9)	2 (7.4)
<i>C. glabrata</i>	9 (11.5)	9 (13.8)	3 (8.6)	2 (7.4)
<i>C. guilliermondii</i>	1 (1.3)	2 (3.1)	1 (2.9)	0 (0.0)

Anti fungal tedavinin başlanmaması
Solunum yetmezliği mortalite nedeni

Türlere göre risk faktörleri

- C.parapsilosis
 - Genç yaş
 - Santral venöz kateter
 - Ekinokandin kullanımı
 - Kötü enfeksiyon kontrolü
- C.tropicalis
 - Nötropenik hematolojik hastalıklar