INFEZIONI DA MDR

Il ruolo del Laboratorio

LE MALATTIE INFETTIVE OGGI
San Fermo della Battaglia, 12 Settembre 2019
Auditorium Ospedale Sant'Anna – ASST Lariana

1- RAPIDITA' NEL FORNIRE UN REFERTO

2- FORNIRE UN REFERTO AGGIORNATO

3- SORVEGLIANZA ED EPIDEMIOLOGIA LOCALE

1- RAPIDITA’ NEL FORNIRE UN REFERTO

2- FORNIRE UN REFERTO AGGIORNATO

3- SORVEGLIANZA

1 – IDENTIFICAZIONE BATTERICA CON SPETTROMETRIA DI MASSA

2 – TEST RAPIDI BIOLOGIA MOLECOLARE PER RESISTENZE

3 – TEST RAPIDI IMMUNOCROMATOGRAFICI PER RESISTENZE

Diagnostica microbiologica della sepsi

Metodi tradizionali

- Giorno 1: prelievi ed incubazione dei flaconi.
- Giorno 2: positivizzazione dei flaconi
- Giorno 3: crescita delle colonie
- Giorno 4: identificazione batterica (biochimica) ed antibiogramma

Spettrometria di massa MALDI - TOF

- Giorno 1: prelievi ed incubazione dei flaconi
- Giorno 2: positivizzazione dei flaconi con identificazione batterica (spettrometria di massa) da flacone positivo.
- Giorno 3: antibiogramma.

Identificazione diretta da emocoltura positiva mediante spettrometria di massa (MALDI-TOF)

Position paper AMCLI sulla possibilità di *Identificazione diretta dei microrganismi da emocoltura positiva con il dispositivo Vitek® MS*

M. Sarti[1], C. Farina[2], F. Luzzaro[3], V. Sambri[4], A. Cellini[4], M. Cosentino[2], C. Mauri[3], D. Nozzi[1], M.F. Pedna[4], L. Pifferi[1] e P. Clerici[5]

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[2] USC Microbiologia e Virologia AO 'Papa Giovanni XXIII' di Bergamo
[3] USC Microbiologia e Virologia AO della Provincia di Lecco
[4] UO di Microbiologia AUSL della Romagna - *Pievesestina (Cesena)*
[5] Presidente AMCLI - UO Microbiologia AO di Legnano *(Milano)*

Position paper AMCLI sulla possibilità di *Identificazione diretta dei microrganismi da emocoltura positiva con il dispositivo Vitek® MS*

- L'utilizzo della tecnologia MALDI-TOF MS per l'identificazione diretta dei batteri aerobi da emocoltura positiva si è confermata essere una possibilità diagnostica di grande interesse, essendo in grado di fornire (soprattutto per le specie microbiche maggiormente critiche sul piano clinico-terapeutico) una importante anticipazione nell'identificazione batterica con livelli di accuratezza adeguati.

- Fra i protocolli operativi considerati nella nostra valutazione si sono in particolare dimostrati altamente performanti la Centrifugazione e Semina con incubazione del terreno solido per 4 ore e la **Semina Diretta con incubazione protratta per 5 ore.**

Mauri et al. BMC Infectious Diseases (2017) 17:749
DOI 10.1186/s12879-017-2851-5

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

Identification by mass spectrometry and automated susceptibility testing from positive bottles: a simple, rapid, and standardized approach to reduce the turnaround time in the management of blood cultures

Carola Mauri[1], Luigi Principe[1], Silvia Bracco[1,2], Elisa Meroni[1], Nicoletta Corbo[1], Beatrice Pini[1] and Francesco Luzzaro[1*]

BMC Infectious Diseases

Abstract

Background

Speeding up identification and antimicrobial susceptibility testing (AST) is of foremost importance in the management of blood cultures. Here, we describe a simple, rapid, and standardized approach based on a very short-term incubation on solid medium from positive blood cultures followed by MALDI-TOF mass spectrometry identification and automated AST. The aim of the study was to evaluate the impact in the laboratory practice of this new procedure with respect to that previously used (standard method) by comparing TAT and cumulative percentage of final reports to clinicians.

Results

Compared with the standard method, the new procedure gave correct organism identification at genus or species level in 98.4% of monomicrobial samples. AST resulted in 97.7% essential agreement and 98.1% categorical agreement, with 0.9% minor errors, 1.0% major error, and 1.5% very major errors. The mean turnaround time to identification and AST was 61.4 h by using the new method compared to 83.1 h by using standard procedure. Concerning cumulative percentages of final reports, approximately a third of results were available at 48 h from the check-in of the sample when using the new procedure, whereas no final reports were ready at the same time with the standard method.

BMC Infectious Diseases

Conclusions

The new procedure, based on rapid identification by MALDI-TOF MS and automated susceptibility testing performed following short-term incubation cultures on solid agar plates inoculated from positive blood cultures, represents a simple, standardized, and workflow-friendly approach that allows faster and reliable results essentially without additional hands-on processing time and costs. The most relevant conclusion from our experience is that the new procedure permits at least a one day reduction in TAT in the management of bloodstream infections, especially when the most frequently isolated pathogens are involved. The introduction of this method in the microbiology laboratory might facilitate an appropriate species-specific therapy with potential downstream impact on the development of resistance and improved patient outcomes.

Xpert® MRSA/SA BC

Rilevamento accurato dell'MRSA e dello SA in campioni di emocolture positive in circa un'ora

Il saggio Xpert MRSA/SA per emocoltura include reagenti per il rilevamento dell'MRSA e dell'SA e un controllo del trattamento del campione (SPC) per verificare l'efficacia del trattamento dei batteri bersaglio e per monitorare la presenza di inibitori nella reazione PCR. I ltest dicontrollo della sonda (PCC) verifica la reidratazione dei reagenti, il riempimento della provetta PCR nella cartuccia, l'integrità della sonda e la stabilità del colorante.

I primer e le sonde nel saggio Xpert MRSA/SA per emocoltura rilevano sequenze brevettate per la proteina A stafilococcica (*spa*), il gene per la resistenza alla meticillina/oxacillina (*mecA*) e il cromosoma nella cassetta stafilococcica *mec* (SCC*mec*) inserito nel sito *attB* cromosomico d'ellSA.

JCM
Journals.ASM.org

Comparison of the Next-Generation Xpert MRSA/SA BC Assay and the GeneOhm StaphSR Assay to Routine Culture for Identification of *Staphylococcus aureus* and Methicillin-Resistant *S. aureus* in Positive-Blood-Culture Broths

Blake W. Buchan,[a,b] Stephen Allen,[c] Carey-Ann D. Burnham,[d] Erin McElvania TeKippe,[d] Thomas Davis,[e] Michael Levi,[f] Donna Mayne,[g] Preeti Pancholi,[h] Ryan F. Relich,[c] Richard Thomson,[i] Nathan A. Ledeboer[a,b]

Medical College of Wisconsin, Milwaukee, Wisconsin, USA[a]; Dynacare Laboratories, Milwaukee, Wisconsin, USA[b]; Indiana University School of Medicine, Indianapolis, Indiana, USA[c]; Washington University School of Medicine, St. Louis, Missouri, USA[d]; Wishard Memorial Hospital, Indianapolis, Indiana, USA[e]; Montefiore Medical Center, Bronx, New York, New York, USA[f]; Sacred Heart Hospital, Pensacola, Florida, USA[g]; The Ohio State University Wexner Medical Center, Columbus, Ohio, USA[h]; NorthShore University HealthSystem, Evanston, Illinois, USA[i]

Journal of Clinical Microbiology March 2015 Volume 53 Number 3

Comparison of the Next-Generation Xpert MRSA/SA BC Assay and the GeneOhm StaphSR Assay to Routine Culture for Identification of *Staphylococcus aureus* and Methicillin-Resistant *S. aureus* in Positive-Blood-Culture Broths

A bloodstream infection with *Staphylococcus aureus*, including methicillin-resistant *S. aureus* (MRSA), is a serious condition that carries a high mortality rate and is also associated with significant hospital costs. The rapid and accurate identification and differentiation of methicillin-susceptible *S. aureus* (MSSA) and MRSA directly from positive blood cultures has demonstrated benefits in both patient outcome and cost-of-care metrics. We compare the next-generation Xpert MRSA/SA BC (Xpert) assay to the GeneOhm StaphSR (GeneOhm) assay for the identification and detection of *S. aureus* and methicillin resistance in prospectively collected blood culture broths containing Gram-positive cocci. All results were compared to routine bacterial culture as the gold standard. Across 8 collection and test sites, the Xpert assay demonstrated a sensitivity of 99.6% (range, 96.4% to 100%) and a specificity of 99.5% (range, 98.0% to 100%) for identifying *S. aureus*, as well as a sensitivity of 98.1% (range, 87.5% to 100%) and a specificity of 99.6% (range, 98.3% to 100%) for identifying MRSA. In comparison, the GeneOhm assay demonstrated a sensitivity of 99.2% (range, 95.2% to 100%) and a specificity of 96.5% (range, 89.2% to 100%) for identifying *S. aureus*, as well as a sensitivity of 94.3% (range, 87.5% to 100%) and a specificity of 97.8% (range, 96.1% to 100%) for identifying MRSA. Five of six cultures falsely reported as negative for MRSA by the GeneOhm assay were correctly identified as positive by the Xpert assay, while one culture falsely reported as negative for MRSA by the Xpert assay was correctly reported as positive by the GeneOhm assay.

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Diagnostic Microbiology and Infectious Disease 93 (2019) 120–124

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journal homepage: www.elsevier.com/locate/diagmicrobio

Clinical Studies

Influence of GeneXpert MRSA/SA test implementation on clinical outcomes of *Staphylococcus aureus* bacteremia — a before–after retrospective study

Haim Ben-Zvi [a,b], Genady Drozdinsky [c,1], Shiri Kushnir [d], Tomer Avni [b,e], Oded Scheuerman [b,f], Jihad Bisahra [b,e], Dafna Yahav [b,e,*]

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A B S T R A C T

Use of GeneXpert MRSA/SA in diagnostic algorithms of *Staphylococcus aureus* bacteremia may influence both patients' clinical outcomes and antibiotic stewardship. We evaluated these outcomes in a retrospective cohort before (1/6/2015–31/5/2016) and after (1/6/2016–31/8/2017) the introduction of the test in adult patients with Gram-positive cocci in clusters in blood cultures. We included 254 patients (125 preintervention, 129 postintervention). No significant difference in 30-day mortality or clinical success was demonstrated between periods. Appropriate antibiotic therapy rates were significantly higher in the postintervention group, and vancomycin use was significantly reduced (80.6% vs 53.6%, $P < 0.01$; 2.3 ± 0.38 vs 2.98 ± 1.02 defined daily doses/100 patient days, $P = 0.026$, respectively). Appropriate beta-lactam use was also significantly higher (56.7% postintervention vs 23.1% preintervention, $P < 0.01$). Use of GeneXpert MRSA/SA test has a positive effect on antibiotic stewardship measures, though it has no significant effect on clinical outcomes including mortality in this fatal infection.

Diagnostic Microbiology and Infectious Disease 93 (2019) 120–124

Cepheid – GeneXpert Carba-R Assay

bla_{KPC}	KPC
bla_{VIM}	VIM
bla_{NDM-1}	NDM

Risultato in circa 1 ora

bla_{OXA-48}	bla_{IMP-1}	
OXA-48		
OXA-162	IMP-1 subgroup	
OXA-163	IMP-1	IMP-6
OXA-181	IMP-3	IMP-25
OXA-204	IMP-10	IMP-30

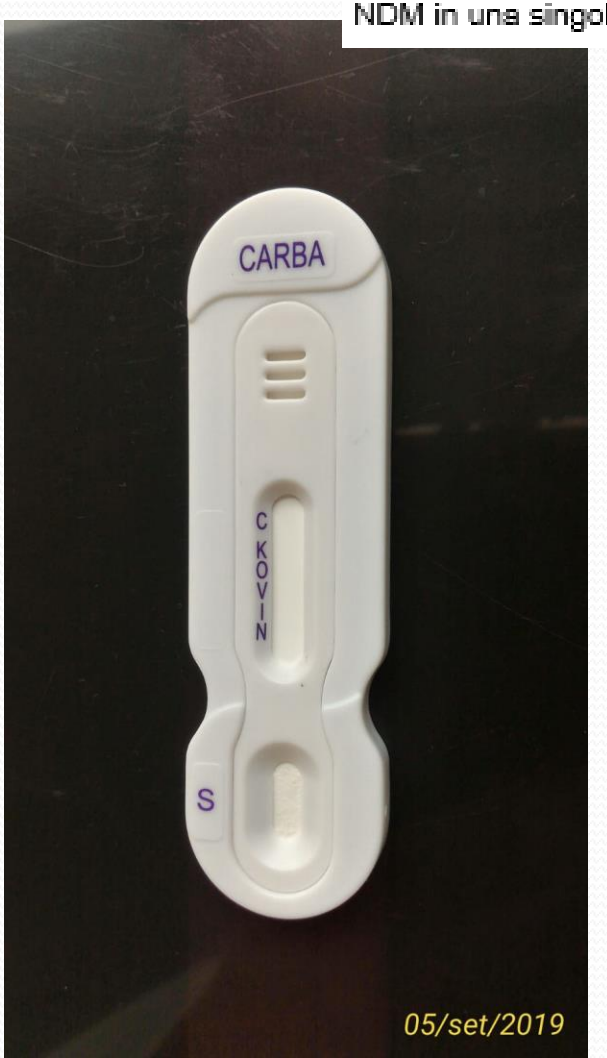
NG-Test CARBA 5

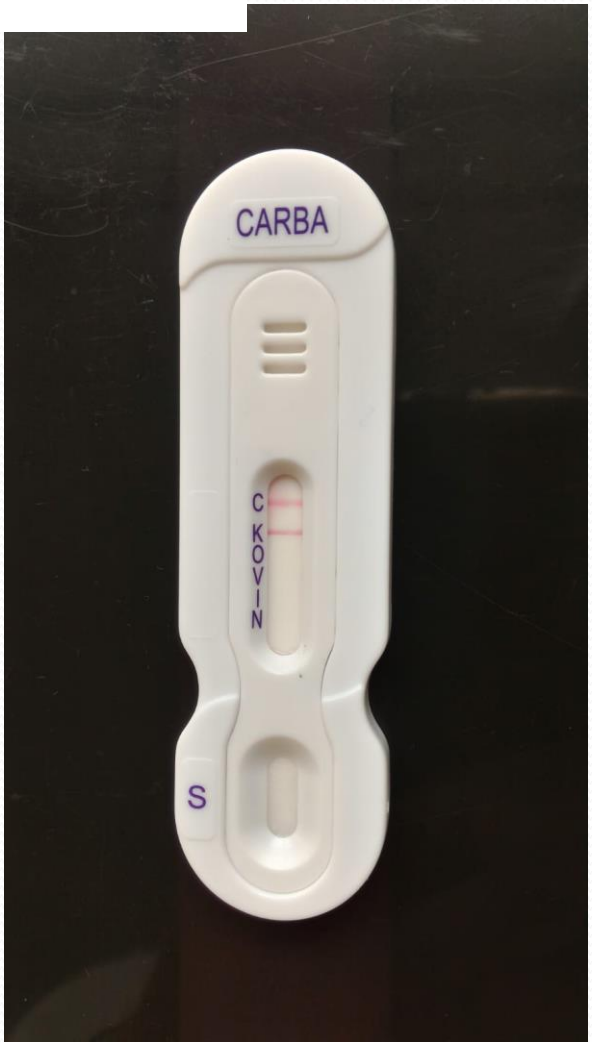
Solo per uso diagnostico in vitro

Test rapido per la ricerca delle carbapenemasi* KPC, OXA, VIM, IMP e NDM *nelle colonie batteriche da coltura

Solo per uso professionale

NG-Test CARBA 5 è un test immunocromatografico rapido, con lettura visiva, per la rilevazione delle 5 carbapenemasi KPC, OXA, VIM, IMP e NDM in una singola colonia batterica ottenuta da coltura.





Antimicrob Agents Chemother. 2019 Jun 24;63(7). pii: e00550-19. doi: 10.1128/AAC.00550-19. Print 2019 Jul.

Simplified Testing Method for Direct Detection of Carbapenemase-Producing Organisms from Positive Blood Cultures Using the NG-Test Carba 5 Assay.

Giordano L[1], Fiori B[1,2,3], D'Inzeo T[1,2], Parisi G[4], Liotti FM[1], Menchinelli G[1], De Angelis G[1], De Maio F[1], Luzzaro F[5], Sanguinetti M[6,2], Posteraro B[#7,8], Spanu T[#1,2].

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Antimicrob Agents Chemother. 2019 Jun 24;63(7).

ABSTRACT

We directly tested 484 organisms from clinical samples (n=310) and simulated (n=174) positive blood cultures using NG-Test Carba 5 assay for carbapenemase-producing *Enterobacterales* detection. The assay identified all but 4 of the KPC (170/171), OXA-48-like (22/22), VIM (19/21), and NDM (14/15) producers with no false positives. Among the clinical *Klebsiella pneumoniae* organisms tested, 122 of 123 KPC, 1 of 1 OXA-48-like, and 1 of 2mVIM producers were detected by the assay. Some VIM and NDM producers yelded scant but still-readable bands with the assay. No organisms produced the IMPs that the assay was designed to detect.

Antimicrob Agents Chemother. 2019 Jun 24;63(7).

1- RAPIDITA' NEL FORNIRE UN REFERTO

2- FORNIRE UN REFERTO AGGIORNATO ED ATTUALE

3- SORVEGLIANZA ed EPIDEMIOLOGIA LOCALE

EUCAST

EUROPEAN COMMITTEE ON ANTIMICROBIAL SUSCEPTIBILITY TESTING

European Society of Clinical Microbiology and Infectious Diseases

http://www.eucast.org/

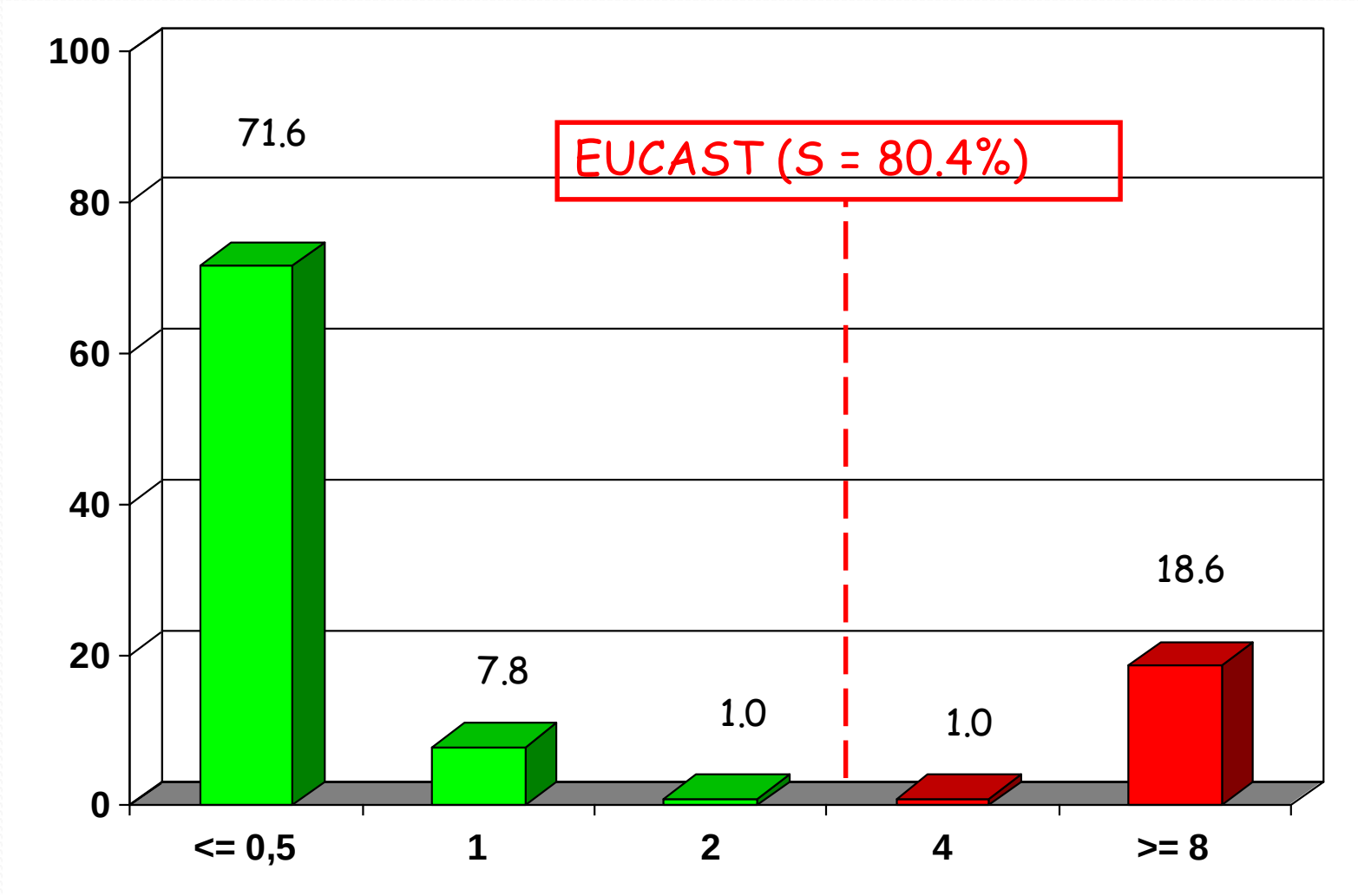
VECCHI ANTIBIOTICI

- COLISTINA
- FOSFOMICINA

NUOVI ANTIBIOTICI

- CEFTAZIDIME-AVIBACTAM
- CEFTOLOZANO-TAZOBACTAM

K. pneumoniae KPC + (n=102): sensibilità alla colistina



Sorveglianza nazionale 2011

Colistin resistance superimposed to endemic carbapenem-resistant *Klebsiella pneumoniae*: a rapidly evolving problem in Italy, November 2013 to April 2014

M. Monaco[1,2], T Giani[2,3], M Raffone[1,4], F Arena[3], A Garcia-Fernandez[1], S Pollini[3], Network EuSCAPE-Italy[5], H Grundmann[6], A Pantosti (annalisa.pantosti@iss.it)[1], G M Rossolini[3,7,8]

www.eurosurveillance.org published on 23 October 2014

Outbreak of Colistin-Resistant, Carbapenemase-Producing *Klebsiella pneumoniae*: Are We at the End of the Road?

David van Duin,[a] Yohei Doi[b]

Journal of Clinical Microbiology | October 2015 Volume 53 Number 10

Large Nosocomial Outbreak of Colistin-Resistant, Carbapenemase-Producing *Klebsiella pneumoniae* Traced to Clonal Expansion of an *mgrB* Deletion Mutant

Tommaso Giani,[a] Fabio Arena,[a] Guendalina Vaggelli,[b] Viola Conte,[a] Adriana Chiarelli,[a] Lucia Henrici De Angelis,[a] Rossella Fornaini,[c] Maddalena Grazzini,[d] Fabrizio Niccolini,[d] Patrizia Pecile,[b] Gian Maria Rossolini[a,b,e,f]

Antimicrobial susceptibility testing of colistin – evaluation of seven commercial MIC products against standard broth microdilution for *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and *Acinetobacter* spp.

E. Matuschek*, J. Åhman, C. Webster, G. Kahlmeter

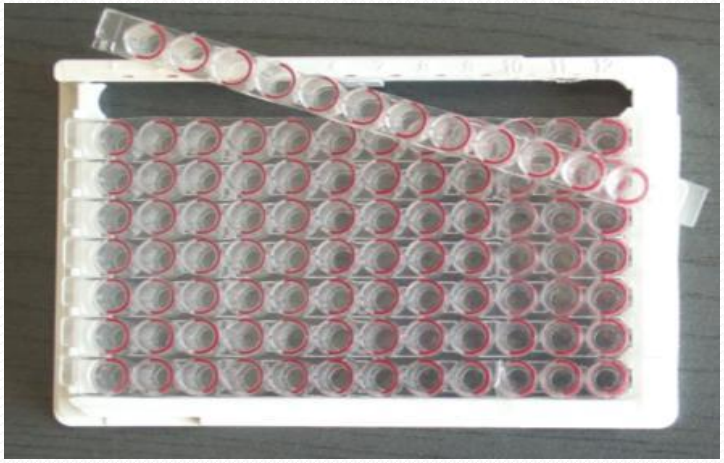
EUCAST Development Laboratory, Växjö, Sweden

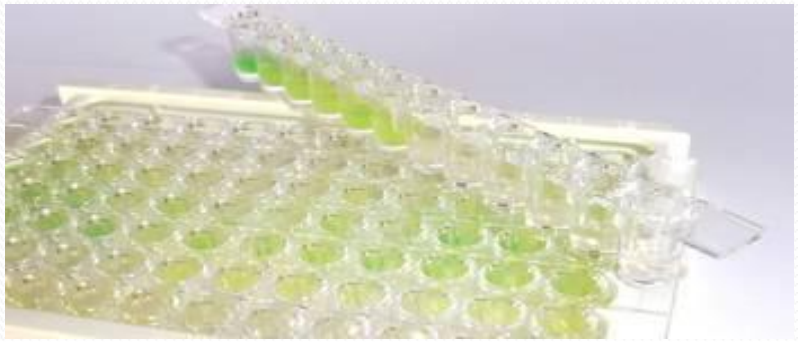
Results: The colistin BMD products correlated well with reference tests, in particular for Sensititre and the two MICRONAUT products (essential agreement ≥96%: 66/69 (96%, CI 88–99%), 72/75 (96%, CI 88–99%) and 74/75 (99%, CI 92–100%)). The results were somewhat poorer for the BMD products SensiTest and UMIC: EA 88% (51/58, CI 77–95%) and 82% (61/74, CI 72–89%), respectively), and considerably poorer for the gradient tests (EA 43–71% depending on gradient test and Mueller-Hinton agar manufacturer). The gradient tests generally underestimated colistin MICs, resulting in a significant number of false susceptible results (9–18 of total 75 tests, compared with 1–3 for the BMD products).

I test di microdiluizione in brodo correlano bene con i test di riferimento, in particolare nel caso di Sensititre e Micronaut.

Risultati considerevolmente più bassi sono stati ottenuti nel caso dei test di diffusione con gradiente (essential agreement tra il 43 e il 71%). Questi test generalmente sottostimano la MIC per la colistina, determinando un significativo numero di risultati falsamente sensibili.

Sistemi di microdiluizione in brodo per singolo antibiotico





1	2	3	4	5	6	7	8	9	10	11	12
GC	COL 0.0625	COL 0.125	COL 0.25	COL 0.5	COL 1	COL 2	COL 4	COL 8	COL 16	COL 32	COL 64

Discrepancies in fosfomycin susceptibility testing of KPC-producing *Klebsiella pneumoniae* with various commercial methods

Giulio Camarlinghi [a], Eva Maria Parisio [a], Alberto Antonelli [b], Maria Nardone [a], Marco Coppi [b], Tommaso Giani [b], Romano Mattei [a], Gian Maria Rossolini [b,c,*]

Fosfomycin susceptibility testing with Sensititre, Vitek2, Etest, Mic Strip Test and disk diffusion methodologies was compared versus reference agar dilution method (AD) with 78 clinical isolates of KPC-producing *Klebsiella pneumoniae*. All methodologies showed a Categorical Agreement and Essential Agreement of ≤69% and ≤72%, respectively, revealing a very low concordance with AD.

Tutte le metodologie testate (Sensititre, Vitek 2, Etest, MIC Strip Test, diffusione da disco) mostravano una bassa concordanza rispetto al metodo di riferimento (agar- diluizione).

In particolare, Sensititre ed Etest avevano alte percentuali di VME e presumibilmente tendono a sottostimare i valori.

Vitek 2, il MIC Strip Test e la diffusione da disco avevano alte percentuali di ME e quindi tendono a sovrastimare i valori di MIC.

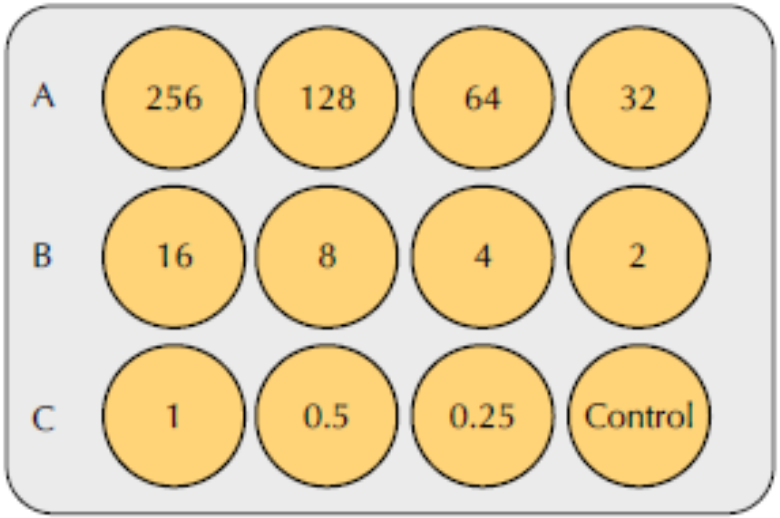
Diagnostic Microbiology and Infectious Disease xxx (2018) xxx–xxx

AD Fosfomycin 0.25-256

Device for fosfomycin susceptibility testing with the agar dilution method.

CONFIGURATION

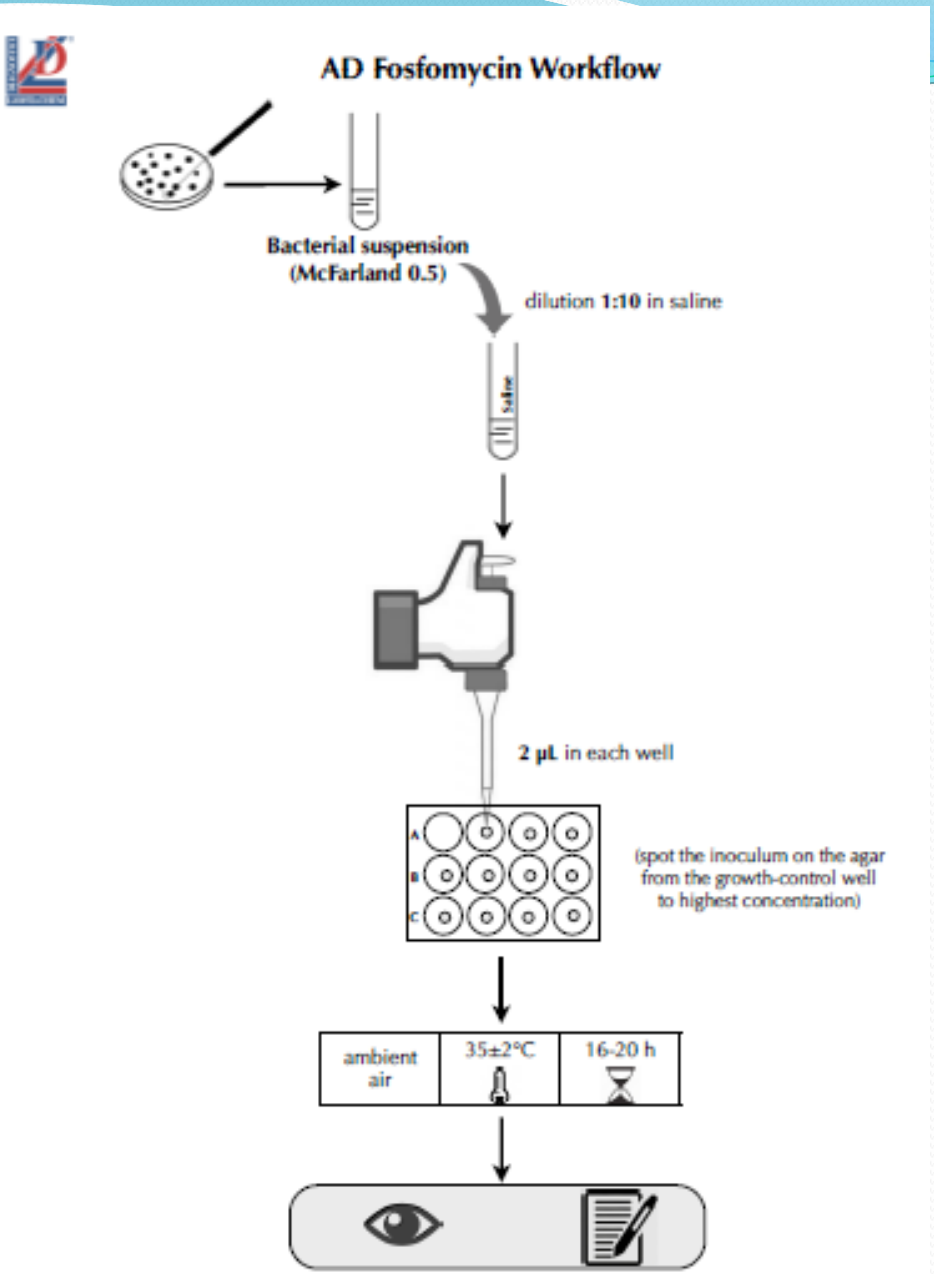
Fosfomycin MIC range: 0.25 - 256 µg/mL



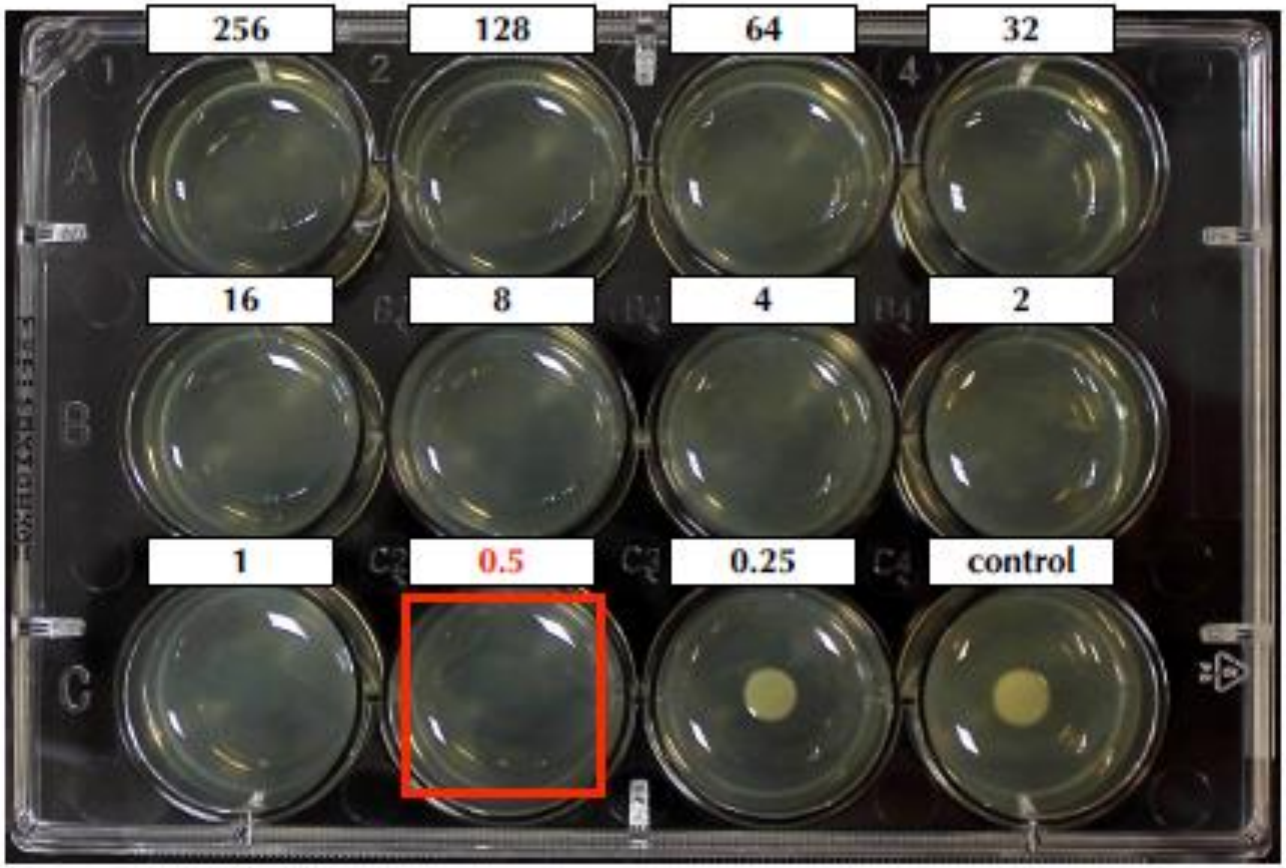
Growth-control: No antimicrobial agent in the well.

PRINCIPLE OF THE METHOD

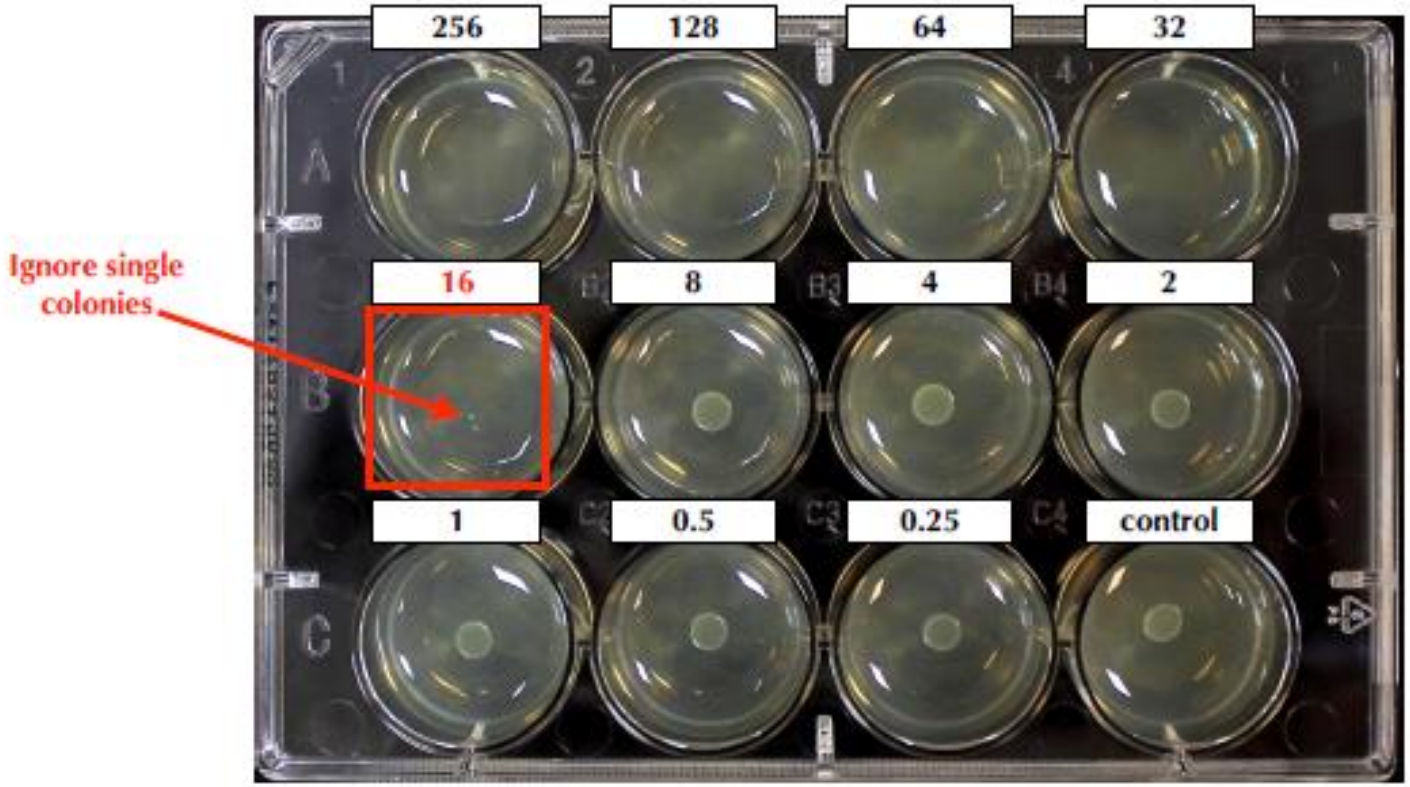
All wells are inoculated with a standardized microbial suspension. After incubation the MIC result is read and interpreted.


AD Fosfomycin Workflow
Bacterial suspension
(McFarland 0.5)
dilution 1:10 in saline
saline
2 µL in each well
A
B
C
(spot the inoculum on the agar from the growth-control well to highest concentration)
ambient air
35±2°C
16-20 h

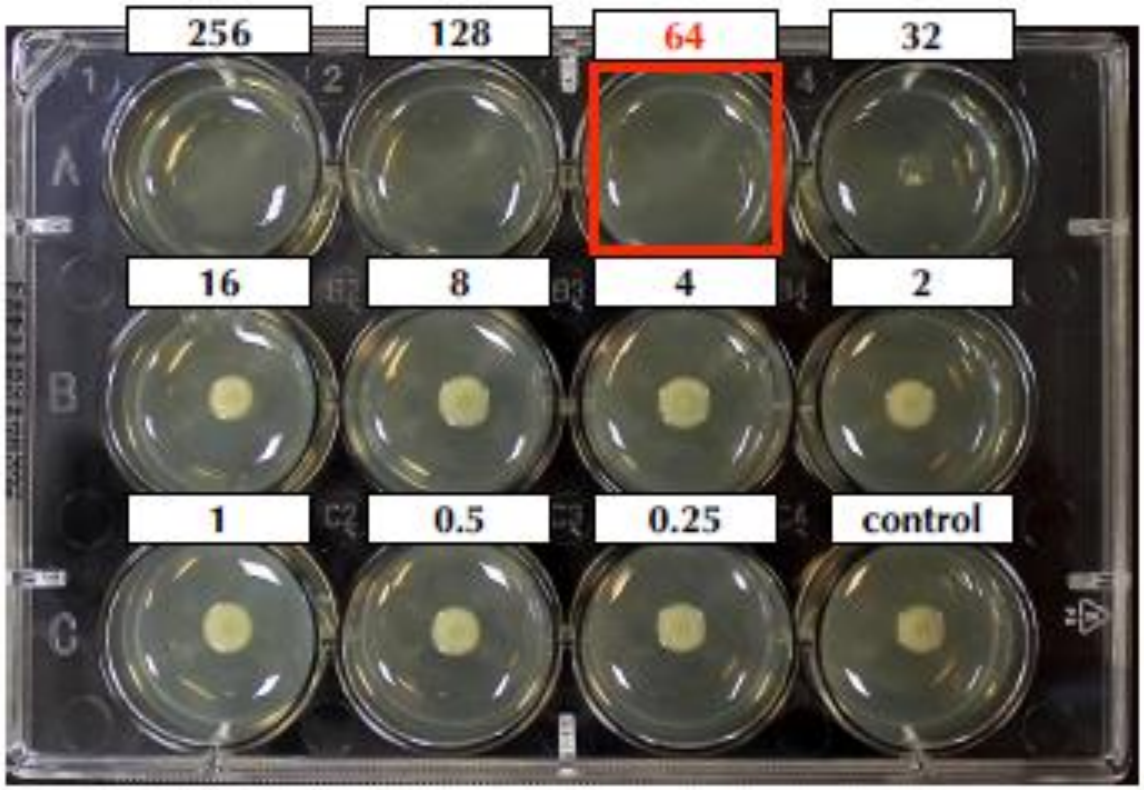
Fosfomycin concentration (µg/mL)



MIC = 0.5 µg/mL



MIC = 16 µg/mL



MIC = 64 µg/mL

Enterobacterales*

Expert Rules and Intrinsic Resistance Tables

Miscellaneous agents	MIC breakpoints (mg/L)			Disk content (µg)	Zone diameter breakpoints (mm)		
	S ≤	R >	ATU		S ≥	R <	ATU
Chloramphenicol	8	8		30	17	17	
Colistin[1]	2	2			Note[A]	Note[A]	
Daptomycin	-	-			-	-	
Fosfomycin iv	32[2]	32[2]		200[B]	24[C,D]	24[C,D]	
Fosfomycin oral (uncomplicated UTI only)	32[2]	32[2]		200[B]	24[C,D]	24[C,D]	
Fusidic acid	-	-			-	-	
Metronidazole	-	-			-	-	
Nitrofurantoin (uncomplicated UTI only), *E. coli*	64	64		100	11	11	
Nitroxoline (uncomplicated UTI only), *E. coli*	16	16		30	15	15	
Rifampicin	-	-			-	-	
Spectinomycin	-	-			-	-	
Trimethoprim (uncomplicated UTI only)	2	4		5	18	15	
Trimethoprim-sulfamethoxazole[3]	2	4		1.25-23.75	14	11	

Enterobacterales*

Expert Rules and Intrinsic Resistance Tables

Miscellaneous agents

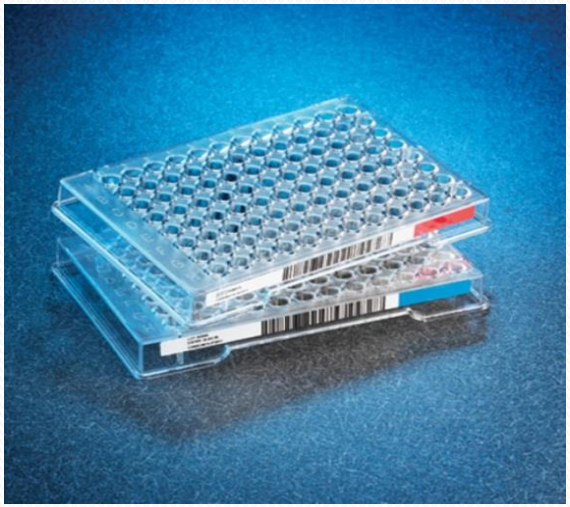
EUCAST Clinical Breakpoint Tables v. 9.0, valid from 2019-01-01

Cephalosporins[1]	MIC breakpoints (mg/L)			Disk content (µg)	Zone diameter breakpoints (mm)		
	S ≤	R >	ATU		S ≥	R <	ATU
Cefaclor	-	-			-	-	
Cefadroxil (uncomplicated UTI only)	16	16		30	12	12	
Cefalexin (uncomplicated UTI only)	16	16		30	14	14	
Cefazolin	-	-			-	-	
Cefepime	1	4		30	27	24	
Cefixime (uncomplicated UTI only)	1	1		5	17	17	
Cefotaxime	1	2		5	20	17	
Cefoxitin (screen)[2]	NA	NA		30	19	19	
Cefpodoxime (uncomplicated UTI only)	1	1		10	21	21	
Ceftaroline	0.5	0.5		5	23	23	22-23
Ceftazidime	1	4		10	22	19	
Ceftazidime-avibactam	8[3]	8[3]		10-4	13	13	
Ceftibuten (UTI only)	1	1		30	23	23	
Ceftobiprole	0.25	0.25		5	23	23	
Ceftolozane-tazobactam	1[4]	1[4]		30-10	23	23	
Ceftriaxone	1	2		30	25	22	

NUOVI ANTIBIOTICI E SPETTRO D'AZIONE

Antibiotico	ESBL	CRE	MDR Pseudomonas	MDR Acinetobacter
Cefiderocol	SI	KPC e NDM	SI	SI
Ceftolozano/Tazobactam	SI	NO	SI	NO
Ceftazidime/Avibactam	SI	KPC e OXA-48 (NO MBL)	SI	NO
Ceftarolina/Avibactam	SI	KPC e OXA-48 (NO MBL)	NO	NO
Aztreonam/Avibactam	SI	MBL	SI	NO
Meropenem/Vaborbactam	SI	KPC	NO	NO
Imipenem/Relebactam	SI	KPC e OXA-48 (NO MBL)	NO	NO
Plazomicina	SI	KPC (NO NDM)	NO	NO
Everacyclina	SI	KPC	NO	SI

Microdiluizione in brodo



Pannello Gram-negativi MDR

	1	2	3	4	5	6	7	8	9	10	11	12
A	MERO 0.12	MERO 0.25	MERO 0.5	MERO 1	MERO 2	MERO 4	MERO 8	MERO 16	AMI 4	AMI 8	AMI 16	AMI 32
B	GEN 0.5	GEN 1	GEN 2	GEN 4	GEN 8	AZT 0.5	AZT 1	AZT 2	AZT 4	AZT 8	AZT 16	AZT 32
C	CIP 0.06	CIP 0.12	CIP 0.25	CIP 0.5	CIP 1	CIP 2	P/T4 1/4	P/T4 2/4	P/T4 4/4	P/T4 8/4	P/T4 16/4	P/T4 32/4
D	AUGC 4/2	AUGC 8/2	AUGC 16/2	AUGC 32/2	AUGC 64/2	C/T 0.5/4	C/T 1/4	C/T 2/4	C/T 4/4	C/T 8/4	C/T 16/4	C/T 32/4
E	COL 0.25	COL 0.5	COL 1	COL 2	COL 4	COL 8	FOT 0.5	FOT 1	FOT 2	FOT 4	FOT 8	TOB 1
F	TGC 0.25	TGC 0.5	TGC 1	TGC 2	TGC 4	SXT 1/19	SXT 2/38	SXT 4/76	SXT 8/152	TOB 2	TOB 4	TOB 8
G	TAZ 0.5	TAZ 1	TAZ 2	TAZ 4	TAZ 8	TAZ 16	CZA 0.5/4	CZA 1/4	CZA 2/4	CZA 8/4	CZA 16/4	NEG
H	IMI 0.5	IMI 1	IMI 2	IMI 4	IMI 8	IMI 16	ETP 0.12	ETP 0.25	ETP 0.5	ETP 1	ETP 2	POS

1- RAPIDITA' NEL FORNIRE UN REFERTO

2- FORNIRE UN REFERTO AGGIORNATO ED ATTUALE

3- SORVEGLIANZA ed EPIDEMIOLOGIA LOCALE

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JUNE 2010, VOL. 31, NO. 6

ORIGINAL ARTICLE

Potential Role of Active Surveillance in the Control of a Hospital-Wide Outbreak of Carbapenem-Resistant *Klebsiella pneumoniae* Infection

Debby Ben-David, MD; Yasmin Maor, MD; Nathan Keller, MD; Gili Regev-Yochay, MD; Ilana Tal, MS; Dalit Shachar, RN; Amir Zlotkin, PhD; Gill Smollan, MD; Galia Rahav, MD

The optimal timing of active surveillance and the interval between the performance of one culture and the next are not well defined.

Most institutions obtain admission culture samples as well as weekly culture samples.

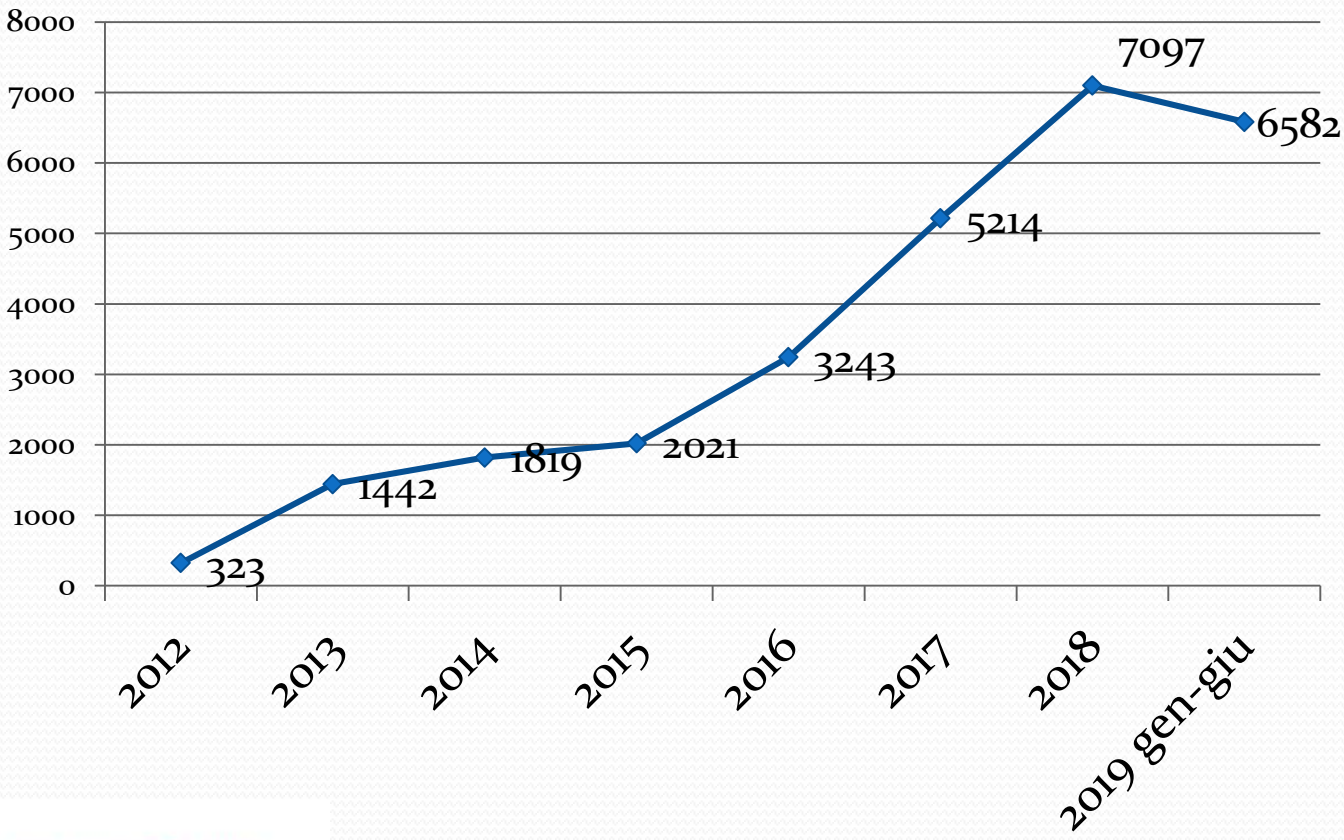
INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY APRIL 2014, VOL. 35, NO. 4

ORIGINAL ARTICLE

Clinical Microbiology Costs for Methods of Active Surveillance for *Klebsiella pneumoniae* Carbapenemase–Producing Enterobacteriaceae

Amy J. Mathers, MD;[1,2] Melinda Poulter, PhD;[2] Dawn Dirks, MS;[2] Joanne Carroll, BS;[2]
Costi D. Sifri, MD;[1] Kevin C. Hazen, PhD[2,a]

Tampone rettale screening CRE



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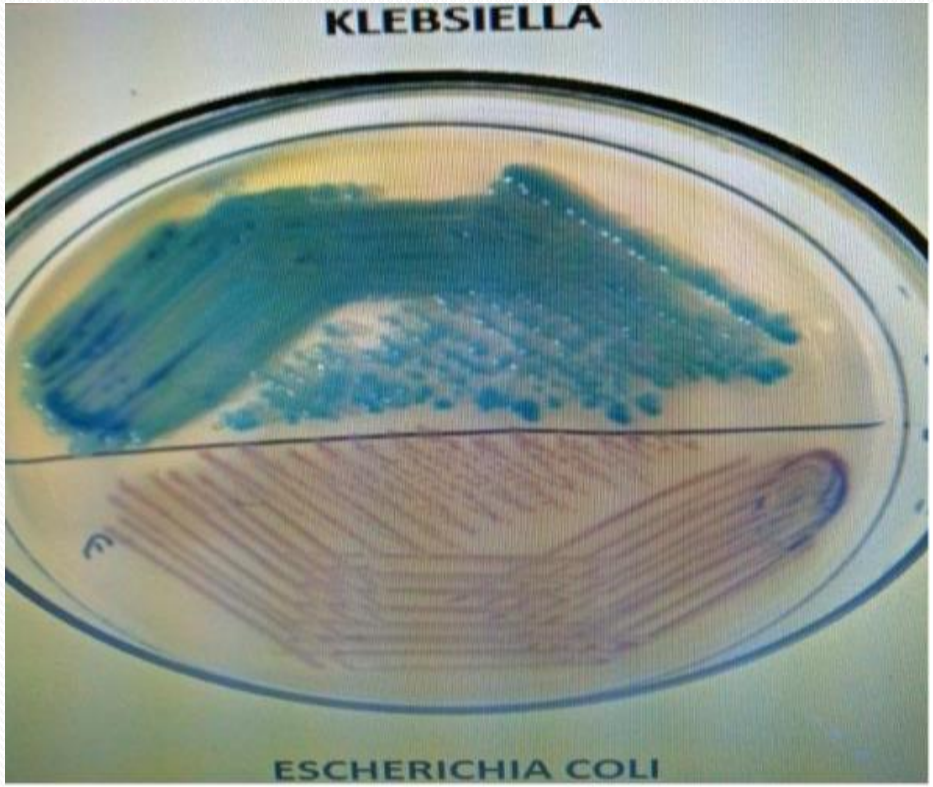
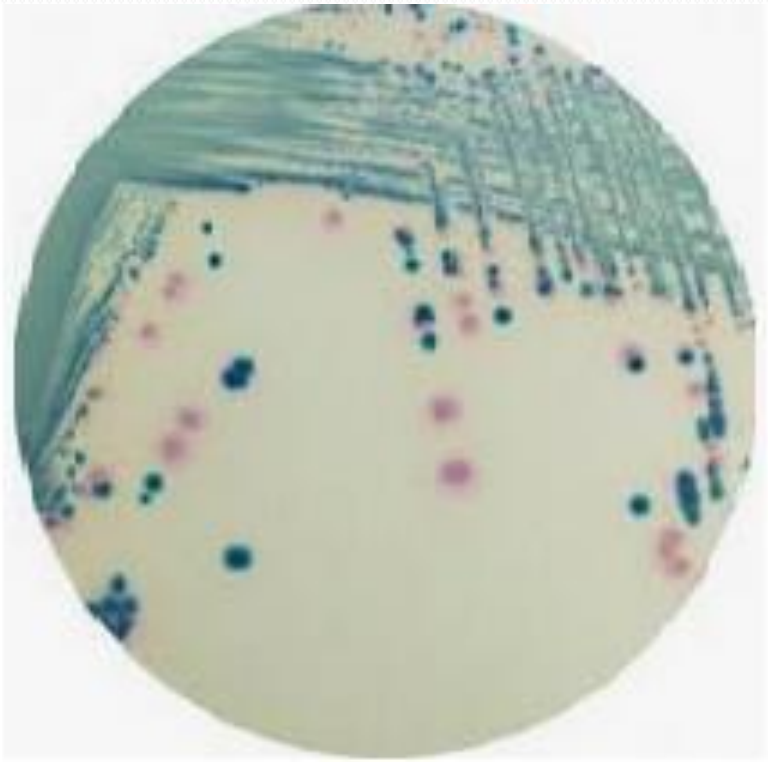
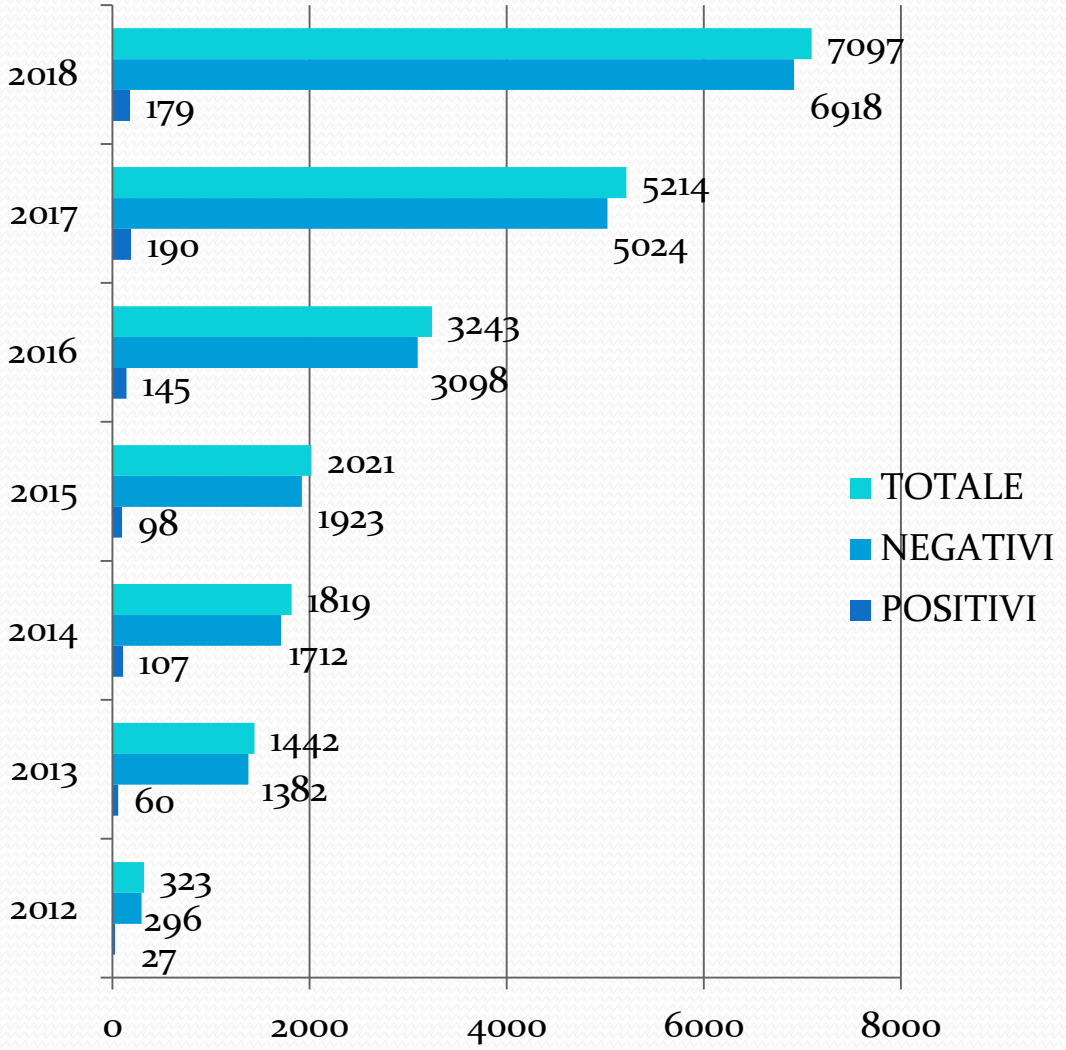

KLEBSIELLA
ESCHERICHIA COLI



WASP

Walk away specimen processor

Tampone rettale screening CRE



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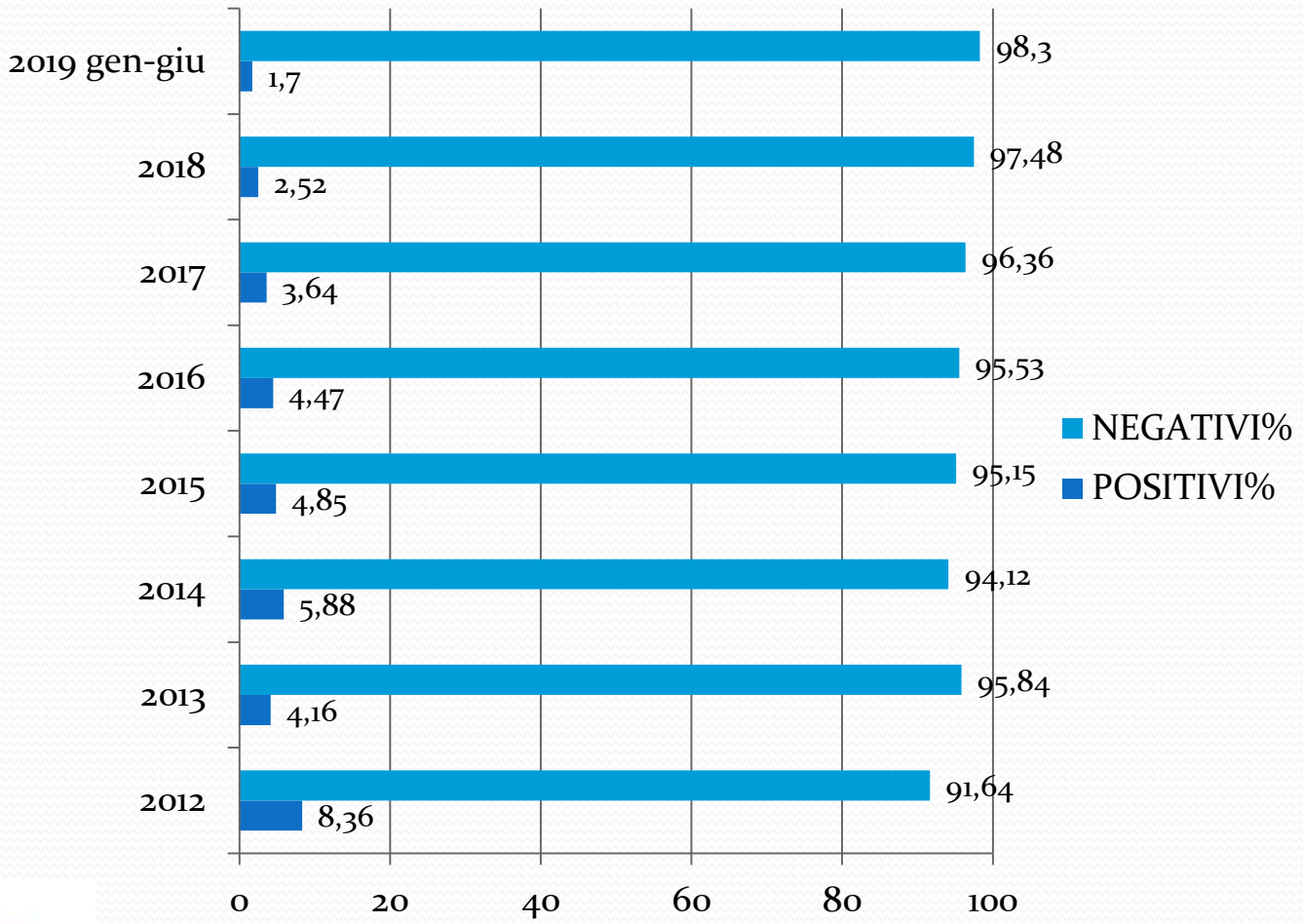
Tampone rettale screening CRE



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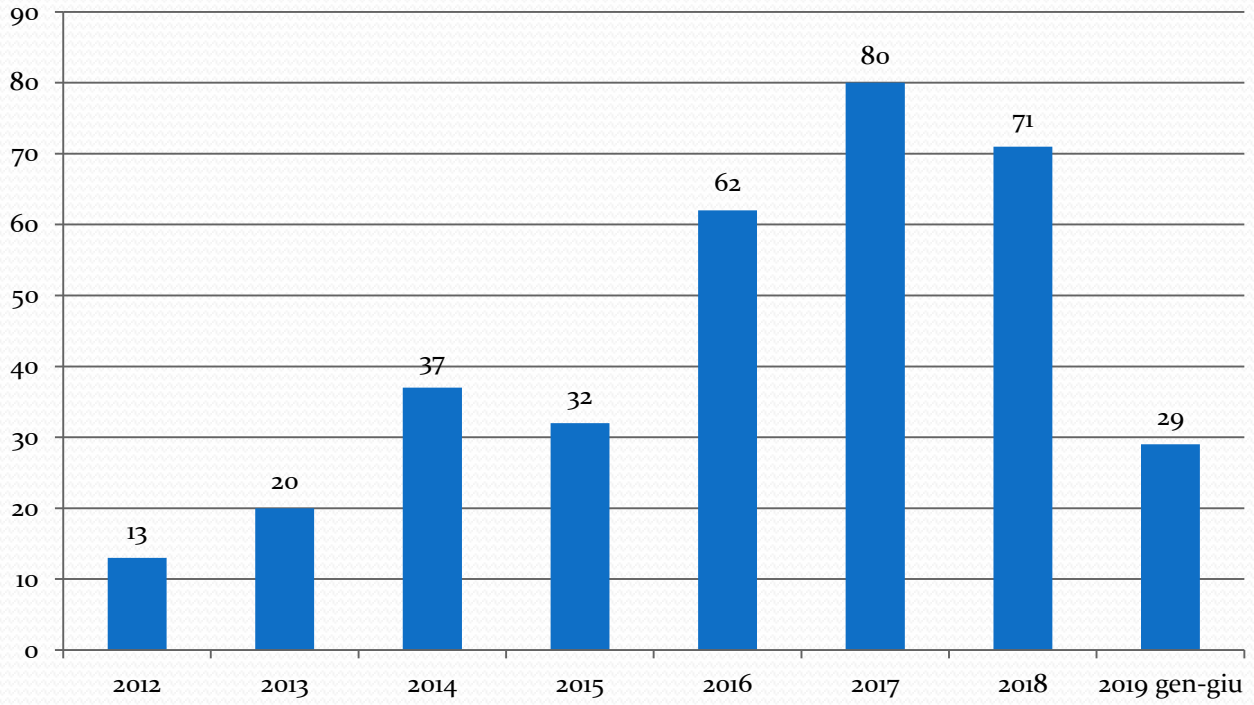
Tampone rettale screening CRE

PAZIENTI POSITIVI



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Colonizzazione intestinale da *Klebsiella peumoniae* produttore di carbapenemasi e rischio di infezione da germi *multi-drug resistant* (MDR): studio retrospettivo.

Sala E.*, Mauri R., Cimetti S.°, Bonvini L.°, Busnelli M.°, Santoro D.
U.O. Malattie Infettive, U.O.S. Microbiologia*, Uffico Epidemiologico Aziendale° – A.O. Sant'Anna - COMO

INTRODUZIONE La colonizzazione intestinale da *K. pneumoniae* produttore di carbapenemasi (KPC) è un problema emergente in ambito ospedaliero. In Europa, Grecia (>50%) e Italia (25-50%) presentano, in base ai dati EARSS 2011-2014, le maggiori percentuali di resistenza di *K. pneumoniae* ai carbapenemi. Presso l'Ospedale Sant'Anna di Como, il primo riscontro di KPC risale all'agosto 2010. Dall'agosto 2012 è in atto una sorveglianza attiva, con tampone rettale al momento del ricovero, per il rilievo dei pazienti colonizzati a livello intestinale con *Enrterobacteriaceae* produttori di carbapenemasi. In questo studio ci proponiamo di definire se i soggetti portatori di KPC mostrano un aumentato rischio per infezioni e/o colonizzazioni sostenute da altri germi MDR.

METODI Lo studio caso-controllo è riferito al periodo 1 gennaio – 31 dicembre 2014, arruolando 34 pazienti risultati colonizzati allo screening e 34 pazienti di controllo negativi allo screening. I tamponi rettali sono stati eseguiti al momento del ricovero e la colonizzazione da KPC è stata sospettata in presenza di inibizione della azione di meropenem (alone di inibizione della crescita <30mm) su agar Mc Conkey. Le colonie sospette sono state identificate con il sistema Vitek 2 (bioMerieux) e con lo stesso sistema è stato eseguito l'antibiogramma secondo le regole EUCAST. La produzione di carbapenemasi è stata confermata con test fenotipici: test di Hodge modificato e Metallo-beta lattammasi/KPC test (Rosco Diagnostica).

RISULTATI 26 pazienti positivi allo screening per KPC hanno presentato una colonizzazione o infezione da germi MDR: *P. aeruginosa* (10 isolati), MRSA (4), *E. coli* ESBL (6), *C. difficile* (2), *P. mirabilis* ESBL (3), *A. baumannii* (3) e VRE (1). 8 pazienti positivi allo screening per KPC non presentavano confezioni o colonizzazioni da MDR, mentre 8 pazienti negativi allo screening per KPC mostravano colonizzazione o infezione da MDR: *P. aeruginosa* (1 isolato), MRSA (3), *E. coli* ESBL (3), *C. difficile* toxin positive (2), *P. mirabilis* ESBL (1), *K. pneumoniae* ESBL (1). 26 pazienti negativi allo screening per KPC risultano negativi anche per colonizzazione e infezioni da MDR.

CONCLUSIONI La colonizzazione intestinale da KPC è un fattore di rischio per la presenza di altri MDR: Odd Ratio=17 e p= 0,001. In base ai dati raccolti nel nostro studio caso-controllo, c'è una correlazione altamente significativa tra colonizzazione intestinale da KPC e presenza di germi MDR. Questi risultati confermano l'utilità della sorveglianza attiva in ambiente ospedaliero, allo scopo di isolare i pazienti e prevenire la diffusione ospedaliera di KPC ed altri MDR.

Nosocomial Neonatal Outbreak of *Serratia marcescens* – Analysis of Pathogens by Pulsed Field Gel Electrophoresis and Polymerase Chain Reaction

K. Steppberger, S. Walter, M.C. Claros, F.B. Spencker, W. Kiess, A.C. Rodloff, C Vogtmann

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Outbreaks of *Serratia marcescens* in neonatal and pediatric intensive care units: Clinical aspects, risk factors and management

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Rapidly controlled outbreak of *Serratia marcescens* infection/colonisations in a neonatal intensive care unit, Pescara General Hospital, Pescara, Italy, April 2011

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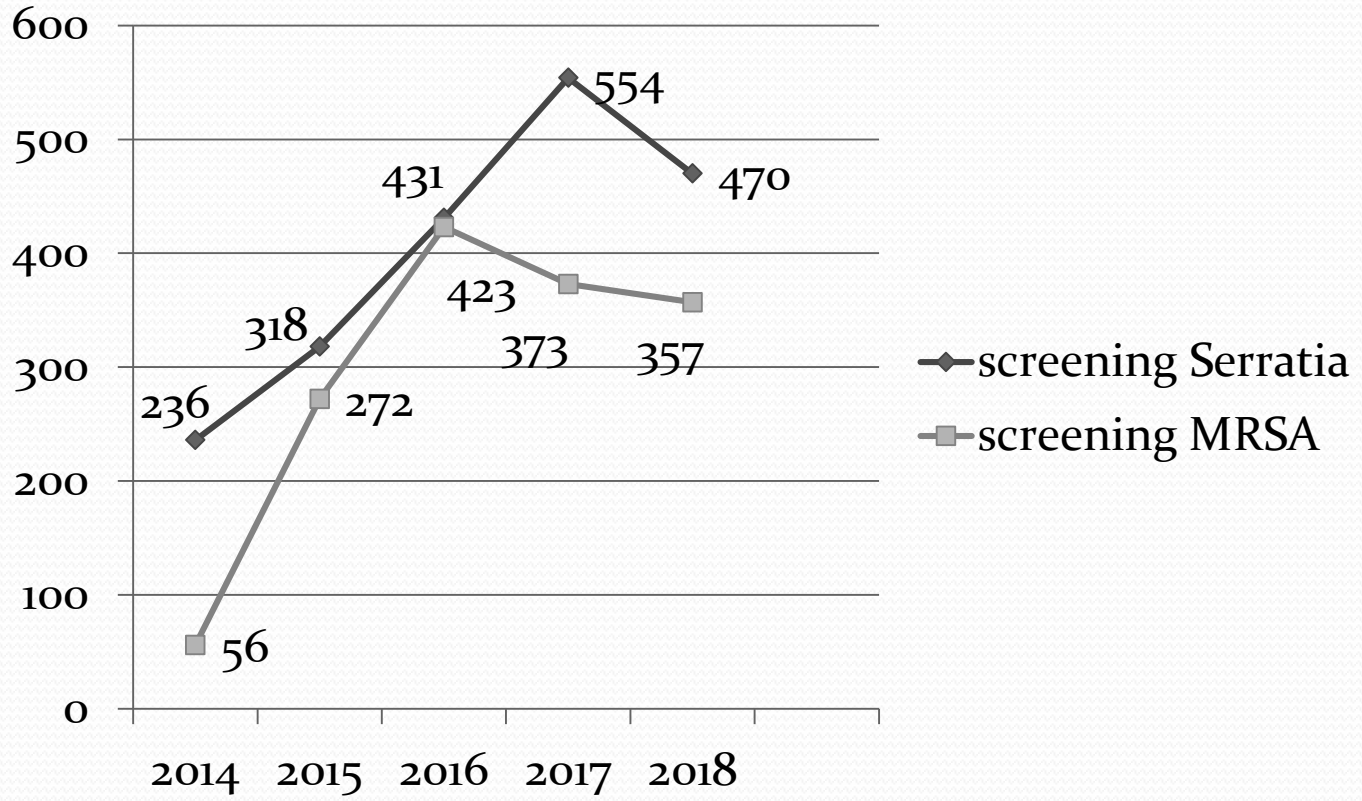
Euro Surveill. 2011;16(24):pii=19892. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19892

Article published on 16 June 2011

TERAPIA INTENSIVA NEONATALE
Tampone faringeo e rettale screening Serratia
Tampone nasale screening MRSA



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