GAVeCeLT

XII PICC Day

Riunione monotematica annuale dedicata ai PICC e ai Midline

Palazzo della Cultura e dei Congressi
Piazza della Costituzione 4

BOLOGNA

3 - 4 dicembre 2018

asur marche azienda sanitaria unica regionale area vasta n. 3

ISO 9001 BUREAU VERITAS Certification

Member of CSQ Federation RINA ISO 9001:2008 Sistema Qualità Certificato

CSQ IQNet ISO 9001:2008

XII° PICC DAY

4 Dicembre 2018

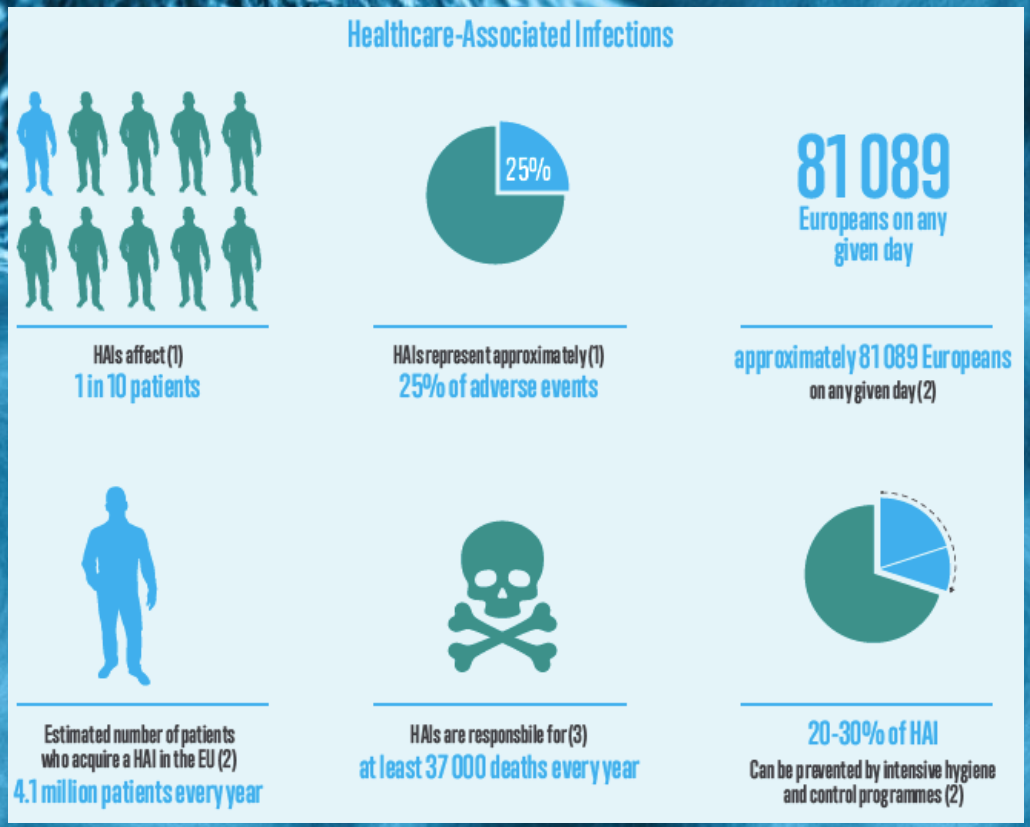
I PICC sotto accusa: aumento o diminuzione del rischio di infezioni da catetere

Dott. Elisei Daniele

U.O. Anestesia e Rianimazione

ASUR Marche, Area Vasta n°3, MACERATA

OPTIMISING SKIN ANTISEPSIS
_ FOR AN ENHANCED PREVENTION OF HEALTHCARE-ASSOCIATED INFECTIONS IN THE EU



Fattori determinanti l'incremento delle infezioni correlate all'assistenza

- ✓ **Aumento delle comorbidità**
- ✓ **Aumento dell'età media**
- ✓ **Capacità di sviluppo rapido**
- ✓ **Progressi nei trattamenti medici**

European Commission.
"Public consultation on strategies for improving patient safety by prevention and control of healthcare-associated infections".
Available at: http://ec.europa.eu/ health/archive/ph_threats/com/cons01_txt_en.pdf

OPTIMISING SKIN ANTISEPSIS

FOR AN ENHANCED PREVENTION
OF HEALTHCARE-ASSOCIATED INFECTIONS
IN THE EU

It is clearly true that patient safety, a key factor to overall healthcare quality, and the prevention of Healthcare-Associated Infections as a threat to patient safety have been a cornerstone of EU and national healthcare policies for years.

However, we believe that much remains to be done with regard to the prevention of Healthcare-Associated Infections (HAIs), universally relevant to patients at every single health-care encounter and which demands comprehensive solutions. Skin antisepsis has certainly a role to play in this regard.

We hereby would like to recall that, as stressed by this Parliament, high-quality healthcare is recognised as a fundamental right by the EU. We are convinced that a harmonised approach

The institution we represent urged the Commission to foster the exchange of information on initiatives concerned with patient safety and quality of care. We welcome this white paper as an example of an exchange of knowledge and best practices between a group of pan-European experts that can translate into increased safety for all European patients. We also applaud the fact antimicrobial resistance is one the topics addressed in the paper, for we consider that this is a serious and growing threat to patient safety that needs to be considered in the frame of any initiative on the prevention of HAI.

As Members of the European Parliament, we are committed to ensuring that all citizens have equal access to health care with the highest possible quality and safety. It is our hope that the information, expertise and policy recommendations contained within this paper will be acted upon by policy makers at

«As Members of the European Parliament,
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with the higest possible quality and safety.»

European Commission.
"Public consultation on strategies for improving patient safety by prevention and control of healthcare-associated infections".

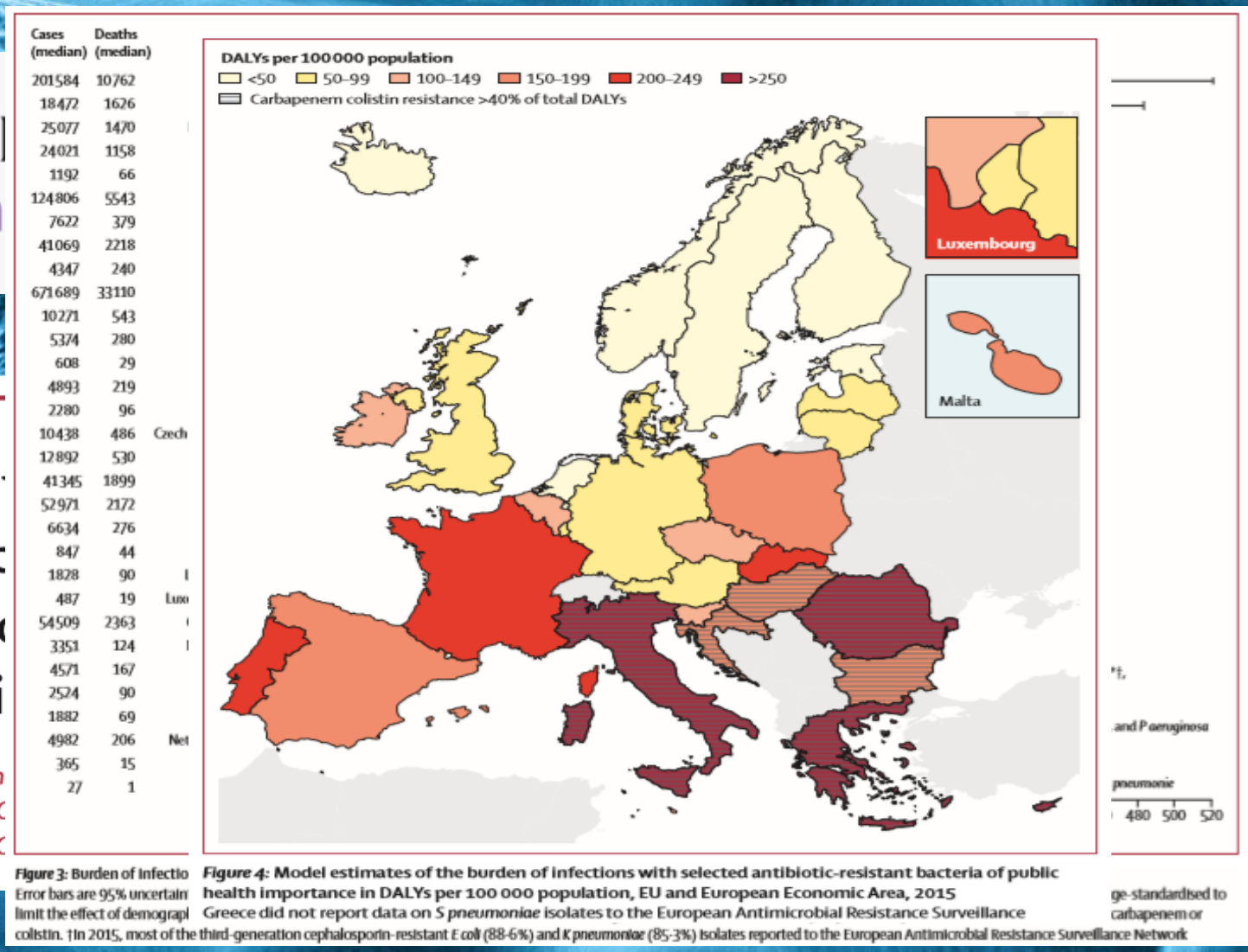
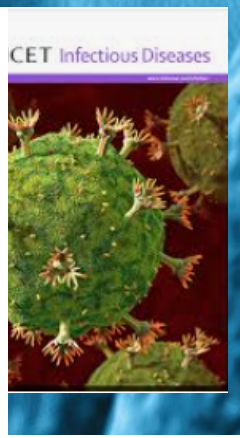


Figure 3: Burden of infectio
Error bars are 95% uncertain
limit the effect of demograp
colistin. †In 2015, most of the third-generation cephalosporin-resistant *E coli* (88·6%) and *K pneumoniae* (85·3%) isolates reported to the European Antimicrobial Resistance Surveillance Network

Figure 4: Model estimates of the burden of infections with selected antibiotic-resistant bacteria of public health importance in DALYs per 100 000 population, EU and European Economic Area, 2015
Greece did not report data on *S pneumoniae* isolates to the European Antimicrobial Resistance Surveillance

ge-standardised to
carbapenem or



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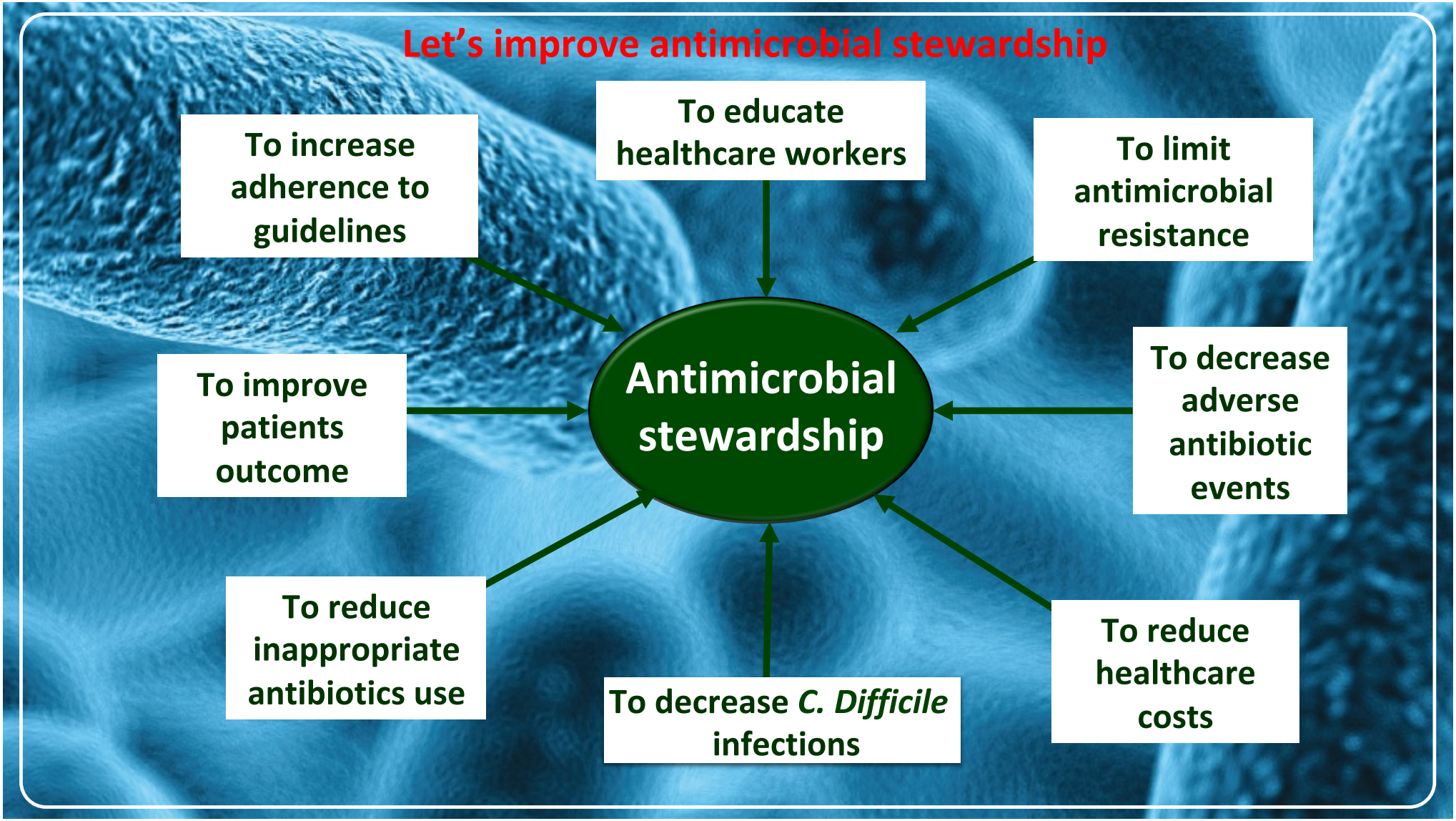
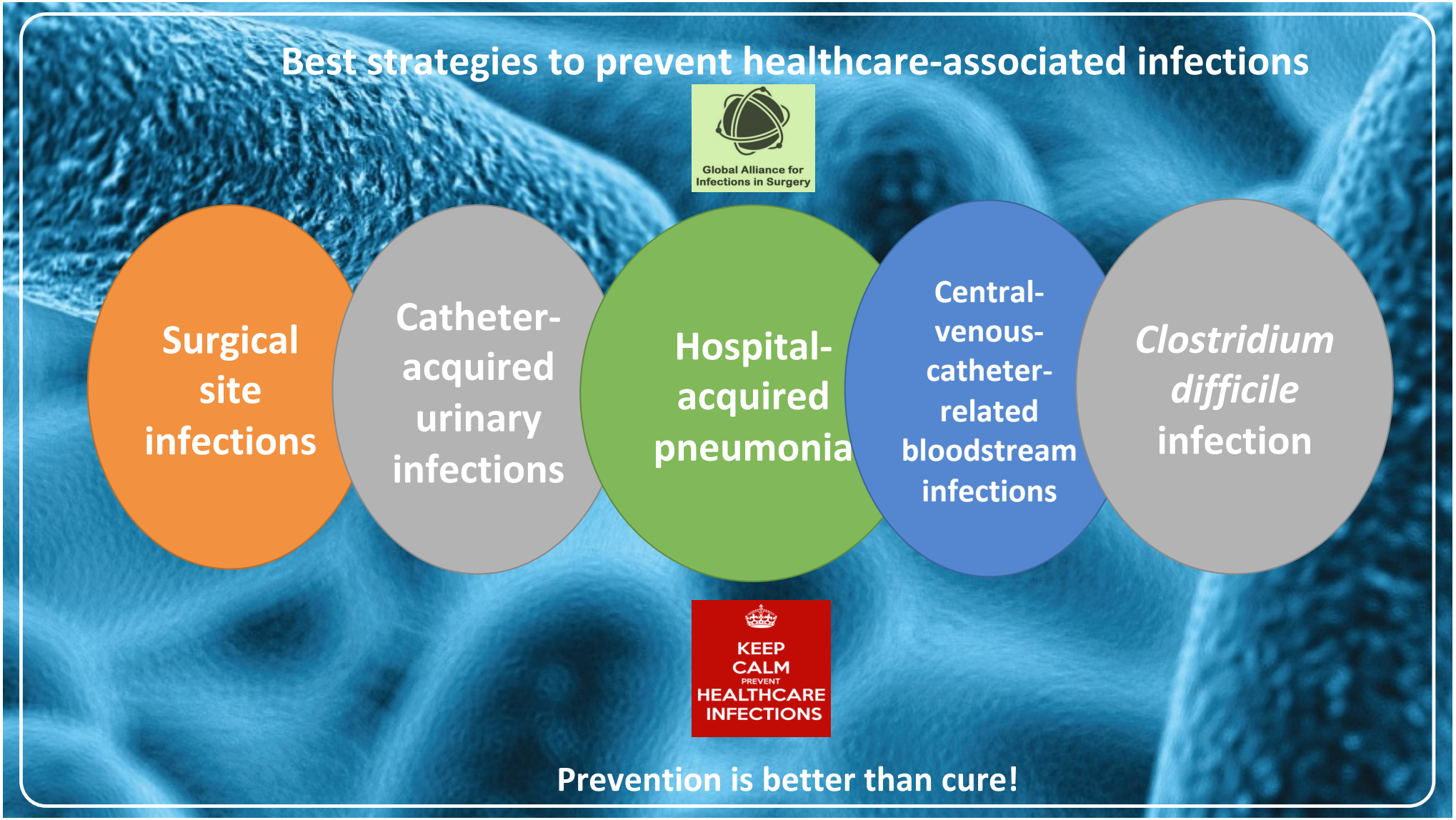
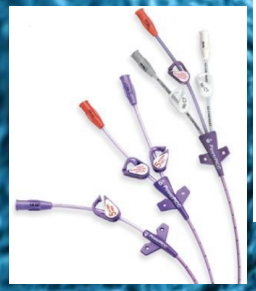
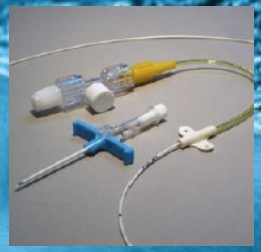
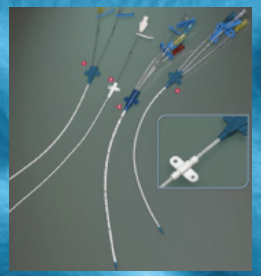

Let's improve antimicrobial stewardship
To increase adherence to guidelines
To educate healthcare workers
To limit antimicrobial resistance
To improve patients outcome
Antimicrobial stewardship
To decrease adverse antibiotic events
To reduce inappropriate antibiotics use
To decrease C. Difficile infections
To reduce healthcare costs


Best strategies to prevent healthcare-associated infections
Global Alliance for Infections in Surgery
Surgical site infections
Catheter-acquired urinary infections
Hospital-acquired pneumonia
Central-venous-catheter-related bloodstream infections
Clostridium difficile infection
KEEP CALM PREVENT HEALTHCARE INFECTIONS
Prevention is better than cure!







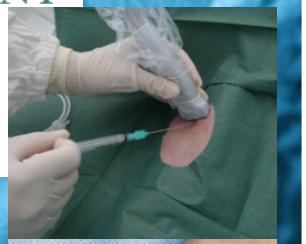
Annals of Internal Medicine | SUPPLEMENT

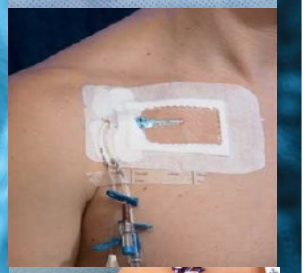
The Top Patient Safety Strategies That Can Be Encouraged for Adoption Now

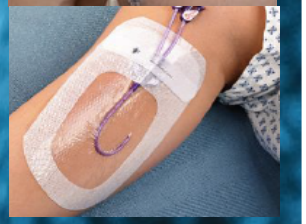
Table 2. **Patient Safety Strategies Ready for Adoption Now**

Strongly encouraged

- Preoperative checklists and anesthesia checklists to prevent operative and postoperative events
- Bundles that include checklists to prevent central line–associated bloodstream infections
- Interventions to reduce urinary catheter use, including catheter reminders, stop orders, or nurse-initiated removal protocols
- Bundles that include head-of-bed elevation, sedation vacations, oral care with chlorhexidine, and subglottic suctioning endotracheal tubes to prevent ventilator-associated pneumonia
- Hand hygiene
- The do-not-use list for hazardous abbreviations
- Multicomponent interventions to reduce pressure ulcers
- Barrier precautions to prevent health care–associated infections
- Use of real-time ultrasonography for central line placement
- Interventions to improve prophylaxis for venous thromboembolisms

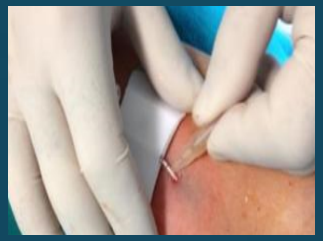


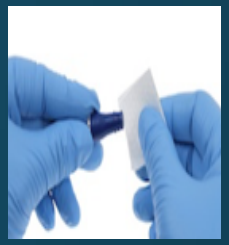




Shekelle PG et al. Ann Intern Med. 2013 Mar 5;158(5 Pt 2):365-8.

BUNDLE 2016





- UTILIZZO DI CIANOACRILATO STERILE PER LA PROTEZIONE DELL'EXIT SITE AL MOMENTO DELL'IMPIANTO
- DISINFEZIONE DEI PUNTI DI ACCESSO (HUB O NEEDLEFREE CONNECTORS DI UN CVC MEDIANTE SCRUBBING CON SOLUZIONI ALCOLICHE (PREFERIBILMENTE CLOREXIDINA 2% IN SOLUZIONE ALCOLICA) OPPURE DISINFEZIONE PASSIVA DEI NFC MEDIANTE PORT PROTECTORS.
- UTILIZZO DI SIRINGHE PRERIEMPITE STERILI PER IL FLUSH E IL LOCK DEI CVC
- UTILIZZO DI UN CARRELLO DEDICATO PER L'IMPIANTO
- UTILIZZO DI CHECKLIST PER LA VERIFICA DELLA CORRETTA APPLICAZIONE DEL BUNDLE
- RIMOZIONE IMMEDIATA DEL CATETERE VENOSO CENTRALE NON PIÙ INDISPENSABILE

ESICM
ICM INTENSIVE CARE MEDICINE
OFFICIAL JOURNAL OF THE EUROPEAN SOCIETY OF INTENSIVE CARE MEDICINE AND THE EUROPEAN SOCIETY OF PAEDIATRIC & NEONATAL INTENSIVE CARE
espnic

Ruolo dei bundles

ORIGINAL

Prevention of hospital infections by intervention and training (PROHIBIT): results of a pan-European cluster-randomized

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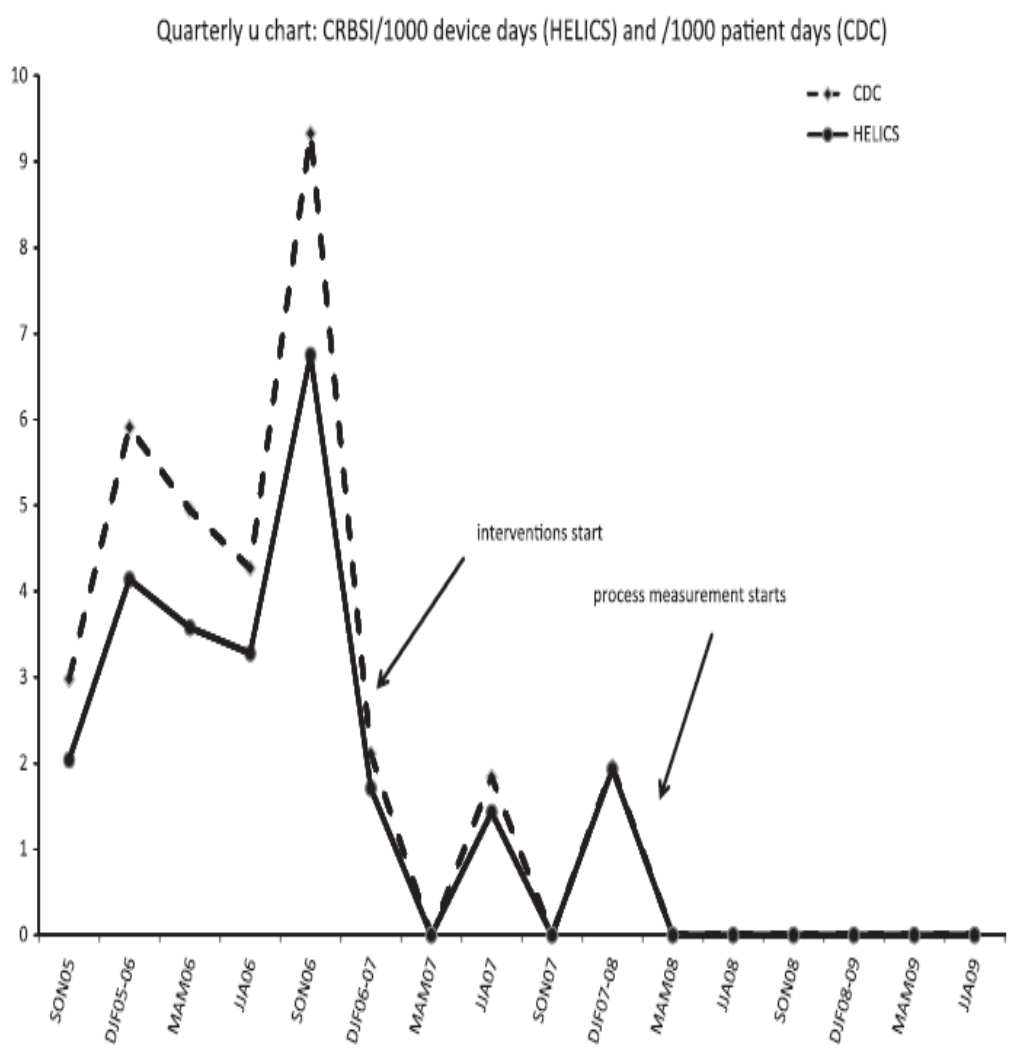
effects of behavioural change studies aiming at CLABSI prevention [44].

In conclusion, this study demonstrates that multimodal prevention strategies aiming at improving CVC insertion practice and hand hygiene compliance reduce CRBSI in culturally diverse European ICUs. The CVC insertion score explained the reduction of CRBSI and helped to explain the dynamics of behaviour change. Future quality improvement studies should encourage measuring process indicators

hygiene adherence is human behavior and its resistance to change.»

van der Kooi T et al, Intensive Care Med (2018) 44:48–60
Laupland KB et al. Intensive Care Med (2018) 44:238–240

Figure 3 Quarterly central-venous-catheter-related bloodstream infection (CRBSI) acquisition as rate per 1000 device days and per 1000 patient days (number of infections divided by the device days and patient days respectively ×1000 per month). CDC, Centers for Disease Control and Prevention; HELICS, Hospitals in Europe Links for Infection Control Surveillance.



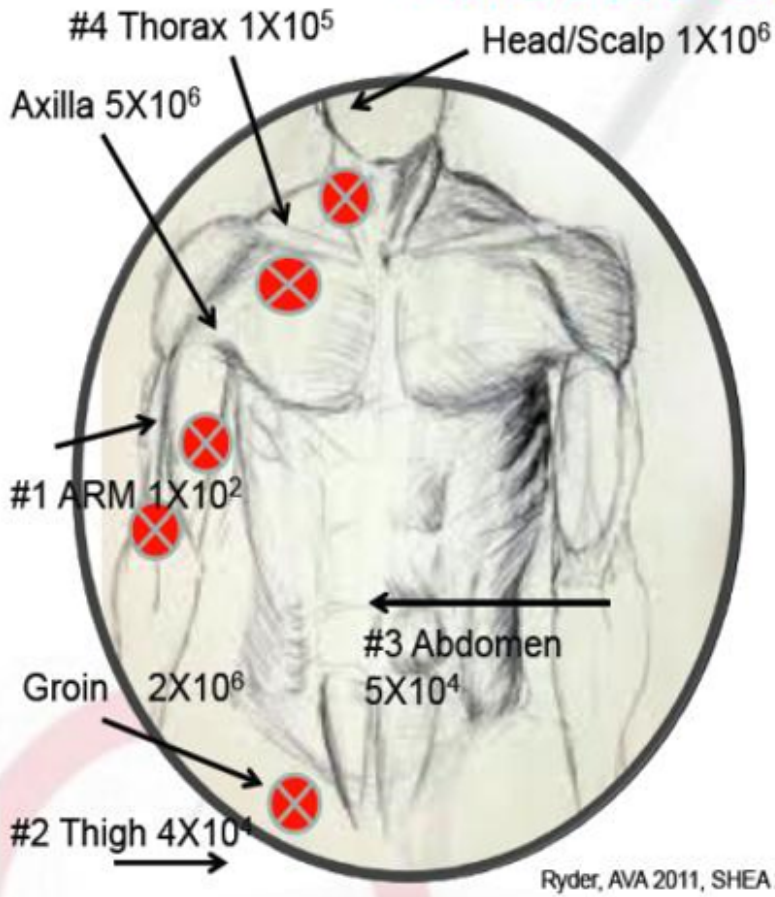
SIAARTI

PRO VITA CONTRA DOLOREM SEMPER

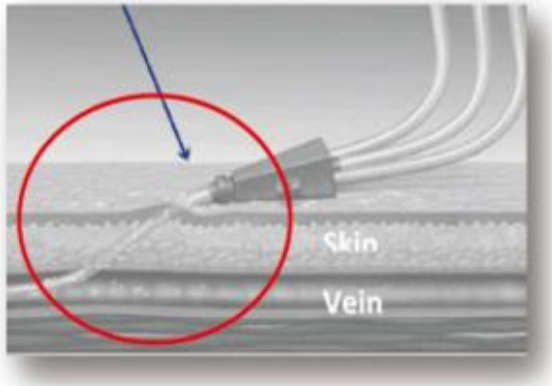
Buone pratiche cliniche SIAARTI

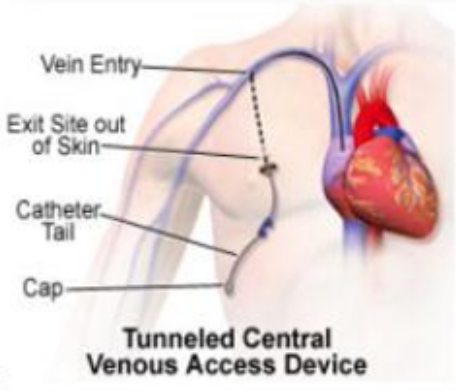
LE BUONE PRATICHE PER GLI ACCESSI VASCOLARI

Exit Site Options



Ryder, AVA 2011, SHEA 2011





Tunneled Central Venous Access Device

Infezioni sistemiche: Batteriemie e CVC in TI

- USA: 15 milioni di giorni-catetere/anno;
- Aumento dei costi ospedalieri e della durata di degenza, ma non della mortalità;
- 80.000 CRBSI/anno in Terapia Intensiva;
- 250.000 BSI/anno in tutti i Reparti.

CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011

- Europa: mancanza di dati sistematici. Dati su ICU in Francia, Germania, Italia, Regno Unito. Ampia variabilità:
  - 1.12 – 4.2 CRBSI per 1000 giorni-catetere
  - 8400 – 14 400 episodi di CRBSI/anno
  - 1000 – 1584 morti/anno
  - 15 960 – 201 600 giorni di TI causati da CRBSI
  - €35.9 to €163.9 milioni per costi associati.

Tacconelli E et al. J Hosp Infect 2009; 72(2):97.

Infezioni attribuibili a cateteri endovenosi secondo il tipo di catetere

Catheter	Catheter-Related Bloodstream Infection: Incidence (%)	Catheter-Related Bloodstream Infection: Incidence Density (Number/1000 Line Days)
Peripheral venous	0.1	0.5
Arterial	0.4	0.2
Peripherally inserted central catheters (PICC)	2.4	2.1
Short-term central venous catheter	4.4	2.7
Percutaneous, tunneled long-term central venous catheter	22.5	1.6
Fully implanted, tunneled long-term central venous catheter	3.6	0.1

Maki DG, Kluger DM, Crnich CJ. Mayo Clin Proc. 2006;81(9):1159-1171.

Ad oggi, quali dati?

Considerando il Rischio infettivo (best achieved rate, CRBSI)

- **Non tunnellizzati:**
  0.9/1.000 giorni-catetere
- **Tunnellizzati:**
  0.83-0.89/1.000 giorni catetere
- **Totalmente impiantabili:**
  0.018-0.35/1.000 giorni-catetere
- **PICC:**
  0.02-0.57/1.000 giorni-catetere

van der Kooi T, et al. Intensive Care Med (2018) 44:48–60
Wang P, Plos One 2016;11(1):e014641
Fulvio Pinelli D, et al. JVA 2018; 0: 1-13
Grau D, et al. Antimicrobial Resistance and Infection Control (2017) 6:18

time frame,[28] whereas 6 studies restricted inclusion to patients who received TPN [19,21,23,31]. No studies reported patients who received both a PICC and GVC. Increasingly difficult to assemble in these areas,

studies that specifically assess the role of novel technologies and practices, such as chlorhexidine-impregnated site dressings or antimicrobial PICCs, are needed in the battle against CLABSI in non-ICU settings. These technological approaches may provide important layers of reinforcement against CLABSI in non-ICU settings, especially as the use of PICCs increases in these areas.[57] Third, because the risk of CLABSI associated with CVCs and PICCs appears to be similar in hospitalized patients, expansion of practices and campaigns such as hub decontamination and "scrub the hub" should specifically be targeted toward PICCs. Finally, we note that PICCs continue to appear safe in outpatient settings when used in healthier, ambulatory populations for appropriate indications. Continued efforts to educate patients on catheter care, including aseptic access, flushing techniques, and early recognition of warning signs, are important to maintain this course.

In conclusion, when placed in hospitalized patients, PICCs

Incidence Rate Ratio (95% CI)	% Weight	N
(1.45, 12.19)	9.67	342
(3.71, 10.49)	11.79	838
(0.04, 2.04)	6.24	494
(0.23, 0.48)	12.21	1127
(0.22, 9.78)	39.90	
(0.58, 0.88)	12.51	45073
(0.58, 0.88)	12.51	
(0.01, 5.03)	3.69	240
(0.02, 15.24)	3.27	49
(0.06, 6.44)	5.11	102
(0.22, 2.09)	9.44	106
(0.39, 2.24)	10.49	1276
(0.01, 2.44)	3.98	300
(0.18, 7.52)	6.50	572
(0.04, 4.64)	5.11	148
(0.41, 1.27)	47.59	
(0.46, 1.79)	100.00	

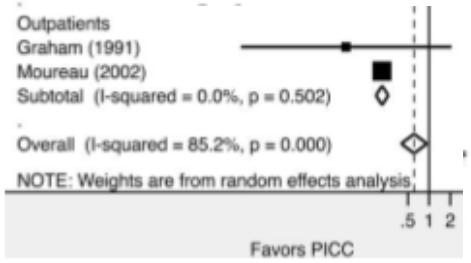


Table 3 Bivariable Logistic and Cox Proportional Hazards Regression Models

PICC character						t estimate	
General PIC						2.05)	.76
Duration						2.10)	.20
PICC adj							
Number							
Table						I)	*P*-Value
Variable							
Num							
1							Ref
2						1.25)	<.0001
3						5.75)	<.0001
4						1.14)	<.0001
5						1.54)	<.0001
6							Ref
CI =							
*De							
Cephalic						3.79)	.50
Other							Ref
PICC inserti							
Medicin							Ref
Surgical						1.74)	.47
Intensiv						6.85)	<.0001
PICC operat							
Interventional radiology	2.57	(1.41-4.68)	.002	2.45	(1.36-4.41)		.003
Vascular access nurse	1	Ref	Ref	1	Ref		Ref

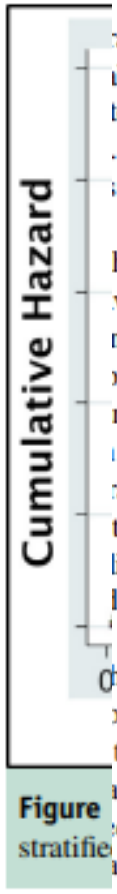


Figure stratifie

CLINICAL SIGNIFICANCE

- Like central venous catheters, peripherally inserted central catheters (PICCs) often are associated with bloodstream infection.
- Critically ill patients and those with prolonged hospitalizations are at significant risk of these infections.
- Multi-lumen PICCs not only increase the risk, but also appear to accelerate the time to infectious complications.
- When feasible, deliberate use of single-lumen PICCs may help reduce the risk of PICC-bloodstream infection.

ally inserted central catheters
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d to
nce, when examining risk of
ream infection by device type,

talized patients who underwent insertion of a I
June 1, 2009 to June 30, 2012 at our 145-bed,
Veterans Affairs (VA) Medical Center. Clinical d
indication for insertion,
attempts, vein and arm o
and type of PICC were
from electronic medica
Information about patie
bidities, medications an
disposition, and admissio
diagnoses were obtained
ministrative datasets. Be
about device characterist
sertion were missing fro
who had PICCs placed
institution, these patient
cluded from our study.

PICC-associated bl
infections were identifi
combination of hospital
and billing (Internation
fication of Diseases, 9th
codes, vascular acces
records, and microbiology data. PICC-associat
stream infections were defined according to the

Patient characteristics (demographic and clinical) by PICC CLABSI

Table 4

Significant risk factors for PICC BSI by univariate and multivariate analysis

	Odds ratio	95% CI	*P* value*
Univariate analysis			
Race (AA)			.41
Sex (F)			.04
Age (mean			.35
Type of cath			
Nonantim			.01
Antimicro			
Insertion fe			
ID			.84
IR			1.0
VAT			1.0
Indication f			
Antimicro			
Chemoth			.50
Total par			<.0001
Tunneled			.45
Comorbid			.0002
Myocardi			
Congestiv			.44
Peripher			.41
Cerebral			.63
Dementia			.51
Chronic o			.79
Connectiv			.06
Peptic ulc			.63
Diabetes			.33
Chronic k			.072
Hemipleg			.22
Leukemia			1.0
Lymphom			<.0001
Liver dise			NA
Solid tum			1.00
AIDS			.06
Charlson Sc			.0002
AIDS	11.76	1.61–76.37	.01

BSI, bloodstream infection; *CI*, confidence interval; *M*, male; *PICC*, peripherally inserted central catheter.

*$P \leq .05$ is considered significant.

AA, African American; *CLABSI*, central line–associated bloodstream infection; *F*, female; *ID*, infectious diseases; *IR*, interventional radiology; *NA*, not applicable; *PICC*, peripherally inserted central catheter; *VAT*, nurse venous access team.

*$P \leq .05$ is considered significant.

Current CDC and Infectious Disease Society guidelines suggest that AIP catheters be used only in settings of increased PICC CLABSI that do not respond to other preventative strategies.[12] The weight of evidence of this and other studies, especially the recent meta-analysis of Kramer et al[5] supports the universal use of AIP catheters rather than limiting their use to high-risk settings. It is unfortunate that there is only 1 small randomized controlled but underpowered trial[35] to support this point. Whether it will ever be feasible to do such a study, which would require several years and significant funding from a noncommercial source, remains to be seen.

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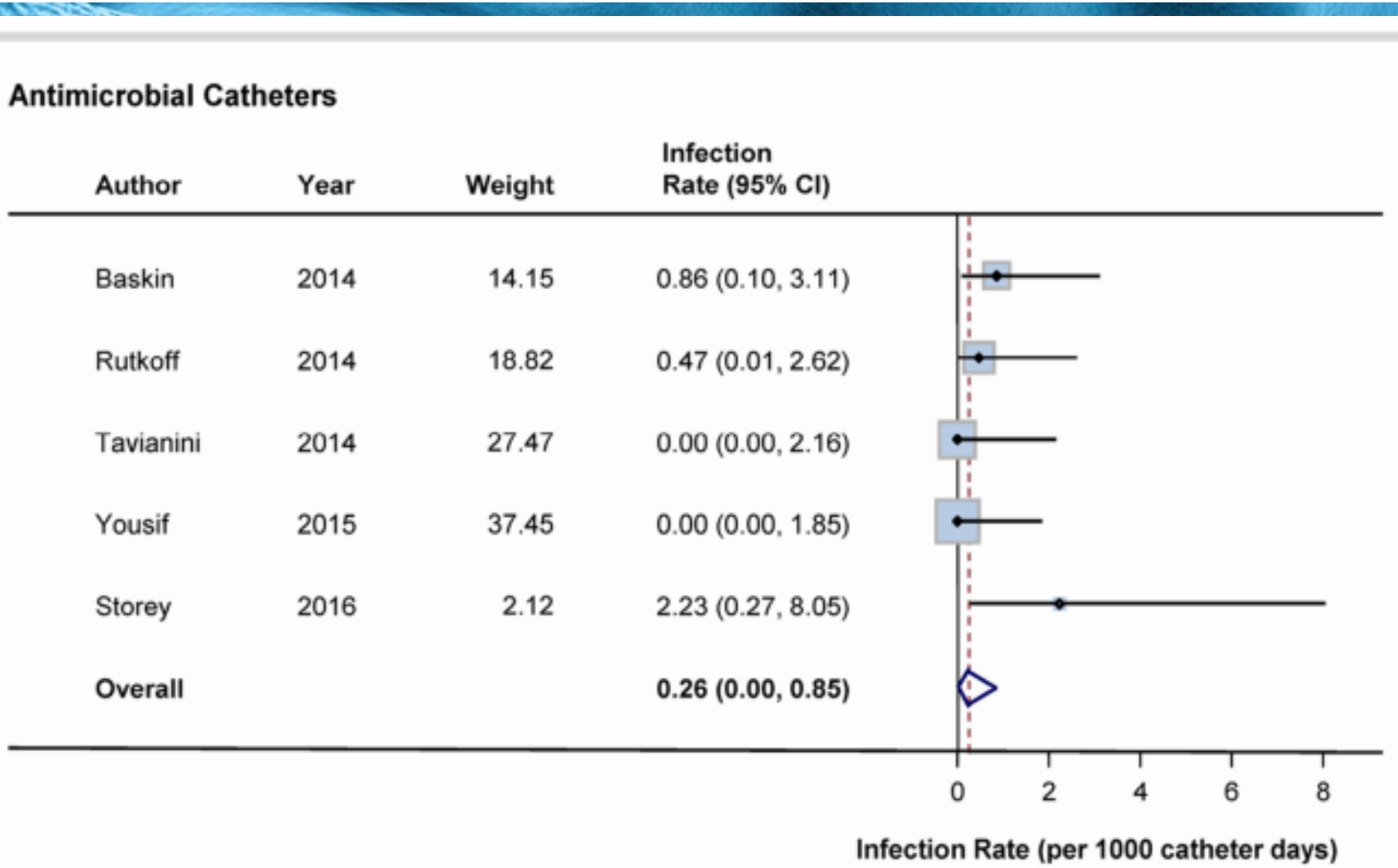
REVENTION AND CONTROL


Antimicrobial Catheters
Author
Year
Weight
Infection Rate (95% CI)
Baskin 2014 14.15 0.86 (0.10, 3.11)
Rutkoff 2014 18.82 0.47 (0.01, 2.62)
Tavianini 2014 27.47 0.00 (0.00, 2.16)
Yousif 2015 37.45 0.00 (0.00, 1.85)
Storey 2016 2.12 2.23 (0.27, 8.05)
Overall 0.26 (0.00, 0.85)
0
2
4
6
8
Infection Rate (per 1000 catheter days)

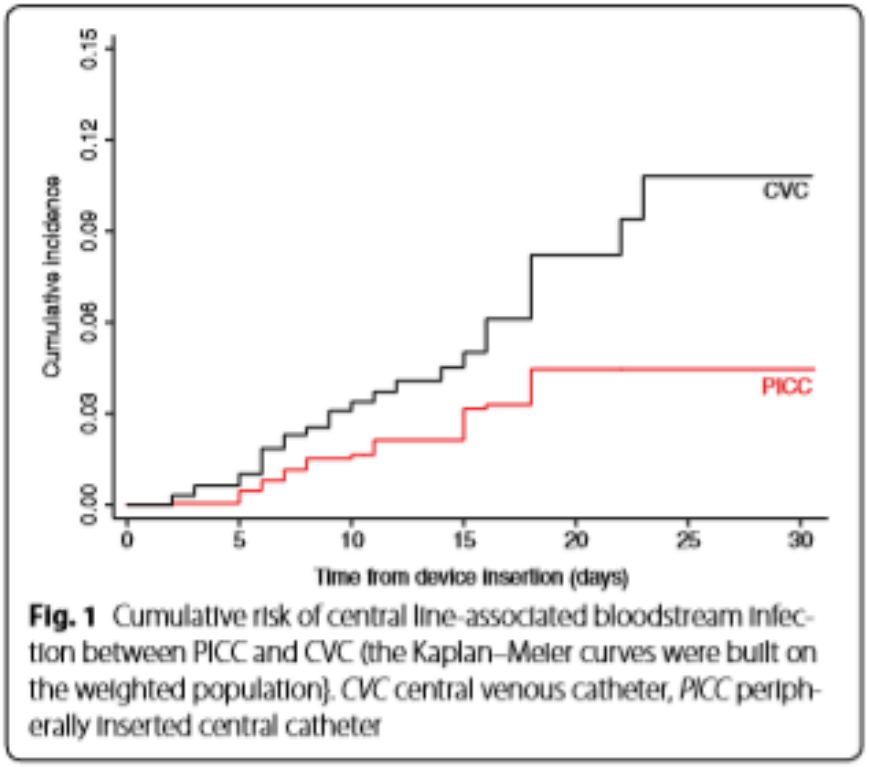


Fig. 1 Cumulative risk of central line-associated bloodstream infection between PICC and CVC (the Kaplan–Meier curves were built on the weighted population). *CVC* central venous catheter, *PICC* peripherally inserted central catheter

Table 3 Crude and adjusted association between type of catheter and CLABSI within the first 30 days

	HR (95% CI)	*p* value
Reference		
tion		
hragmatic	Reference	
agmatic	0.84 (0.39–1.83)	0.66
trition (time-dependent)		
No	Reference	
Yes	3.76 (1.44–9.84)	0.007
	2.18 (1.02–4.64)	0.044

CI confidence interval, *CVC* central venous line, *HR* hazard ratio, *IPTW* inverse probability of treatment weighting, *PICC* peripherally inserted central catheter, *CLABSI* central line-associated bloodstream infection

Conclusion

CLABSI is an important infectious complication in PICU patients. The role of PICC use in the prevention of CLABSI is unknown in paediatric critical care patients. Our study confirms the hypothesis that PICCs have a protective role in CLABSI prevention when compared to CVCs, in PICUs with low incidence of CLABSI, and their use should be considered instead of CVCs, whenever possible, in the paediatric intensive care setting.

Electronic supplementary material

The online version of this article (doi:10.1007/s00134-017-4852-7) contains supplementary material, which is available to authorized users.

Gabriela Ortega Cisternas Muñoz[1,2,3], Ana Paul

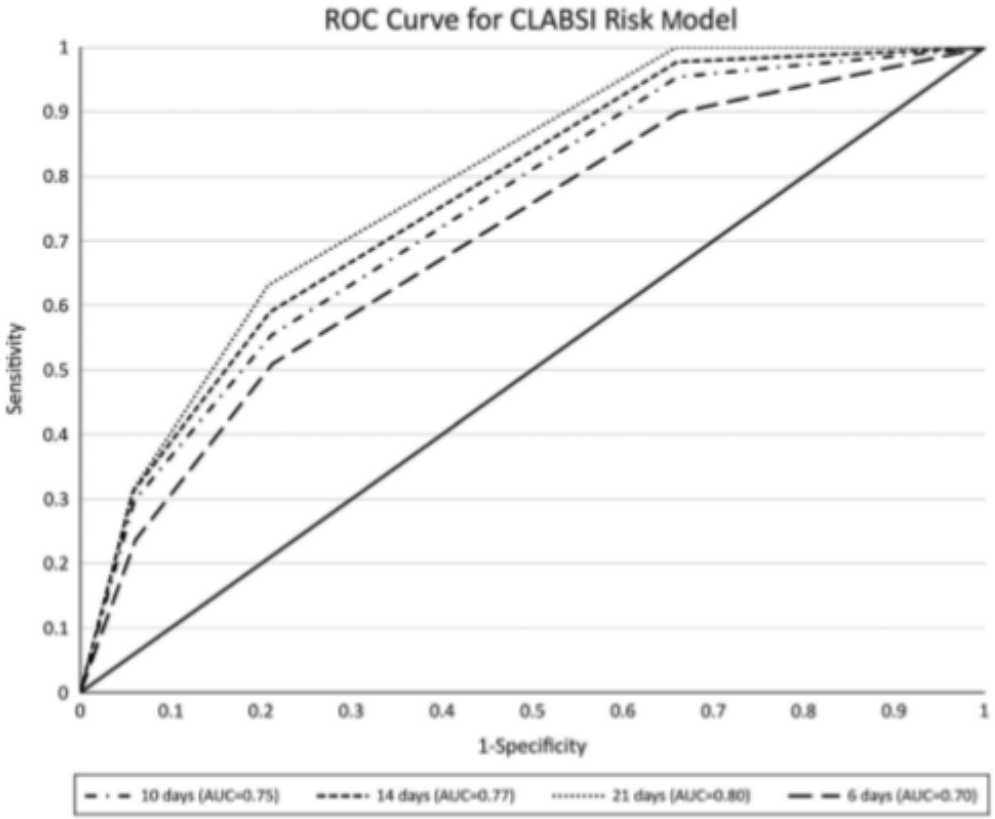
8.
9.
10.
11.
12

TABLE 4. Frequency and Rate of PICC CLABSI by MPC Risk Score

Risk Score (Total Points)	Observed Ev: No. of Patients	CLA: No.	Probability of CLABSI by day 28 % (95% CI)
0	7,797	35 (	0.9 (0.7–1.1)
1	10,356	74 (	1.4 (1.–1.7)
2	3,512	61 (	2.3 (1.9–2.7)
3	666	18 (	3.7 (3.–4.2)
4	361	16 (	5.9 (5.0–6.8)
5	120	13 (	9.5 (8.0–11.0)
6	236	28 (	15.0 (12.4–17.7)

NOTE. PICC-CLABSI, peripher venous thromboembolism; C an PICC-CLABSI; VTE,

NOTE. PICC-CLABSI, periphe ratio; PICC, peripherally inse e interval; HR, hazard
[a]Points assigned to each predi



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An Official Journal of The Society for Healthcare Epidemiology of America
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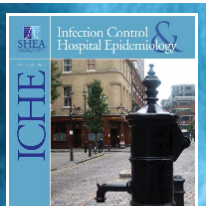
INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

ORIGINAL ARTICLE

A Model to Predict Central-Line–Associated Bloodstream Infection Among Patients With Peripherally Inserted Central Catheters:



Our study has several limitations. First, it was derived and

phone tools. Exploring avenues such as these to bring research to the bedside is a key strength of this scoring method.

In conclusion, we derived and validated a tool that predicts the risk of PICC-CLABSI in a large cohort of hospitalized patients. Future studies that focus on both validating the tool and exploring strategies for implementation in clinical settings are needed.

consideration of an antimicrobial-impregnated or -coated PICC, as these have been shown to reduce risk of CLABSI in patients at high risk of this event.[47]

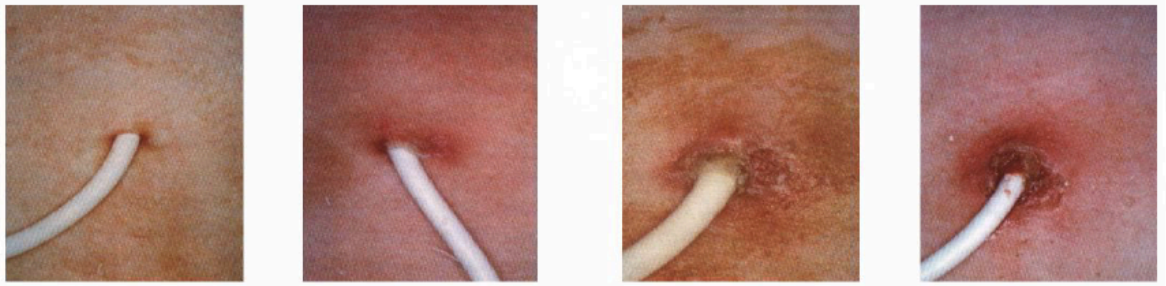
Infezioni locali: sito di inserzio

Clinical Practice Guidelines for the Diagnosis and Management of Intravascular Catheter-Related Infection: 2009 Update by the Infectious Diseases Society of America

Leonard A. Mermel,[1] Michael Allon,[2] Emilio Bouza,[3] Donald E. Craven,[3] Patricia Flynn,[3] Naomi P. O'Grady,[3] Issam I. Raad,[4] Bart J. A. Rijnders,[10] Robert J. Sherertz,[7] and David K. Warren[8]

SCORE CLINICO PER LA VALUTAZIONE DELLE INFEZIONI LOCALIZZATE

GRADO 0:	GRADO 1:	Grado 2:	Grado 3:
Cute sana, integra, non segni di flogosi.	Iperemia < 1 cm. al punto di uscita del CVC; +/- fibrina.	Iperemia > 1 < 2 cm. al punto di uscita del CVC; +/- fibrina.	Iperemia, secrezione, pus, +/- fibrina.



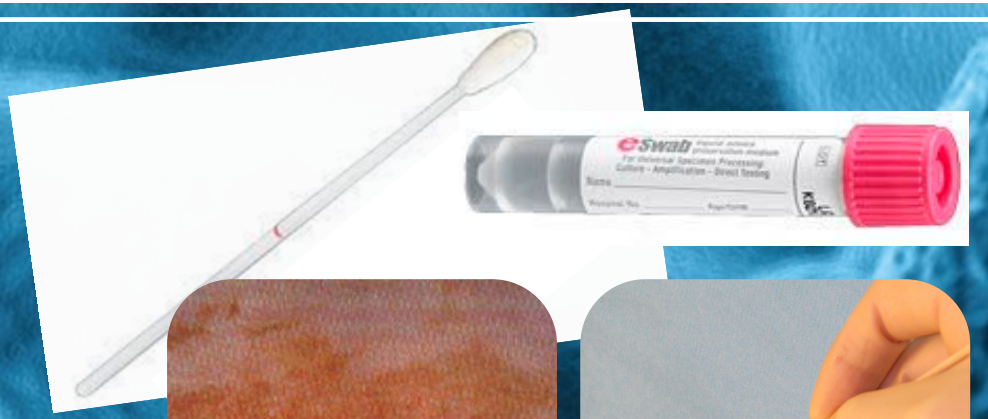
Presenza di eritema, tumefazione, dolore nei primi 2 cm dal punto di fuoriuscita del catetere.
Possibili sintomi associati: febbre, essudazione con o senza una concomitante batteriemia.
Diagnosi: coltura del tampone cutaneo sito di uscita/materiale purulento.

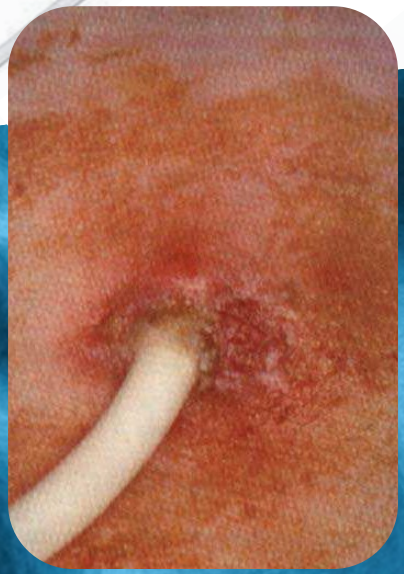
Diagnosi microbiologica

Conservativa

Infezione del catetere

- ❑ Tampone allo skin exit
- ❑ Tampone hub





Contenitore	Conservazione
Tampone tappo rosa	In frigo (+4°C)

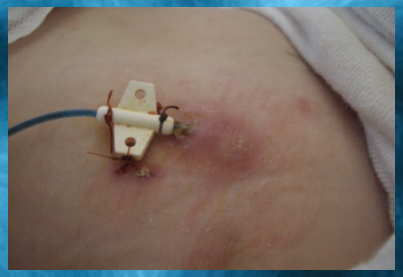
Metodo	Descrizione	Positività	Interpretazione
• **Coltura tampone skin exit**	Coltura area 6 cm^2 skin exit CVC	≥ 15 UFC	*VPN elevato*
• **Coltura tampone hub**	Coltura superficie interna tutti gli hub	≥ 15 UFC	*Rischio di contaminazione*

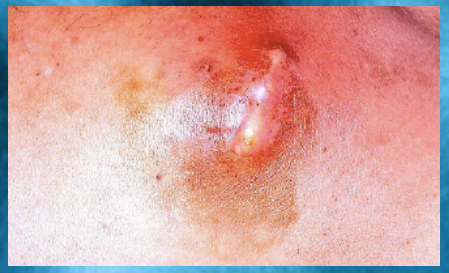
Infezioni locali: tunnel sottocutaneo/tasca

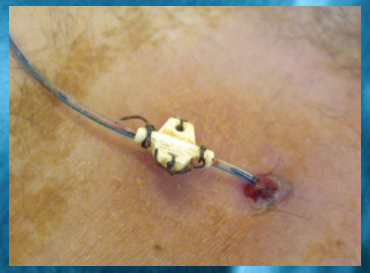
Clinical Practice Guidelines for the Diagnosis and Management of Intravascular Catheter-Related Infection: 2009 Update by the Infectious Diseases Society of America

Leonard A. Mermel,[1] Michael Allon,[2] Emilio Bouza,[3] Donald E. Craven,[3] Patricia Flynn,[4] Naomi P. O'Grady,[5] Issam I. Raad,[6] Bart J. A. Rijnders,[10] Robert J. Sherertz,[7] and David K. Warren[8]

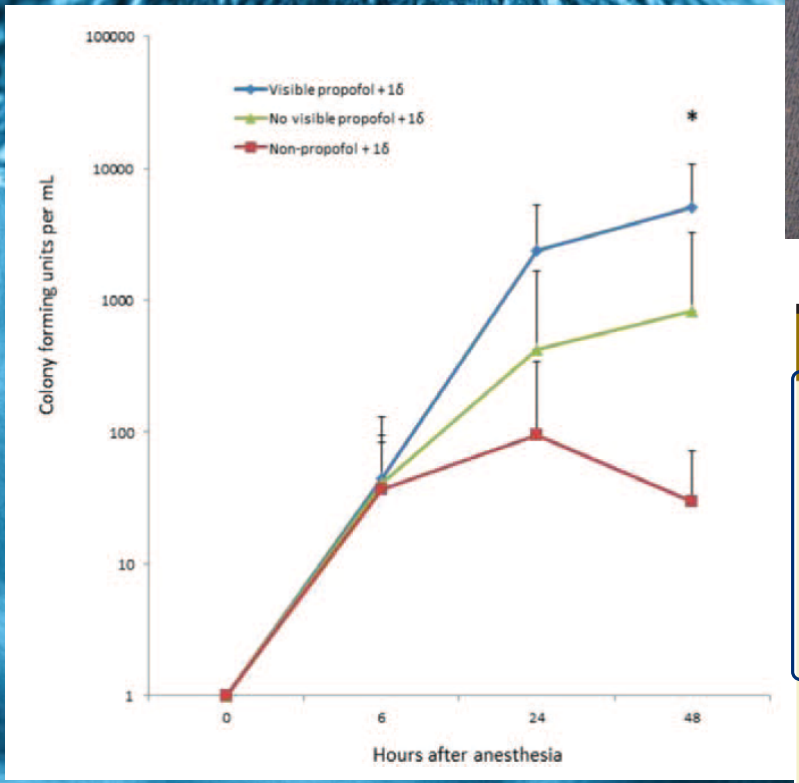
- **Sottocutaneo:** Presenza di **tumefazione, eritema, dolore a più di 2 cm** dal sito di fuoriuscita, lungo il tragitto sottocutaneo di un catetere esterno tunnellizzato. Possibili sintomi associati: febbre, essudato.
- **Tasca**: Presenza di **essudato all'interno della tasca** dei cateteri totalmente impiantabili; associato a dolore, eritema, tumefazione o necrosi della cute sovrastante.
- **Diagnosi:** se essudato tampone per coltura; se non essudato emocoltura (se praticabile).

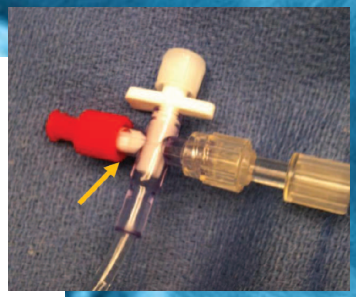






Infezioni sistemiche: Batteriemie e accessi venosi in sala operatoria





Leaving More Than Your Fingerprint on the Intravenous Line: A Prospective Study on Propofol Anesthesia and Implications of Stopcock Contamination

Devon C. Cole, MD,* Tezcan Ozrazgat Baslanti, PhD,* Nikolaus L. Gravenstein, BS,† and Nikolaus Gravenstein, MD*

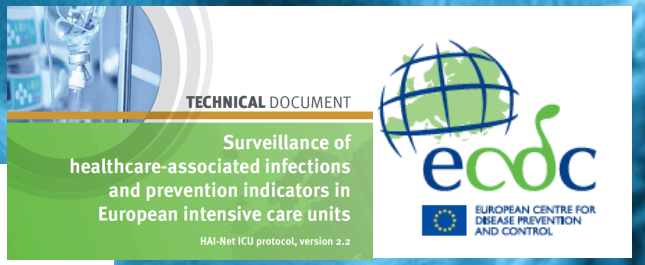
Table 4. Microorganism Concentrations Found in IV Extension Set Stopcock Dead Spaces After Propofol and Nonpropofol Anesthesia at Respective Holding Times

Propofol	CFU/mL	Nonpropofol	CFU/mL
6 h			
Staphylococcus epidermidis	18	*S warneri*	14
Acinetobacter	18	*S cohnii*	65
Micrococcus	46	*Micrococcus*	61
Kocuria	69	*Kocuria*	14
24 h			
S hominis	269	*Dermacoccus*	51
Micrococcus	115	*Micrococcus*	33
Acinetobacter	6846	*Kocuria*	79
S epidermidis	2968	*Streptococcus sanguinis*	41
48 h			
Pseudomonas oryzihabitans	>10,000	*S lentus*	31
Micrococcus	83	*Micrococcus*	45
Kocuria	182	*Kocuria*	15

CFU = colony forming units.

Anesth Analg 2015;120:861–7

Definizioni ECDC



3.2 Bloodstream infection

3.2.1 Case definition

Patient has at least one positive blood culture for a recognised pathogen

– or –

Patient has at least one of the following signs or symptoms: fever (> 38 °C), chills, or hypotension

And

two positive blood cultures for a common skin contaminant (from two separate blood samples, usually within 48 hours).

Skin contaminants = coagulase-negative staphylococci, *Micrococcus* spp., *Propionibacterium acnes*, *Bacillus* spp., *Corynebacterium* spp.

3.5.3 CRI3-CVC: microbiologically confirmed CVC-related bloodstream infection

- BSI occurring 48 hours before or after catheter removal (if any)

and positive culture with the same microorganism of either:

- quantitative CVC culture ≥ 10^3 CFU/ml or semi-quantitative CVC culture > 15 CFU

or

- quantitative blood culture ratio CVC blood sample/peripheral blood sample > 5 [11,12]
- differential delay of positivity of blood cultures [10]: CVC blood sample culture positive two hours or more before peripheral blood culture (blood samples drawn at the same time) [11,13]
- positive culture with the same microorganism from pus from insertion site.

www.ecdc.europa.eu

Definizioni

BSI

+

Catetere intravascolare

CRBSI – catetere-correlata

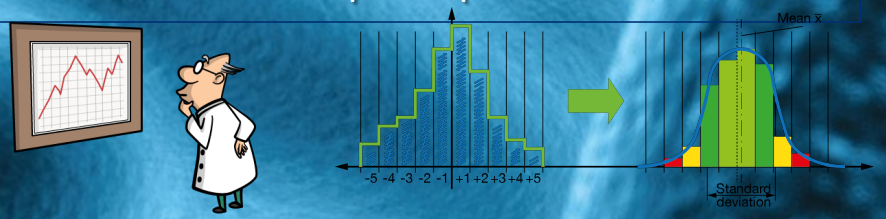
- Definizione clinica
- Richiede specifici test di laboratorio

Identità microbiologica con isolamento dello stesso microrganismo dalla punta del CVC e dall'emocoltura.

Denominatore 1.000 ricoveri o 1.000 giorni di degenza.

CLABSI – associata a catetere

- Definizione per la sorveglianza
- Sensibile ma poco specifica



BSI + CVC in sede da più di 48 ore (probabile o possibile).

Richiede la registrazione del numero di giorni-catetere.

Definizioni

Non esiste un test microbiologico considerato *gold standard* nella diagnosi di CRBSI

❑ CRBSI – catetere-correlata

Criteri

- Paziente con batteriemia o fungemia
- Almeno 1 emocoltura positiva da venipuntura periferica
- Portatore di catetere intravascolare
- Manifestazioni cliniche di infezione (es. febbre, brividi, ipotensione)
- Nessuna altra apparente fonte di infezione

e almeno 1 tra:

- Esame colturale della punta del catetere positivo
- Emocolture comparative positive

Criteri microbiologici

- ✓ Almeno 1 emocoltura positiva da venipuntura periferica
- ✓ Esame colturale della punta del catetere positivo
- ✓ Emocolture comparative positive

Stesso microrganismo e stesso antibiotipo

A Guide to Utilization of the Microbiology Laboratory for Diagnosis of Infectious Diseases: 2013 Reccomandations by IDSA and the ASM – CID 2013

Gestione delle complicanze infettive – *BPC SIAARTI 2018*

3.10 GESTIONE DELLE COMPLICANZE INFETTIVE

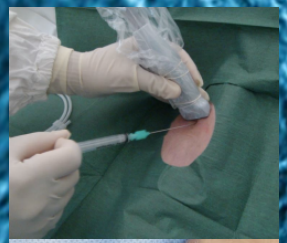
- **Raccomandata** l'esecuzione di esami colturali prima di iniziare un'antibioticoterapia empirica; in presenza di sepsi o shock settico il timing consentito per iniziare la terapia antimicrobica è di 60 minuti post-diagnosi[29].
- La comparsa di febbre in pazienti portatori di catetere venoso centrale da almeno 48 ore va, sempre, indagata attraverso esecuzione di emocolture da vena periferica e da catetere venoso centrale. Il "Differential Time to Positivity" (DTP) consente di correlare l'origine dell'evento infettivo al catetere venoso centrale: il campione emocolturale che si positivizzi almeno due ore prima offre indicazioni sul focus infettivo primario.

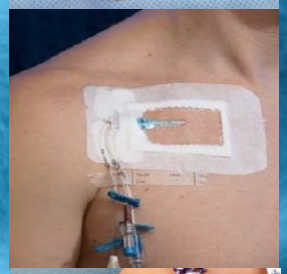
Gestione delle complicanze infettive – *BPC SIAARTI 2018*

3.10 GESTIONE DELLE COMPLICANZE INFETTIVE

- Studi retrospettivi **suggeriscono** che ottenere gli esami colturali prima di iniziare la terapia antibiotica migliori l'outcome[30,31]. Il tipo di patogeno identificato è essenziale nel guidare la decisione rispetto alla rimozione del catetere. In tutti i casi dubbi è opportuno avvalersi di una consulenza infettivologica[32].
- La rimozione del catetere **è raccomandata** nelle seguenti situazioni: shock settico con instabilità emodinamica, endocardite o evidenza di infezioni disseminate, eritema o essudato dovuto a tromboflebite suppurativa, batteriemia persistente dopo 72 ore di terapia a cui il microrganismo causale sia suscettibile.
- **Nessun catetere venoso deve essere rimosso** basandosi esclusivamente sulla comparsa di febbre.

Coltura del catetere: limiti






- La coltura del catetere (o della punta) **non è un esame di routine** in assenza del sospetto clinico di infezione.
- Per cateteri **a breve termine**, coltivare la punta (piuttosto che il segmento sottocutaneo) se il catetere è stato in sede per almeno 7-10giorni. In caso di tempi inferiori, deve essere coltivata la porzione intradermica del catetere (contaminazione da ferita).
- In caso di **cateteri impiantabili**, coltivare la punta anche se tempo di permanenza < a 10 giorni. La coltura in brodo di tipo qualitativo non è raccomandata (la colonizzazione si determina sul criterio quantitativo).
- In caso di **cateteri in arteria polmonare**, è necessario valutare se sia opportuno coltivare l'introduttore (piuttosto che il catetere).
- In caso di **port sottocutanei** è opportuno valutare con coltura qualitativa il materiale interno al *reservoir* oltre che la punta del catetere.
- I cateteri **impregnati con antimicrobici** devono essere segnalati al laboratorio per coltivazione con terreni selettivi.
- In caso di **materiale essudativo dall'exit site**, oltre alla coltura è opportuno eseguire anche il batterioscopico diretto.

Safdar N, et al. Ann Intern Med 2005; 142:451.
Mrozek N, et al. Crit Care Med 2011; 39:1301.