XIII congresso nazionale

simeu

GENOVA 30 MAG - 1 GIU 2024

SEPSI

Hot Topics

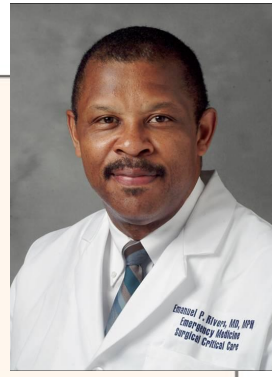
Mario Calci

COLD CASE

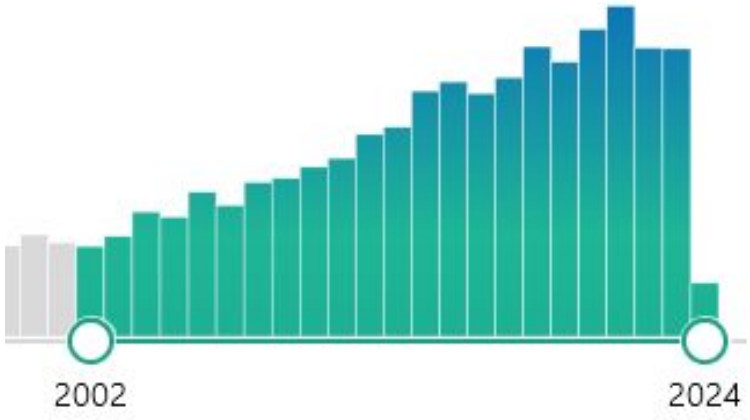
The New England Journal of Medicine

EARLY GOAL-DIRECTED THERAPY IN THE TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

EMANUEL RIVERS, M.D., M.P.H., BRYANT NGUYEN, M.D., SUZANNE HAVSTAD, M.A., JULIE RESSLER, B.S., ALEXANDRIA MUZZIN, B.S., BERNHARD KNOBLICH, M.D., EDWARD PETERSON, PH.D., AND MICHAEL TOMLANOVICH, M.D., FOR THE EARLY GOAL-DIRECTED THERAPY COLLABORATIVE GROUP*

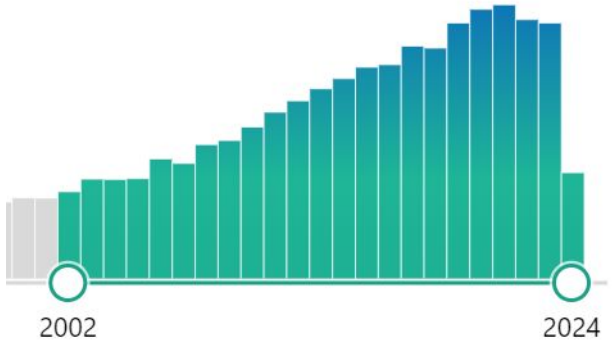


PubMed®



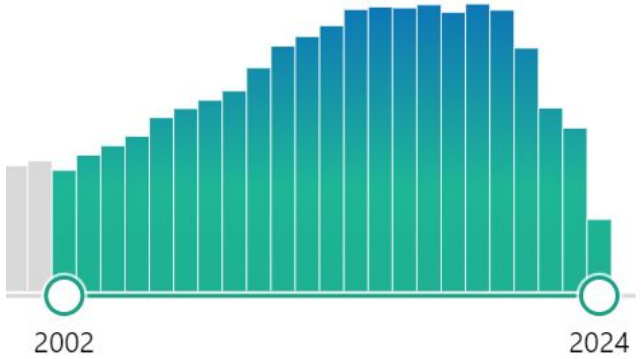
((Sepsis) OR (septic shock)) AND fluid

9.970 articoli



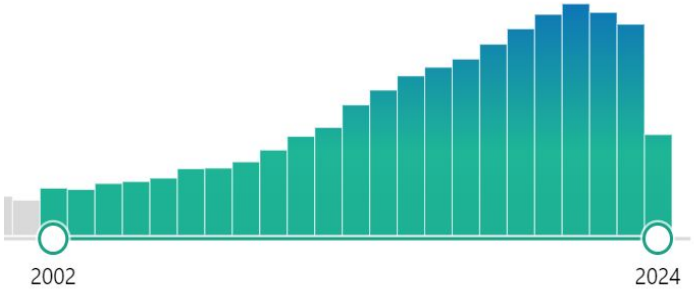
((SEPSIS) OR (SEPTIC SHOCK)) AND (ANTIBIOTIC)

31.077 articoli



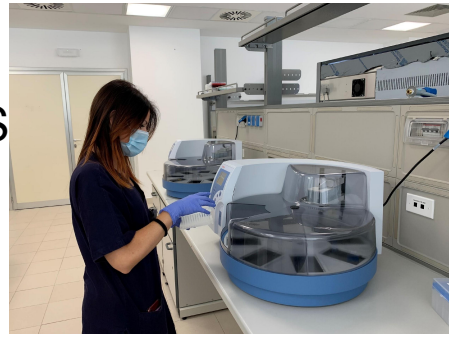
((SEPSIS) OR (SEPTIC SHOCK)) AND (MICROBIOLOGY)

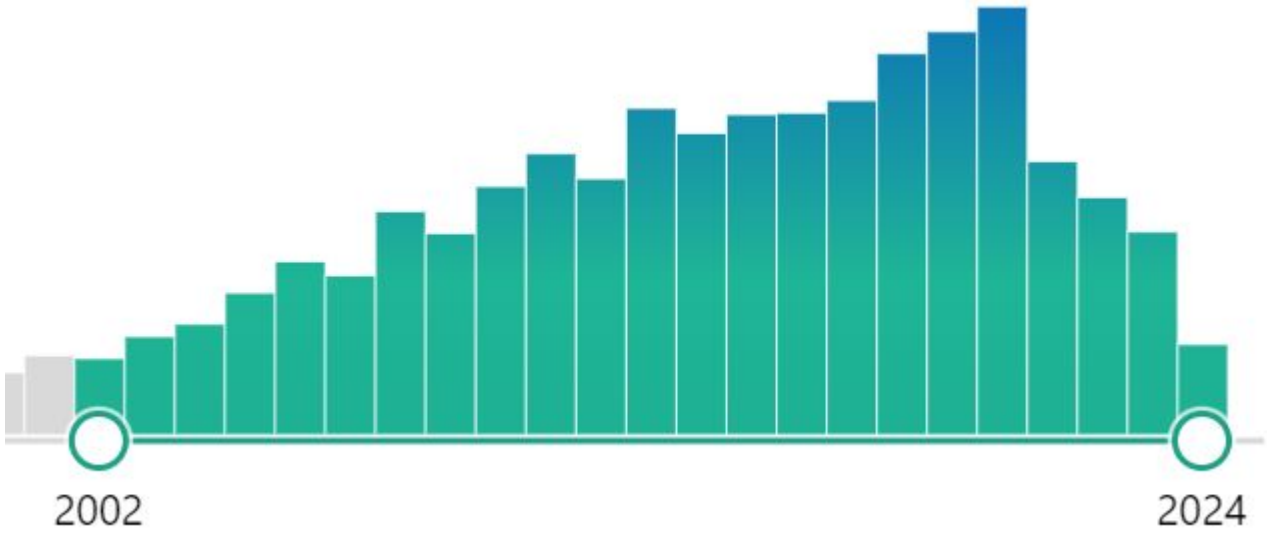
40.602 articoli



((SEPSIS) OR (SEPTIC SHOCK)) AND (BIOMARKERS

12.478 articoli

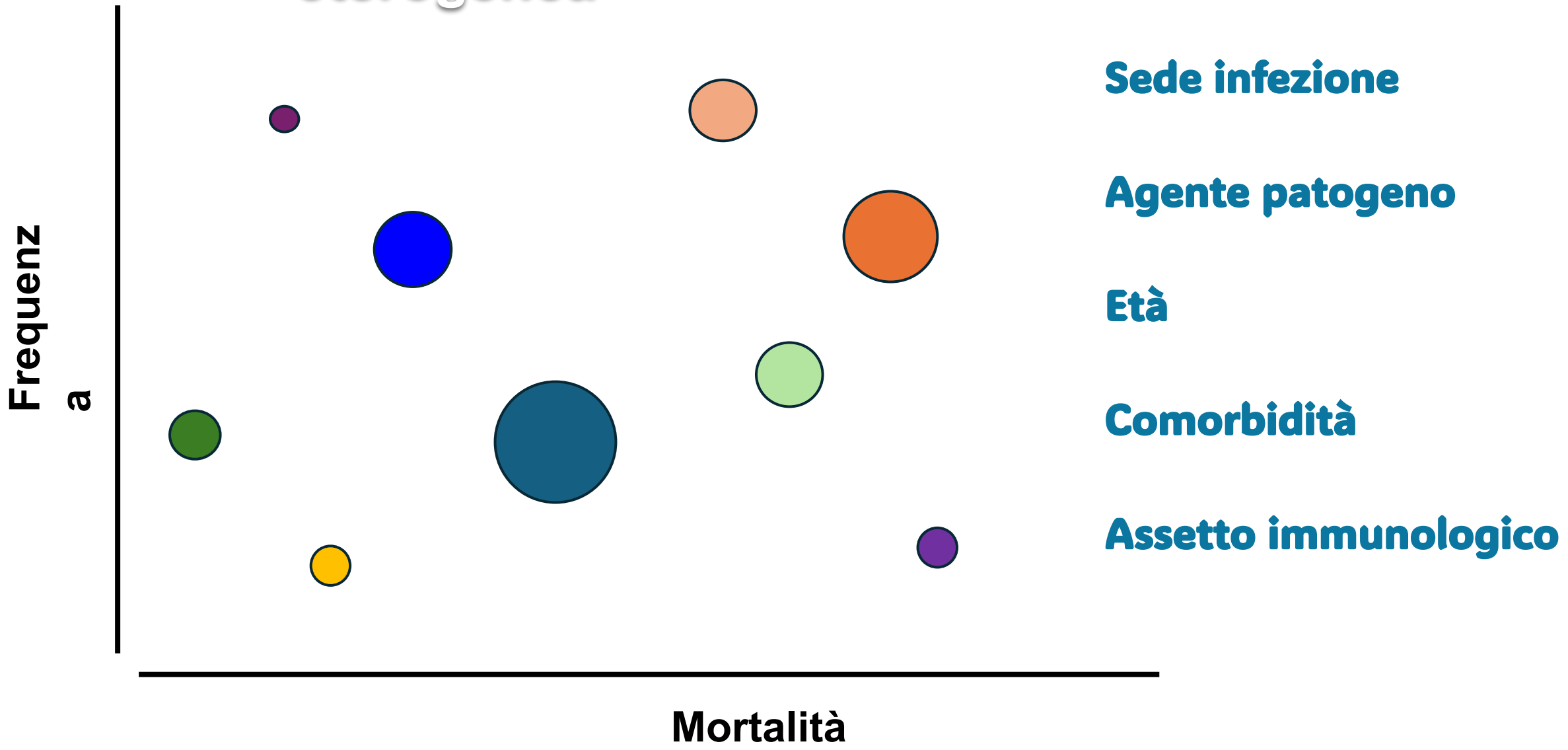




((SEPSIS) OR (SEPTIC SHOCK)) AND GUIDELINES

3.101
articoli

La sepsi è una sindrome eterogenea



Evidence based medicine: what it is and what it isn't

It's about integrating individual clinical expertise and the best external evidence

D L Sackett

BMJ VOLUME 312 13 JANUARY 1996

Singer *Critical Care* 2019, **23**(Suppl 1):127
https://doi.org/10.1186/s13054-019-2398-5

Critical Care

REVIEW Open Access

Sepsis: personalization v protocolization?

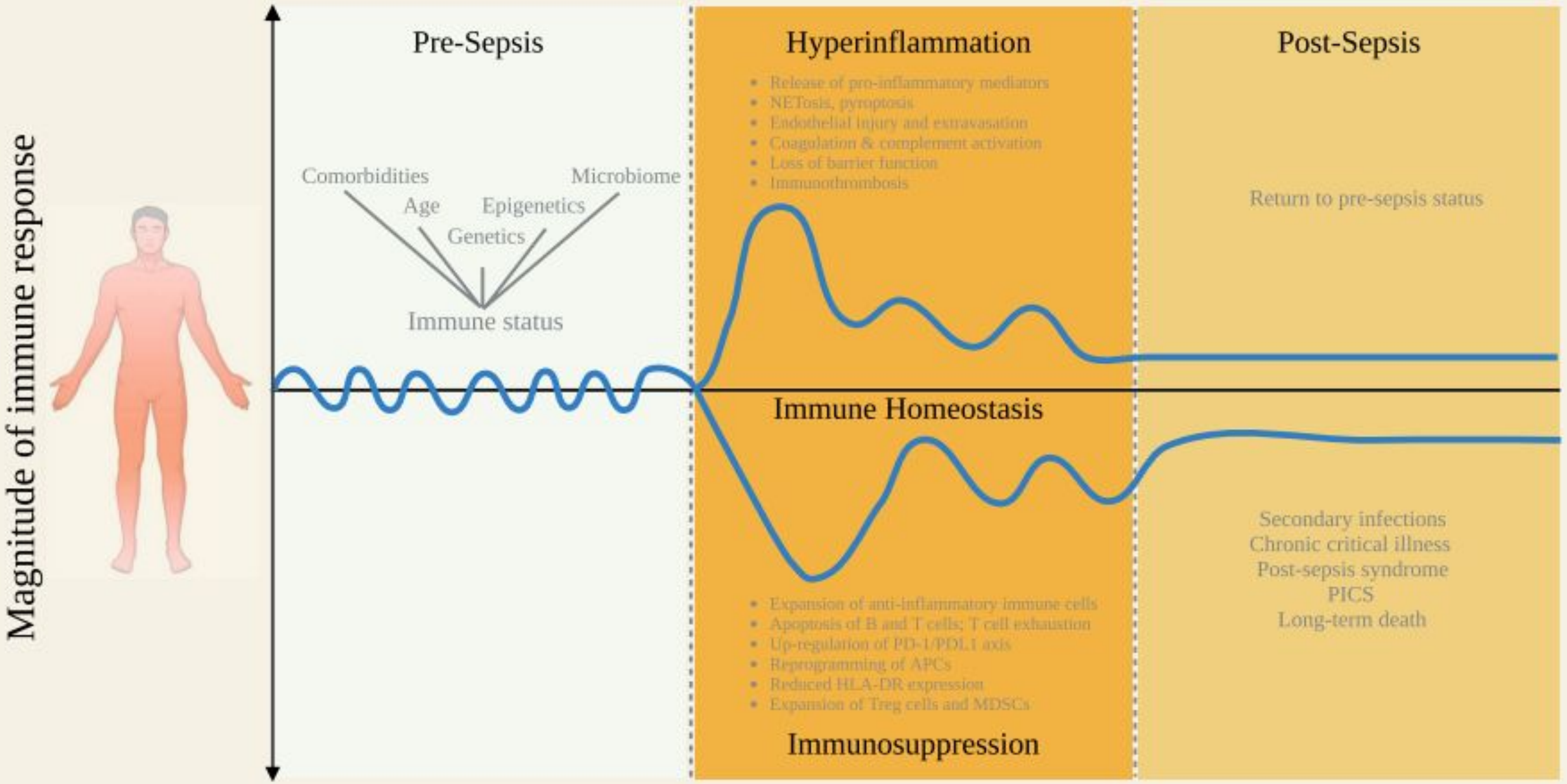
Mervyn Singer

Check for updates

We must acknowledge there is still no 'right' way to manage all the complexities of a septic patient

Le sfide….

1. Identificare il tipo di paziente

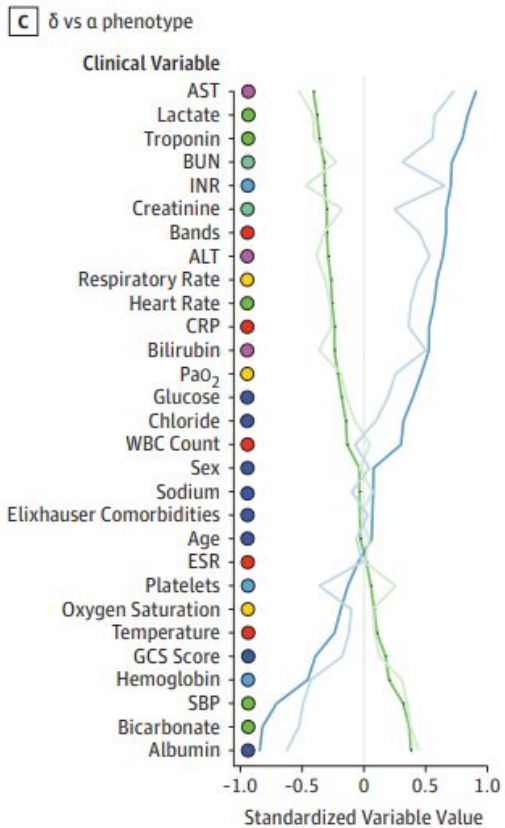

Magnitude of immune response
Pre-Sepsis
Comorbidities
Microbiome
Age
Epigenetics
Genetics
Immune status
Hyperinflammation
Release of pro-inflammatory mediators
NETosis, pyroptosis
Endothelial injury and extravasation
Coagulation & complement activation
Loss of barrier function
Immunothrombosis
Post-Sepsis
Return to pre-sepsis status
Immune Homeostasis
Secondary infections
Chronic critical illness
Post-sepsis syndrome
PICS
Long-term death
Expansion of anti-inflammatory immune cells
Apoptosis of B and T cells; T cell exhaustion
Up-regulation of PD-1/PDL1 axis
Reprogramming of APCs
Reduced HLA-DR expression
Expansion of Treg cells and MDSCs
Immunosuppression

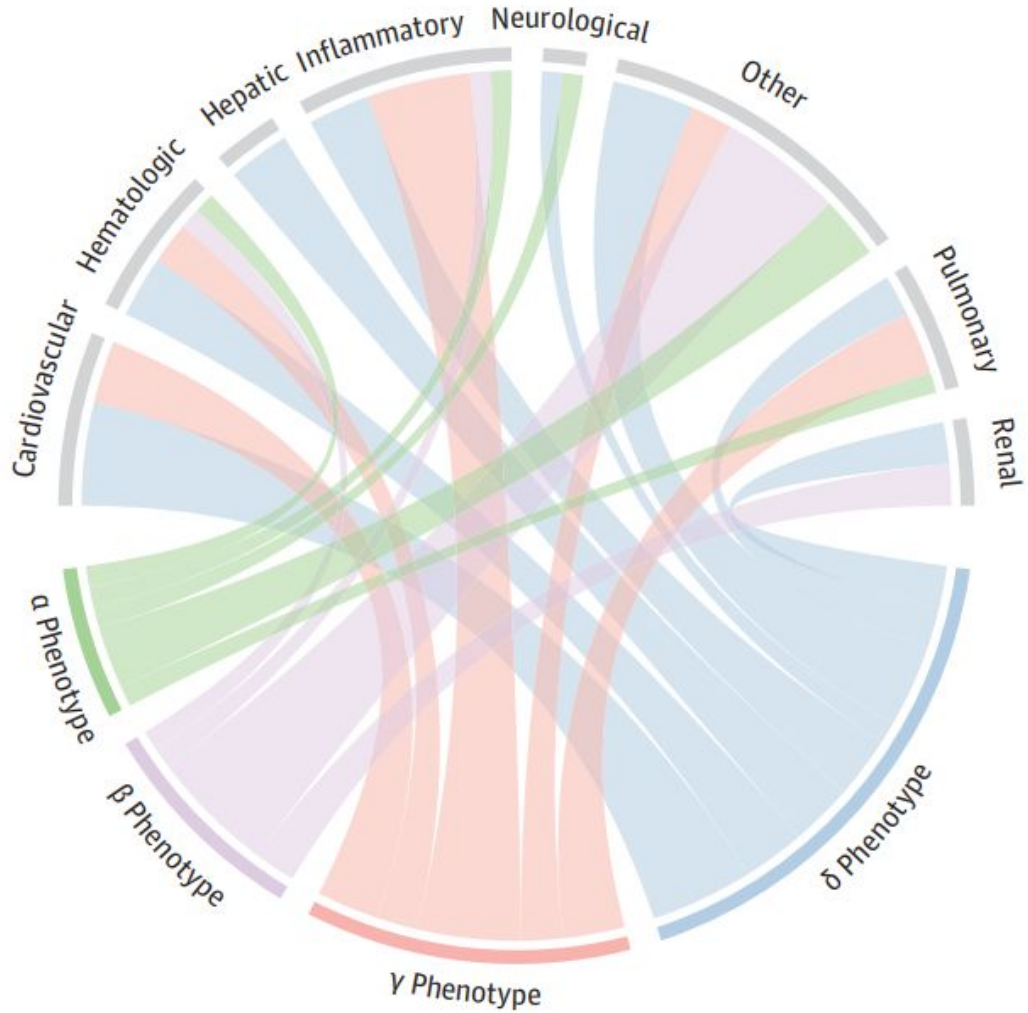
JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

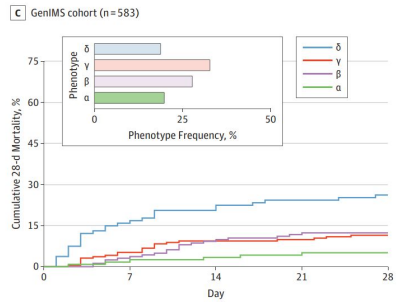
Derivation, Validation, and Potential Treatment Implications of Novel Clinical Phenotypes for Sepsis

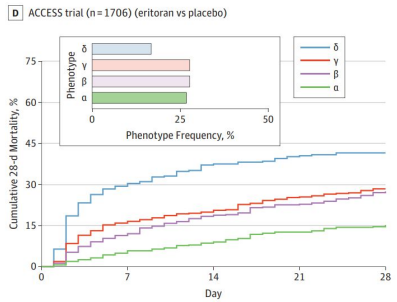
. Seymour,

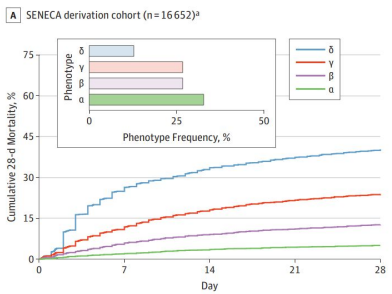
JAMA. 2019;321(20):2003-2017. doi:10.1001/jama.2019.5791

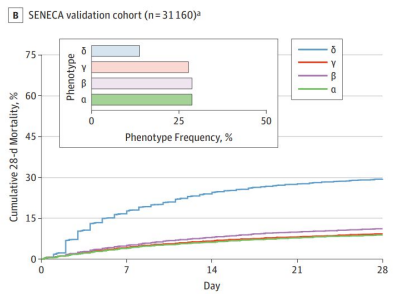


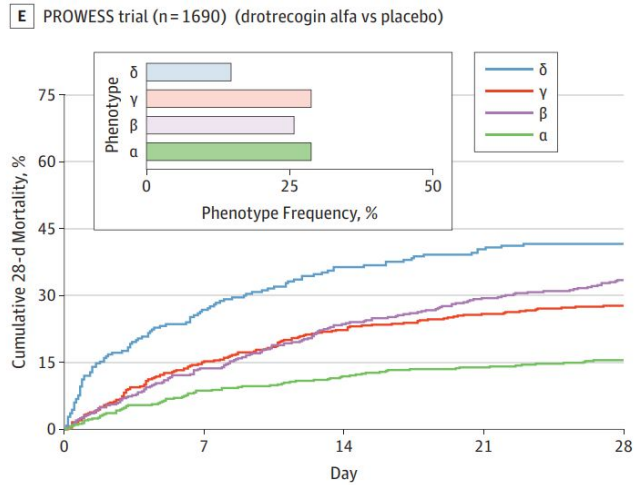


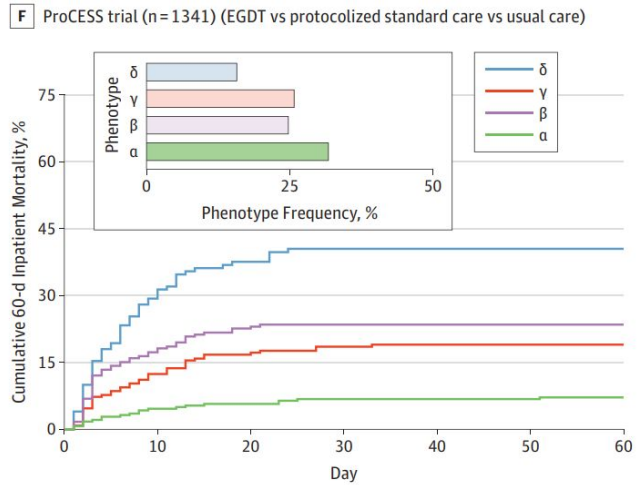

C GenIMS cohort (n = 583)
Cumulative 28-d Mortality, %
Day
Phenotype
Phenotype Frequency, %
δ
γ
β
α


D ACCESS trial (n = 1706) (eritoran vs placebo)
Cumulative 28-d Mortality, %
Day
Phenotype
Phenotype Frequency, %
δ
γ
β
α


A SENECA derivation cohort (n = 16 652)[a]
Cumulative 28-d Mortality, %
Day
Phenotype
Phenotype Frequency, %
δ
γ
β
α


B SENECA validation cohort (n = 31 160)[a]
Cumulative 28-d Mortality, %
Day
Phenotype
Phenotype Frequency, %
δ
γ
β
α


E PROWESS trial (n = 1690) (drotrecogin alfa vs placebo)
Cumulative 28-d Mortality, %
Day
Phenotype
Phenotype Frequency, %
δ
γ
β
α

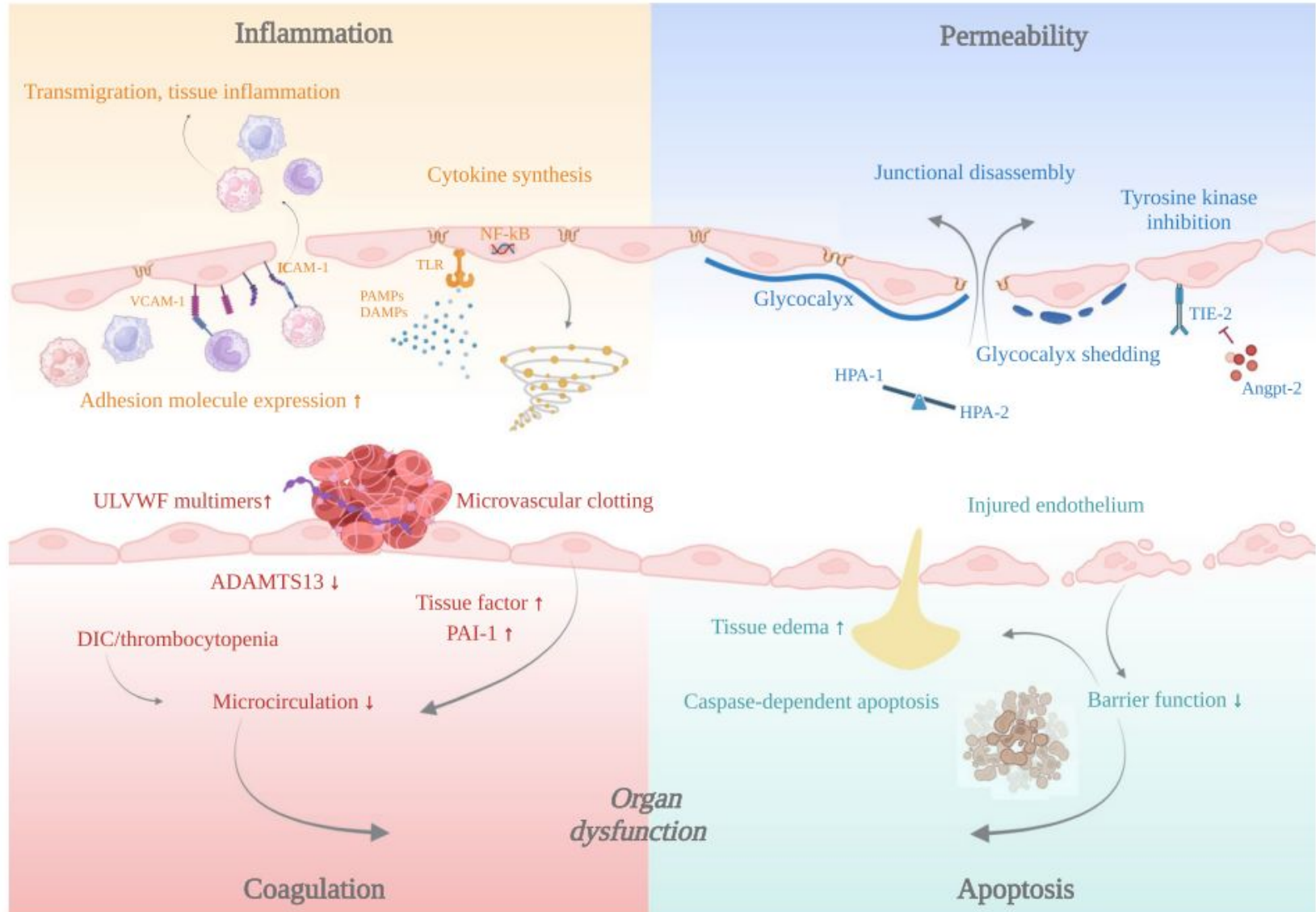

F ProCESS trial (n = 1341) (EGDT vs protocolized standard care vs usual care)
Cumulative 60-d Inpatient Mortality, %
Day
Phenotype
Phenotype Frequency, %
δ
γ
β
α

Bode et al. Critical Care (2023) 27:478
https://doi.org/10.1186/s13054-023-04762-6

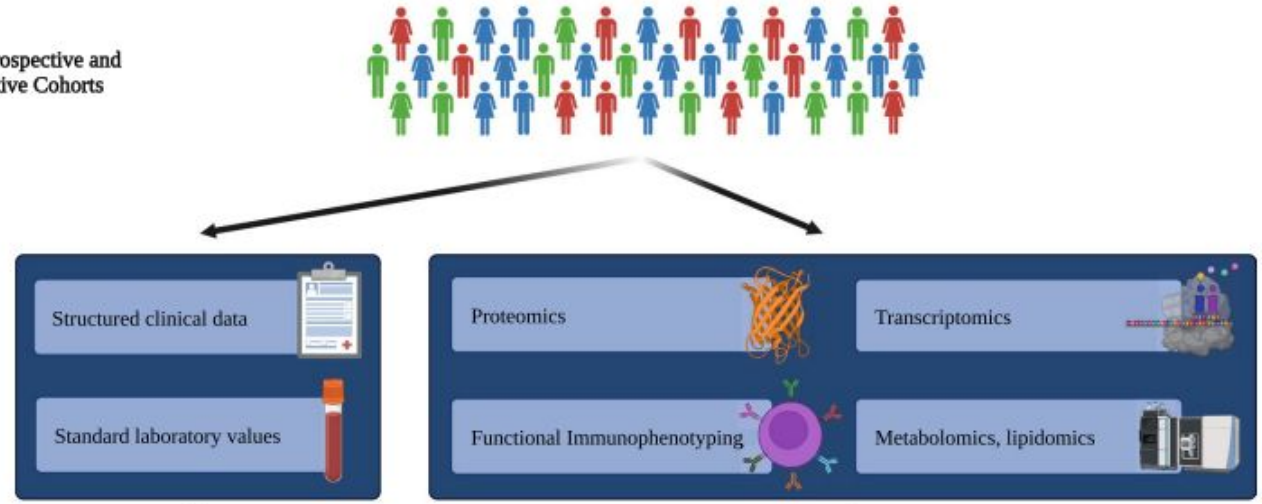
REVIEW Open Access

Targeting the host response in sepsis: current approaches and future evidence

Christian Bode[1*], Sebastian Weis[2,3,4], Andrea Sauer[1], Pedro Wendel-Garcia[5] and Sascha David[5]



Large Retrospective and Prospective Cohorts



Targeting hyperinflammation

Selective immunomodulators

Tumor necrosis factor	anti-TNF
Interleukin-1 receptor	Anakinra
Complement inhibition (anti-C5a)	anti-C5a

Non-selective immunomodulators

Corticosteroids	hydrocortisone
Vitamin C	Vitamin C
Antibiotics with anti-inflammatory properties	tetracyclines
	macrolides
(Activated) protein C and thrombomodulin	
Bioactive adrenomedullin	
Extracorporeal blood purification	

Immune augmentation strategies

Immunostimulatory cytokines and growth factors

Granulocyte–macrophage colony-stimulating factor

Interferon gamma

Thymosin alpha 1

Immunoglobulins

Mesenchymal stem cells

Immune checkpoint inhibitors

anti-PD-1

nivolumab

Published in final edited form as:
Annu Rev Med. 2023 January 27; 74: 457–471. doi:10.1146/annurev-med-043021-014005.

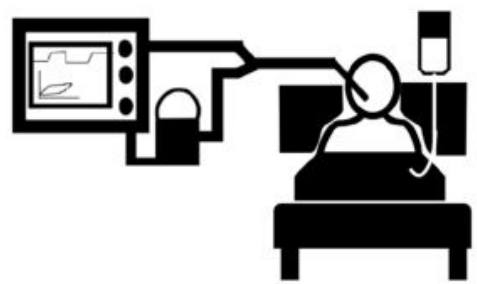
Biological Phenotyping in Sepsis and ARDS

Pratik Sinha[1], **Nuala J. Meyer**[2], **Carolyn S. Calfee**[3]

Challenges to Clinical Implementation of Phenotypes

Utility
How does it help my patients?
Currently Experimental
Lacking Prospective Data

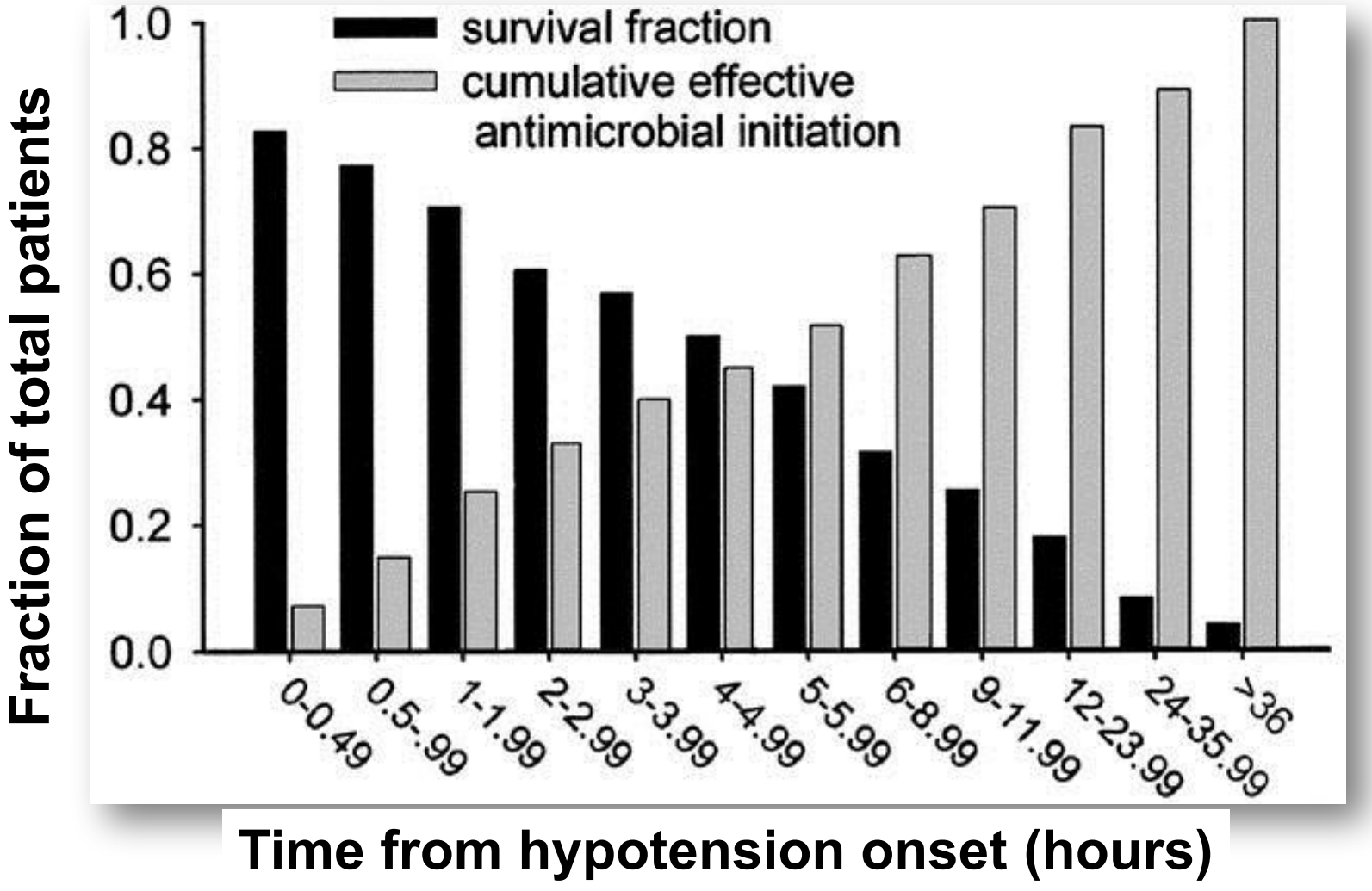
Feasibility
Can phenotyping be part of clinical workflow?
Biomarkers processing
Clinician skepticism



Stability
What are the implications of changing phenotypes?
Most schema use cross-sectional data
Unstable measurement system

Rudimentary
Do we understand the biology sufficiently?
Phenotypes may be too simplistic for ICU
Optimal therapies unknown

2. Ottimizzare la terapia antibiotica


survival fraction
cumulative effective antimicrobial initiation
1.0
0.8
0.6
0.4
0.2
0.0
Fraction of total patients
0-0.49
0.5-.99
1-1.99
2-2.99
3-3.99
4-4.99
5-5.99
6-8.99
9-11.99
12-23.99
24-35.99
>36
Time from hypotension onset (hours)

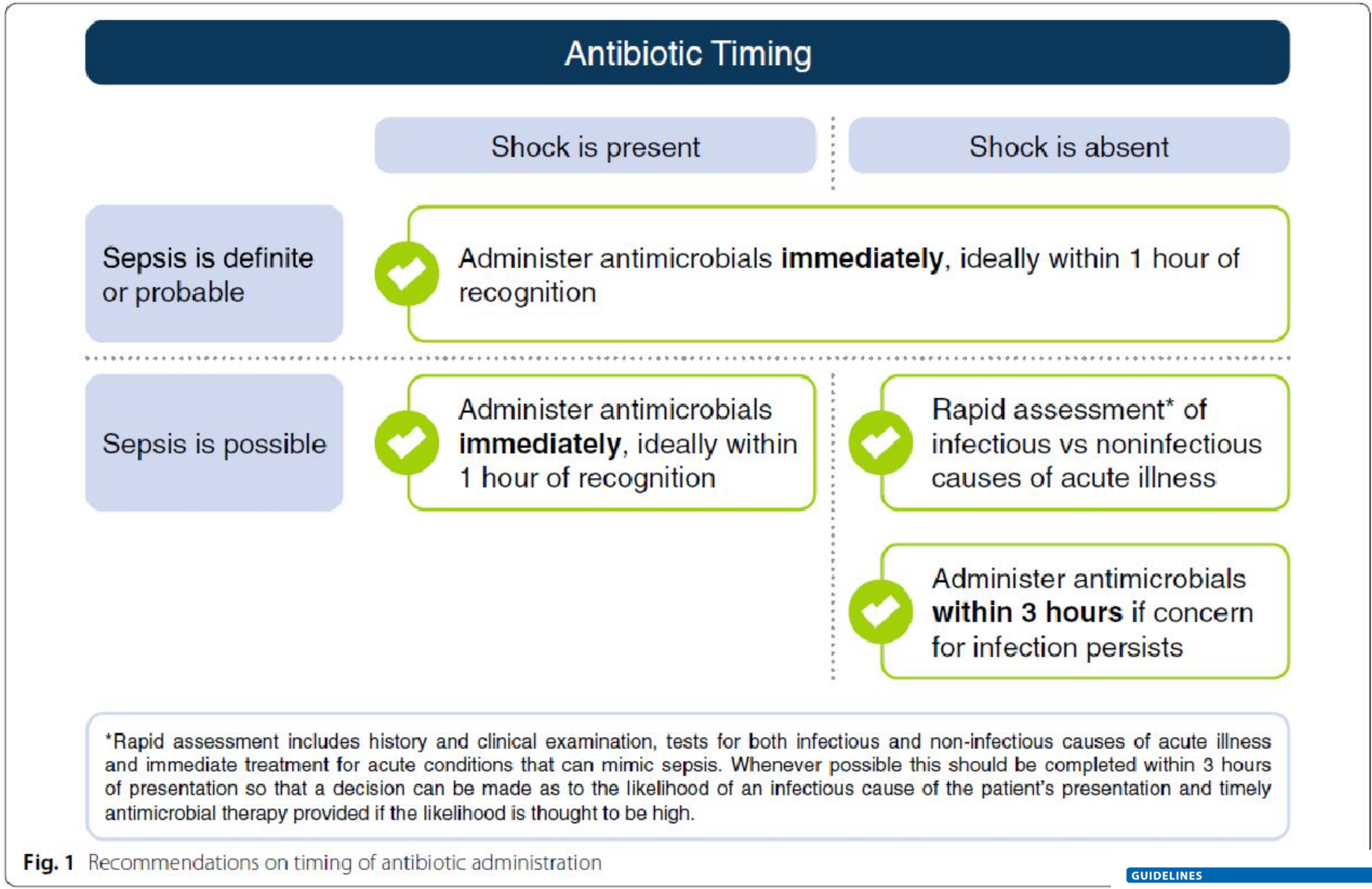


Fig. 1 Recommendations on timing of antibiotic administration

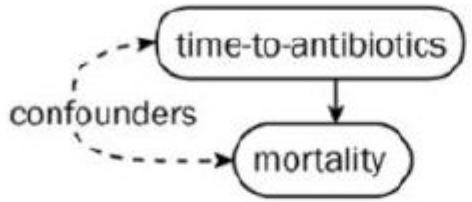
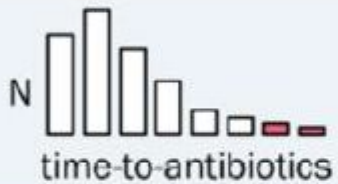
Risk of Misleading Conclusions in Observational Studies of Time-to-Antibiotics and Mortality in Suspected Sepsis

Theodore R. Pak,[1,2] Jessica Young,[1] Caroline S. McKenna,[1] Anna Agan,[1] Laura DelloStritto,[1] Michael R. Filbin,[3] Sayon Dutta,[3] Sameer S. Kadri,[4] Edward J. Septimus,[1] Chanu Rhee,[1,5,a] and Michael Klompas[1,5,a]

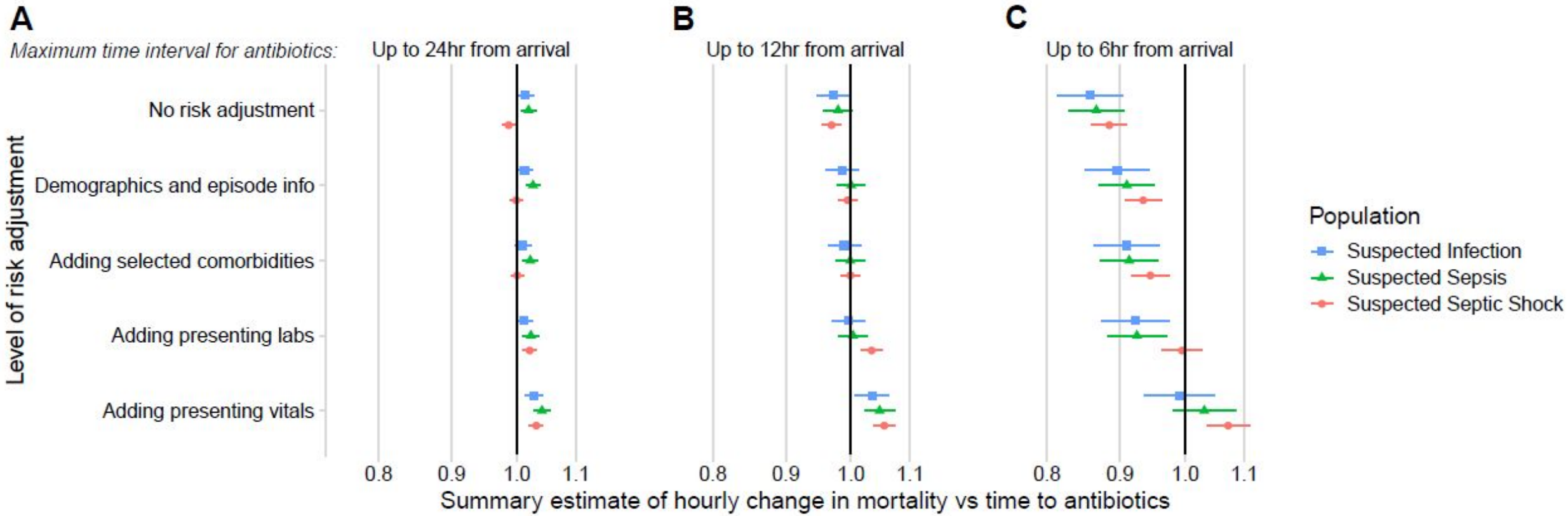
Clinical Infectious Diseases

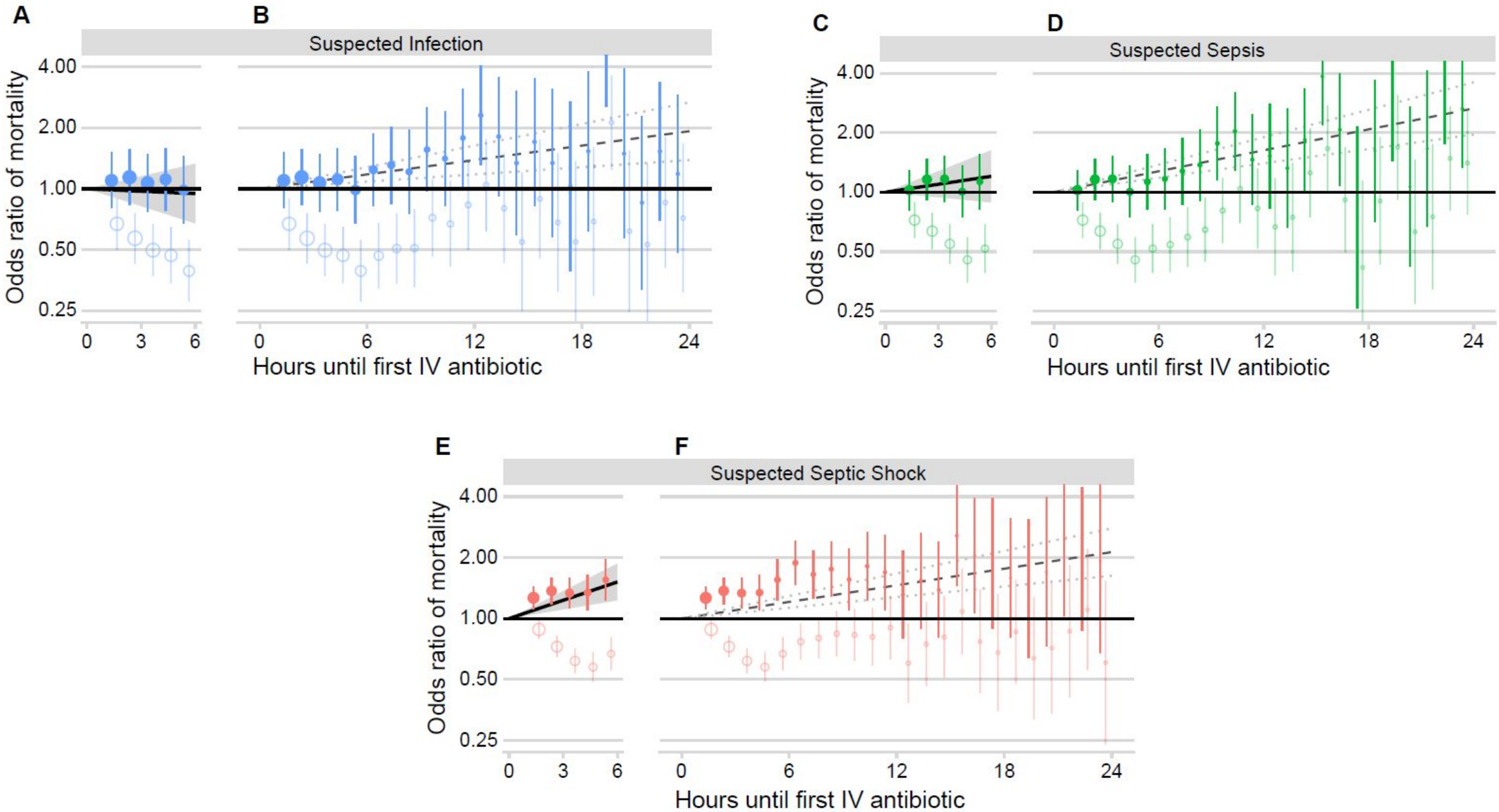
MAJOR ARTICLE

https://doi.org/10.1093/cid/ciad450

ANALYTICAL CONCERN	TEST	RESULTS
Insufficient confounding adjustment 	Add progressively more detailed covariates: basics → + comorbidities → + labs → + vitals	⚠ Changed
Including time-to-antibiotics outliers 	Pts treated >6h are rare & different. Lower max time-to-antibiotics: 24h → 12h → 6h	⚠ Changed
Equating sepsis & septic shock 	Separate analyses for: • suspected infection • suspected sepsis • suspected septic shock	⚠ Changed
Linearizing non-linearity 	Remove the assumption of a linear relationship between time-to-antibiotics ↔ log odds of mortality	⚠ Changed

	Cohort		
	Suspected Infection (N = 54 639)	Suspected Sepsis (N = 23 619)	Suspected Septic Shock (N = 25 990)
Decessi	1049 (1.9%)	1423 (6.0%)	3484 (13%)

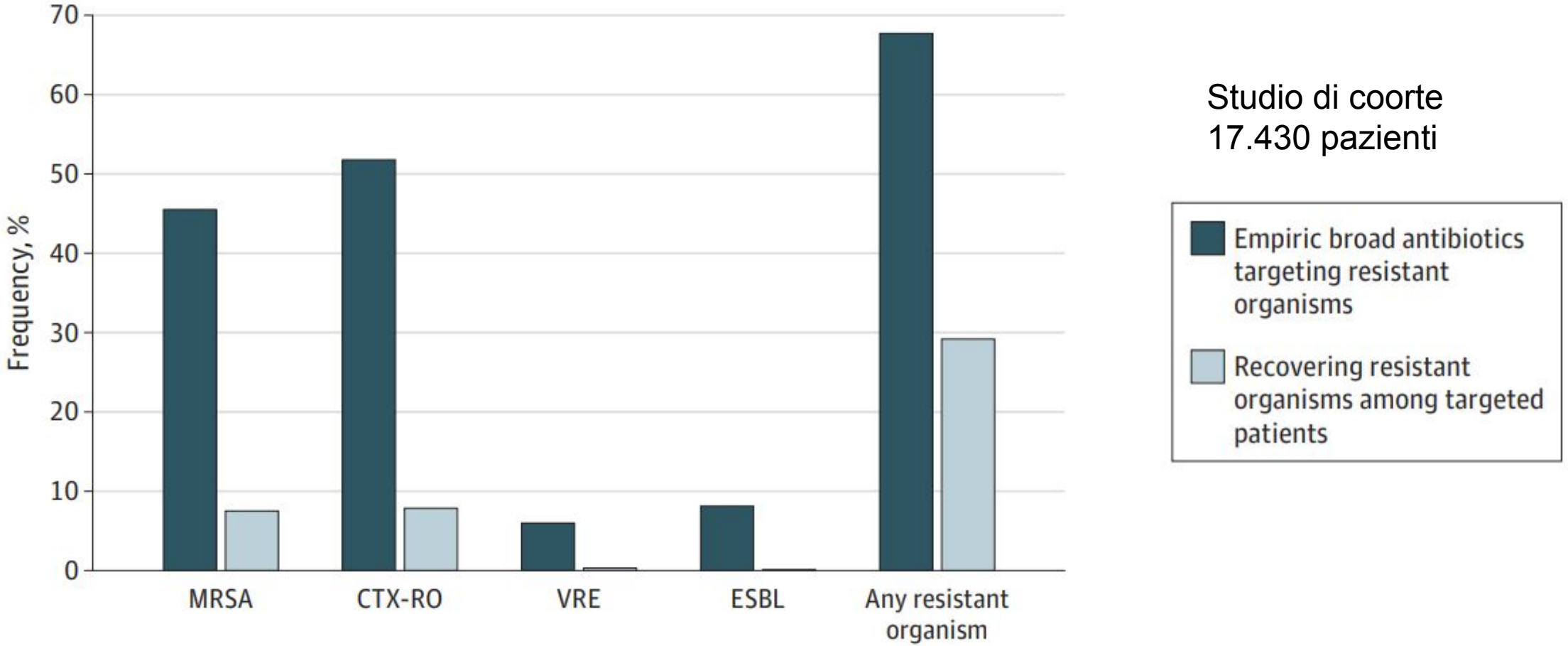



A
B
Suspected Infection
C
D
Suspected Sepsis
E
F
Suspected Septic Shock
Odds ratio of mortality
4.00
2.00
1.00
0.50
0.25
0
3
6
12
18
24
Hours until first IV antibiotic

Original Investigation | Infectious Diseases

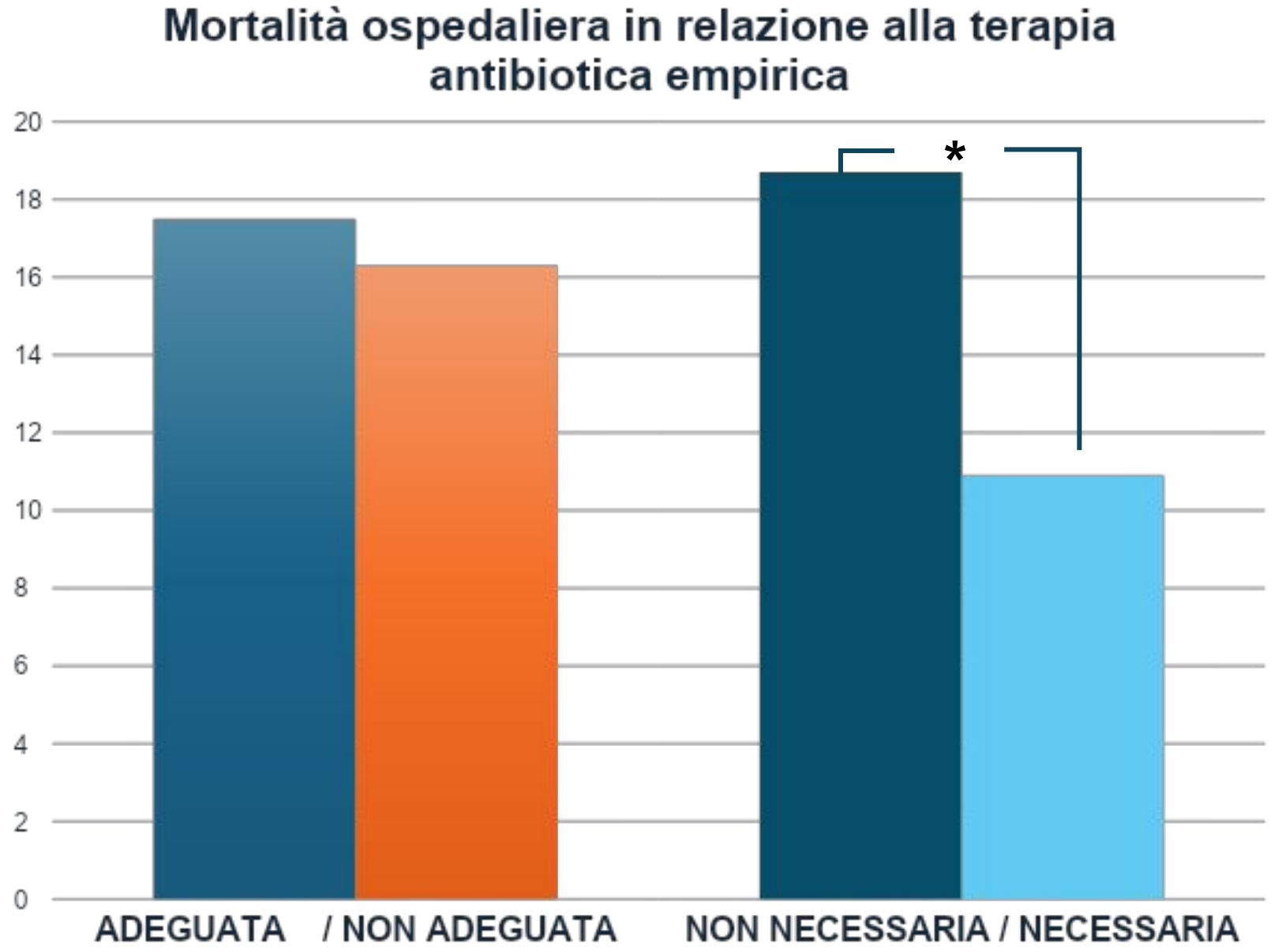
Prevalence of Antibiotic-Resistant Pathogens in Culture-Proven Sepsis and Outcomes Associated With Inadequate and Broad-Spectrum Empiric Antibiotic Use

Chanu Rhee, MD, MPH; Sameer S. Kadri, MD, MSc; John P. Dekker, MD, PhD; Robert L. Danner, MD; Huai-Chun Chen, PhD; David Fram, BA; Fang Zhang, PhD; Rui Wang, PhD; Michael Klompas, MD, MPH; for the CDC Prevention Epicenters Program



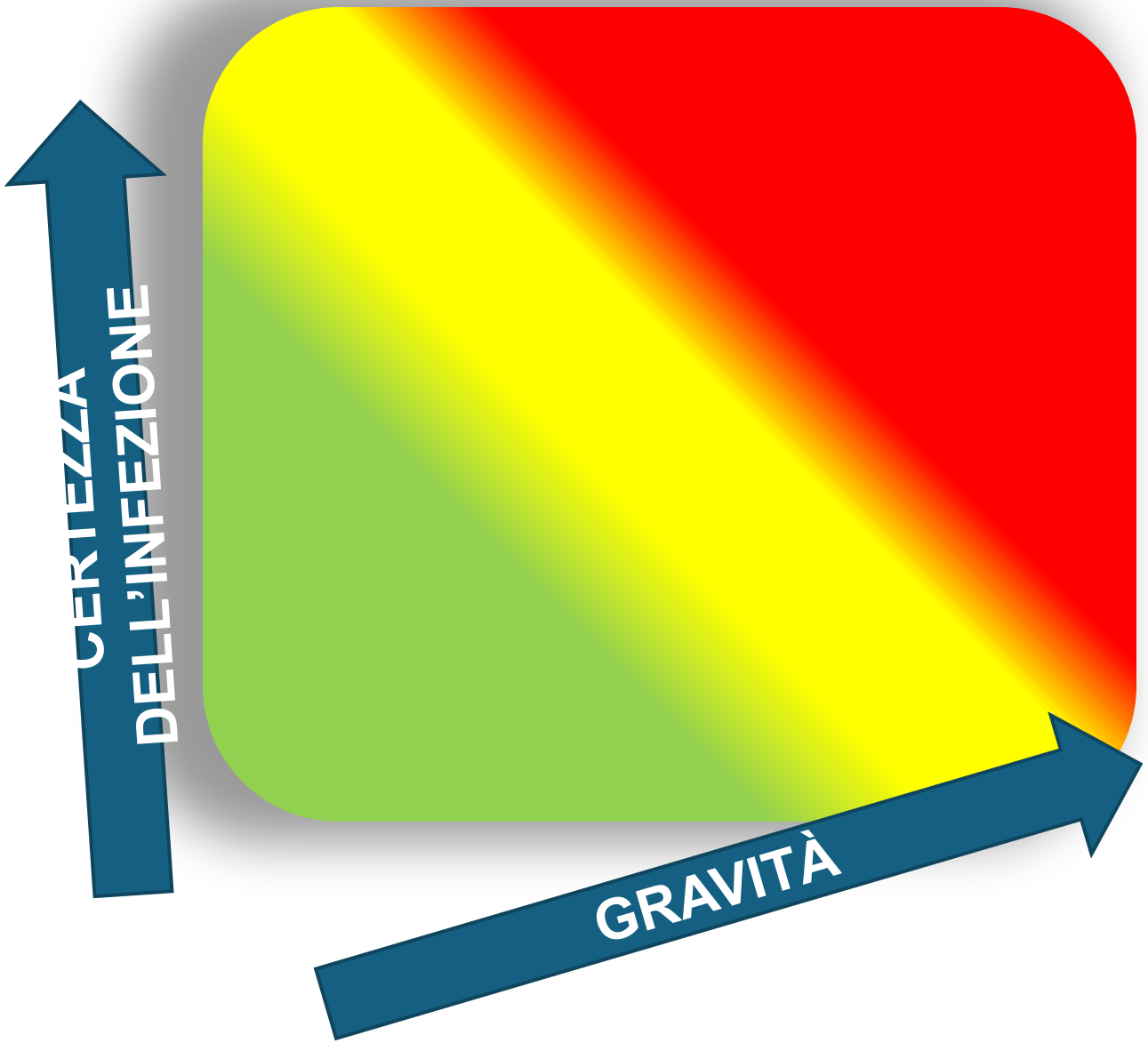
Studio di coorte
17.430 pazienti

JAMA Network Open. 2020;3(4):e202899. doi:10.1001/jamanetworkopen.2020.2899


Mortalità ospedaliera in relazione alla terapia antibiotica empirica
20
18
16
14
12
10
8
6
4
2
0
*
ADEGUATA / NON ADEGUATA
NON NECESSARIA / NECESSARIA

* = p < 0,001

VERSO UN RAGIONEVOLE EQUILIBRIO



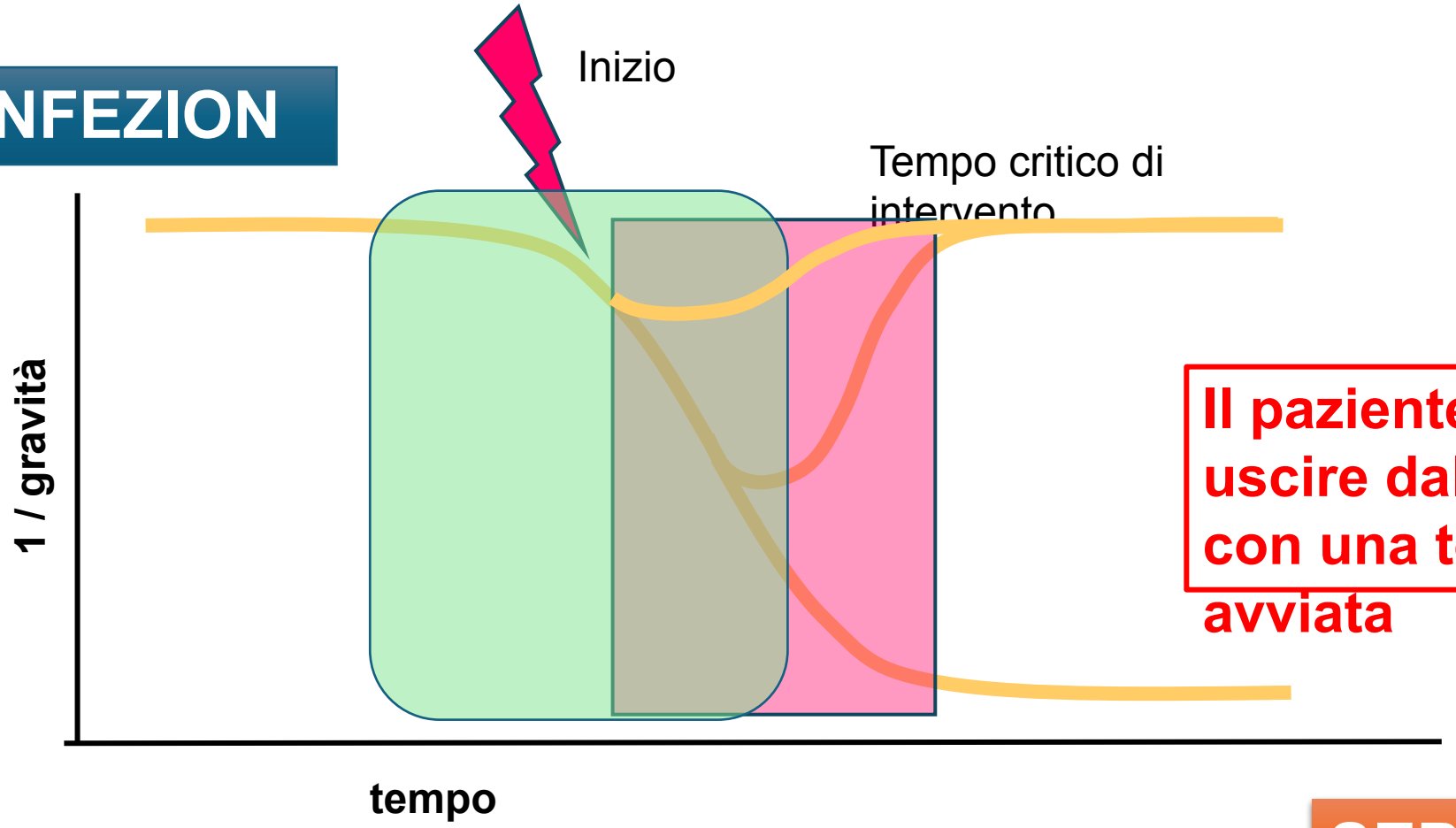
SHOCK SETTICO

antibiotico ad ampio spettro subito, eventuale descalation

SEPSI ED INFEZIONE

Ci diampo il tempo di riflettere per una terapia mirata

INFEZION



Il paziente deve SEMPRE uscire dal Pronto Soccorso con una terapia antibiotica avviata

SEPS

Bad Bugs, No Drugs

As Antibiotic Discovery Stagnates ...
A Public Health Crisis Brews

IDSA
Infectious Diseases Society of America

July 2004

Clinical Microbiology and Infection 26 (2020) 142–150

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Narrative review

Bloodstream infections – Standard and progress in pathogen diagnostics

I pannelli molecolari multiplex

vantaggi

- tempi di analisi
- simultanea identificazione di più agenti patogeni
- scelte più precise
- decisioni più rapide

sfide

- Costi
- strategie di utilizzo condivise
- interpretazione del risultato

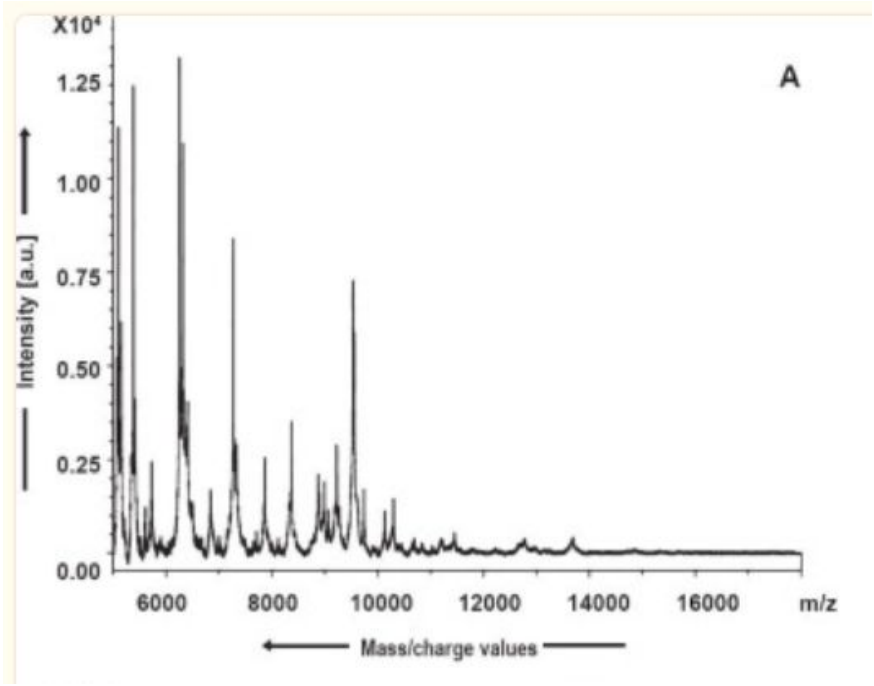
Test fenotipici (spettrometria di massa)

Test genomici Film Array

T2RM

Spettrometria di massa MALDI-TOF

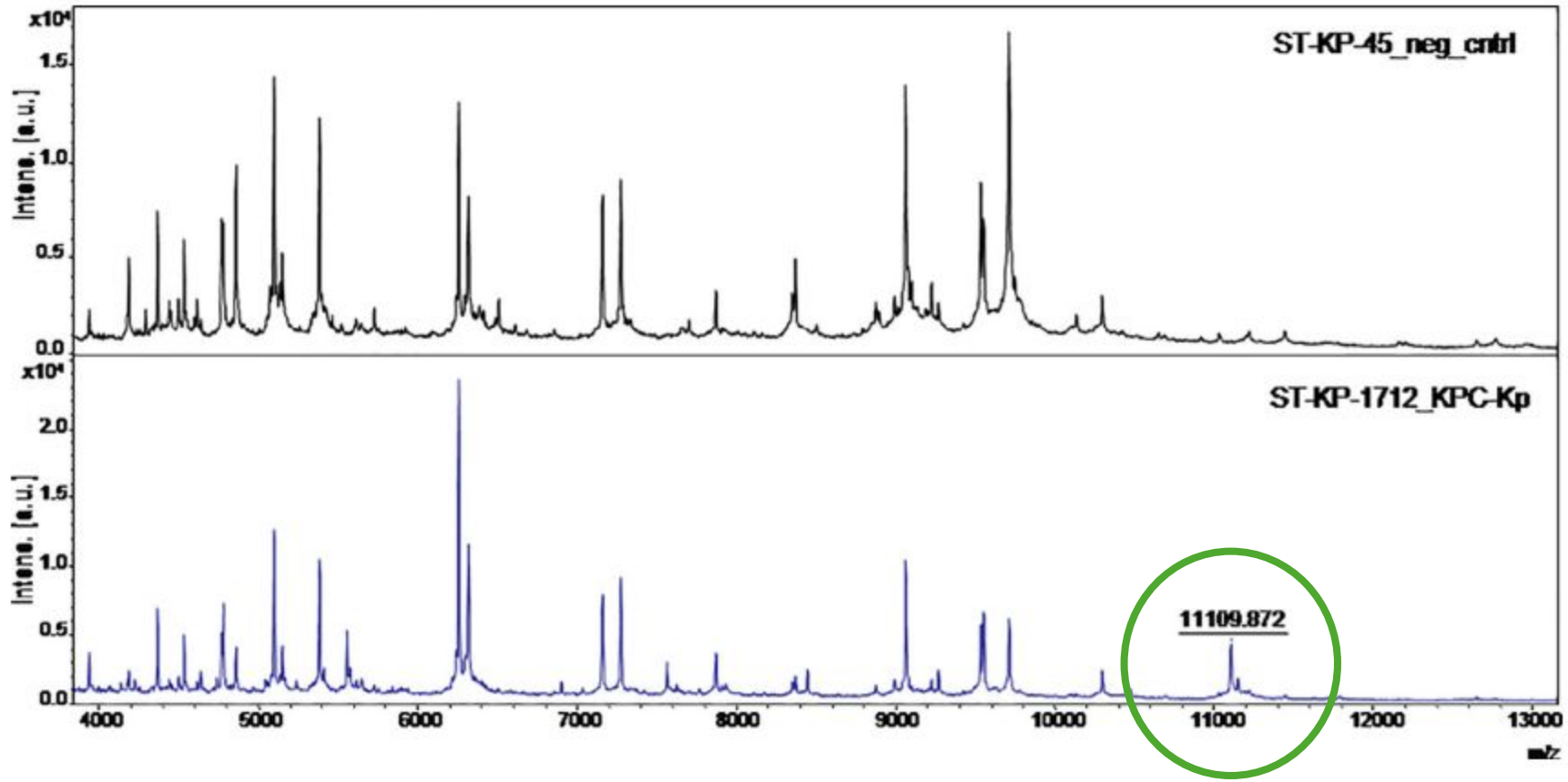
"*Matrix-Assisted Laser Desorption/Ionization – Time of Flight*",



23 min vs 24-48 h

after culture positivity

il MALDI-TOF attualmente non è in grado di differenziare *E. coli* da *Shigella*.



Identificazione dei profili di resistenza

FilmArray: Approccio Sindromico

BIOMÉRIEUX

1. Approccio Sindromico
Capacità di **testare completamente un ampio spettro di patogeni** quando il paziente presenta un insieme di segni e sintomi aspecifici

L'approccio sindromico massimizza le probabilità di produrre una risposta **accurata in un tempo clinicamente rilevante**

2. Risultato rapido

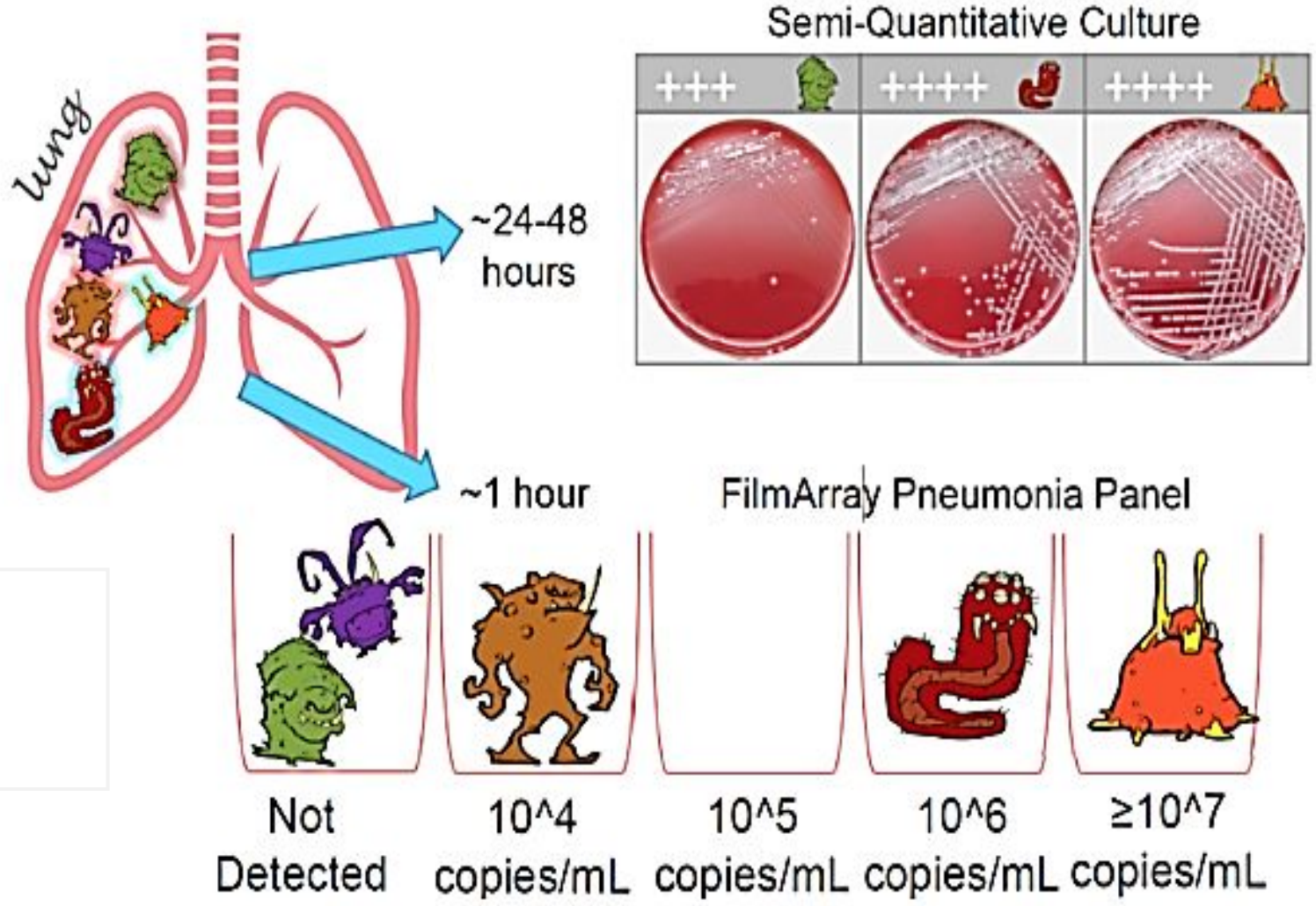
1hr

3. Sinergia tra il laboratorio ed il clinico

3

- Respiratory 2.1 (RP2.1) Panel*
- Respiratory 2.1 *plus* (RP2.1*plus*) Panel*
- Pneumonia *plus* (PN*plus*) Panel*
- Blood Culture Identification (BCID) Panel*
- Blood Culture Identification 2 (BCID2) Panel*
- Gastrointestinal (GI) Panel*
- Meningitis/Encephalitis (ME) Panel*

Una coltura standard conta gli organismi vitali
Il FilmArray misura la presenza di acidi nucleici.



La coltura può richiedere dalle 24 alle 48 ore.

L'esame colturale può non essere sensibile, in particolare per i batteri esigenti o se il prelievo è stato fatto dopo l'inizio della terapia empirica

I risultati relativi ai batteri comuni sono di tipo semi-quantitativo, con refertazione in log 104, 105,106, >107 di copie genomiche/ml di campione.
La refertazione in copie/ml dei livelli degli acidi nucleici è stata disegnata per essere analoga alle tecniche di coltura standard.

The BioFire® FilmArray® BCID2 Panel emocoltura

Gram-Negative Bacteria

Acinetobacter calcoaceticus-baumannii complex
*Bacteriodes fragilis**
Haemophilus influenzae
Neisseria meningitidis
Pseudomonas aeruginosa
*Stenotrophomonas maltophilia**
Enteric Bacteria
Enterobacter cloacae complex
Escherichia coli
*Klebsiella aerogenes**
Klebsiella oxytoca
Klebsiella pneumoniae group
Proteus
*Salmonella**
Serratia marcescens

Gram-Positive Bacteria

*Enterococcus faecalis**
*Enterococcus faecium**
Listeria monocytogenes
Staphylococcus
Staphylococcus aureus
*Staphylococcus epidermidis**
*Staphylococcus lugdunensis**
Streptococcus
Streptococcus agalactiae
Streptococcus pneumoniae
Streptococcus pyogenes

Resistance Markers

Carbapenemases
IMP*
KPC
Oxa-48-like*
NDM*
VIM*
ESBL
CTX-M*
Methicillin resistance
mecA/C
mecA/C and MREJ* (MRSA)
Vancomycin resistance
vanA/B
Colistin resistance
Mcr-1*

Yeast

Candida albicans
*Candida auris**
Candida glabrata
Candida krusei
Candida parapsilosis
Candida tropicalis
*Cryptococcus neoformans/gattii**

(43 Targets)

CASO 1 F. 21 anni

Diabete insipido a seguito di asportazione di faringioma a 6 anni. In terapia con desmopressina.

- Esordio improvviso con gastralgia
- Vomito incoercibile (>10 episodi) e diarrea (> 10 episodi)
- Temperatura fino 39,1 °C
- Impossibilità ad assumere la desmopressina, altri farmaci, liquidi

BATTERIOLOGIA

Materiale: Feci

Ricerca diretta molecolare multiplex pannello gastroenterico

BATTERI	
Campylobacter spp	**Negativa**
Clostridium difficile toxin A/B	**Negativa**
Plesiomonas shigelloides	**Negativa**
Salmonella spp	**Negativa**
Vibrio spp	**Negativa**
Vibrio cholerae	**Negativa**
Yersinia enterocolitica	**Negativa**
E.coli patogeni / Shigella	**Negativa**
EAEC (aggR)	**Negativa**
EPEC (eaeA)	**Negativa**
ETEC (It / st)	**Negativa**
STEC (stx 1 / 2)	**Negativa**
Shigella/Enteroinvasive E.coli (EIEC)	**Negativa**

Alla c.a. Dott.CALCI

BATTERIOLOGIA

Materiale: Feci

Ricerca diretta molecolare multiplex - Virus

Norovirus G 1	**Positiva**
Norovirus G 2	**Positiva**
Rotavirus	**Negativa**
Adenovirus	**Negativa**
Astrovirus	**Negativa**
Sapovirus	**Negativa**

Alla c.a. Dott.CALCI

CASO 2 F 35 anni

Tossicodipendenza.
Dolore anca destra
In PS anemia severa, febbre, ipotensione

Sig.ra MELCHIOR SARITA
Data Nascita: 15/10/1986 Età: 36 Anni Sesso: F
Richiesta: 55346030 del: 06/12/2022 Ore: 09:36
(UD)-Seminterrato, Pad. 1

Esame	*Esito*	*U.M.*	*Intervalli di riferimento*
BATTERIOLOGIA			
Materiale: Sangue			
Flacone colturale aerobi	**Sviluppo di**		
Ceppo 1 Streptococcus dysgalactiae			
Sede del prelievo non specificata.			
Flacone colturale anaerobi	**Sviluppo di**		
Ceppo 1 Streptococcus dysgalactiae			
Flacone colturale aerobi 2° set	**Sviluppo di**		
Ceppo 1 Streptococcus dysgalactiae			
Sede del prelievo non specificata.			
Flacone colturale anaerobi 2° set	**Sviluppo di**		
Ceppo 1 Streptococcus dysgalactiae			

Antibiogramma

ANTIBIOTICO	Ceppo 1 *MIC*
Clindamicina	S 0.0625
Eritromicina	S 0.125
Penicillina G	S <=0.0078

< R = Resistente, S = Sensibile, I = Intermedio >

Esito esame microscopico: si osserva la presenza di cocchi Gram positivi. Dato comunicato il 06/12/2022 alle ore 17:50, mediante modalità read back.

Sig.ra MELCHIOR SARITA
Data Nascita: 15/10/1986 Età: 36 Anni Sesso: F
Richiesta: 55346030 del: 06/12/2022 Ore: 09:36
(UD)-Seminterrato, Pad. 1

Esame	*Esito*	*U.M.*	*Intervalli di riferimento*
Note 2° set emocoltura	*Esito esame microscopico: si osserva la presenza di cocchi Gram positivi. Dato comunicato il 06/12/2022 alle ore 17:50, mediante modalità read back.*		
Ricerca diretta molecolare multiplex			
GRAM POSITIVI			
Enterococcus faecalis	**Negativa**		
Enterococcus faecium	**Negativa**		
Listeria monocytogenes	**Negativa**		
Staphylococcus spp	**Negativa**		
Staphylococcus aureus	**Negativa**		
Staphylococcus epidermidis	**Negativa**		
Staphylococcus lugdunensis	**Negativa**		
Streptococcus spp	**Positiva**		
Streptococcus agalactiae	**Negativa**		
Streptococcus pneumoniae	**Negativa**		
Streptococcus pyogenes	**Negativa**		
Ricerca diretta molecolare multiplex			
GRAM NEGATIVI			
Acinetobacter calcoaceticus-baumannii complex	**Negativa**		
Bacteroides fragilis	**Negativa**		
Enterobacterales	**Negativa**		
Enterobacter cloacae complex	**Negativa**		
Escherichia coli K1	**Negativa**		
Klebsiella aerogenes	**Negativa**		
Klebsiella oxytoca	**Negativa**		
Klebsiella pneumoniae group	**Negativa**		
Proteus spp.	**Negativa**		
Salmonella spp	**Negativa**		
Serratia marcescens	**Negativa**		
Haemophilus influenzae	**Negativa**		
Neisseria meningitidis	**Negativa**		
Pseudomonas aeruginosa	**Negativa**		
Stenotrophomonas maltophilia	**Negativa**		

Ecocardiografia: endocardite

CASO 3 F 59 anni

Recidiva di fistola rino-liquorale
Lamenta congestione nasale e cefalea
T.C. 40,2°C
Presenza di rigor

Richiedente Referto: (UD)-Pronto Soccorso Generale

Sig.ra **RUTIGLIANI GRAZIELLA**
Data Nascita: 03/11/1963 Età: 59 Anni Sesso: F
Richiesta: **55420044** del: **20/12/2022** Ore: 14:00
(UD)-Seminterrato, Pad. 1

Esame	*Esito*	*U.M*	*Intervalli di riferimento*
BATTERIOLOGIA			
Materiale: Liquor			
Ricerca diretta molecolare multiplex			
BATTERI			
Escherichia coli K1	**Negativa**		
Haemophilus influenzae	**Positiva**		
Listeria monocytogenes	**Negativa**		
Neisseria meningitidis	**Negativa**		
Streptococcus agalactiae	**Negativa**		
Streptococcus pneumoniae	**Negativa**		
VIRUS			
Citomegalovirus (CMV)	**Negativa**		
Enterovirus	**Negativa**		
Herpes simplex virus 1 (HSV-1)	**Positiva**		
Herpes simplex virus 2 (HSV-2)	**Negativa**		
Human herpes virus 6 (HHV-6)	**Negativa**		
Human parechovirus	**Negativa**		
Varicella zoster virus (VZV)	**Negativa**		
LIEVITI			
Cryptococcus neoformans/gattii	**Negativa**		
Dato comunicato il 20/12/2022 alle ore 17:56, mediante modalità read back.			
Esame colturale batteri aerobi	**Sviluppo di**		

Ceppo 1	Haemophilus influenzae	Numerose colonie

Antibiogramma

ANTIBIOTICO	Ceppo 1	*MIC*
Amoxicillina-clavulanato	S	1
Ampicillina	S	0.5
Cefotaxime	S	0.047
Ceftazidime	S	0.19
Ceftriaxone	S	0.016

Sig.ra **RUTIGLIANI GRAZIELLA**
Data Nascita: 03/11/1963 Età: 59 Anni Sesso: F
Richiesta: **55420044** del: **20/12/2022** Ore: 14:00
(UD)-Seminterrato, Pad. 1

Esame	*Esito*	*U.M*	*Intervalli di riferimento*
Ciprofloxacina	S	0.006	
Levofloxacina	S	0.016	
Meropenem	S	0.125	

< R = Resistente, S = Sensibile, I = Intermedio >

Esame colturale batteri anaerobi	**Nessuno sviluppo**
Esame colturale miceti	**Nessuno sviluppo**

CASO 4 M 19 anni

Tosse secca e febbre da 3 gg

All'ecografia
Addensamento apicale destro ed interstiziopatia a destra

Microbiologia

Materiale: Tamp. faringeo

Multiplex Respiratory plus

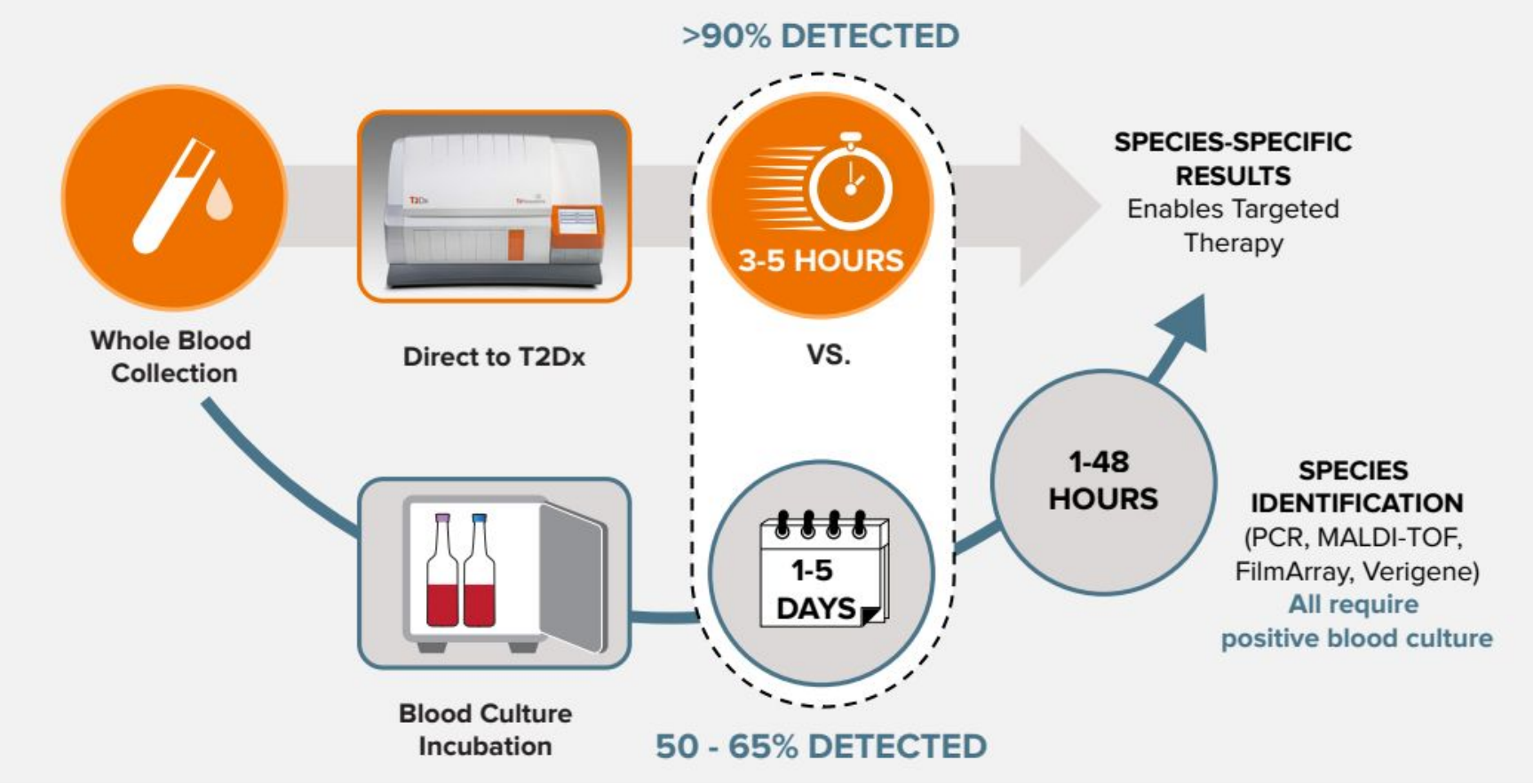
Bordetella pertussis	**Negativo**
Bordetella parapertussis	**Negativo**
Chlamydiophila pneumoniae	**Negativo**
Mycoplasma pneumoniae	**Positivo**
Adenovirus	**Negativo**
Coronavirus 229E	**Negativo**
Coronavirus HKU1	**Negativo**
Coronavirus OC43	**Negativo**
CoronavirusNL63	**Negativo**
H. Metapneumovirus	**Negativo**
H. Rhinovirus/Enterovirus	**Negativo**
Influenza A	**Negativo**
Influenza B	**Negativo**
MERS-CoV	**Negativo**
Parainfluenza 1	**Negativo**
Parainfluenza 2	**Negativo**
Parainfluenza 3	**Negativo**
Parainfluenza 4	**Negativo**
Virus Respiratorio Sinciziale (RSV)	**Negativo**
SARS-CoV 2	**Negativo**

Grazie ad un approccio molecolare in **Multiplex PCR**, unito ad un sistema di rilevazione in **risonanza magnetica** ora è possibile per il microbiologo definire la **terapia antibiotica** più appropriata e concorrere all'applicazione dei protocolli di ***stewardship***, per il controllo dei fenomeni di **resistenza farmacologica**, in solo 3.5 ore dall'inizio del test.

Powered by CARB-X

T2 Candida®	T2 Bacteria®	T2Resistance™	T2Candida® auris
Sensibilità: 91,1%[2] Specificità: 99,4%[2]	Sensibilità: 95,4%[1] Specificità: 98,0%[2]	FDA in corso CE fine 2019	Sensibilità: ≥89% Specificità: 98%
C. albicans *C. tropicalis* *C. parapsilosis* *C. krusei* *C. glabrata*	*E. faecium* *S. aureus* *K. pneumoniae* *A. baumannii* *P. aeruginosa* *E. coli*	*mec* A/C *van* A/B CTXM-14/15 KPC OXA-48 Group NDM, VIM, IMP AmpC (CMY/DHA)	*C. auris* *C. duobushaemulonii* *C. haemulonii*
Approvato FDA 1-3 CFU/mL LoD	Approvato FDA 2-11 CFU/mL LoD	Pannello RUO 2-5 CFU/mL LoD	RUO, validazione CDC su tamponi, prestazioni su sangue dimostrate; ≤5 CFU/mL LoD

The T2MR-powered **T2Dx® Instrument** can detect organisms as low as 1 CFU/mL, enabling it to be the only FDA-cleared technology that can detect low levels of pathogens in whole blood.



T2Bacteria® Panel*

95.8% Sensitivity | 98.1% Specificity[1]

- *Enterococcus faecium*
- *Staphylococcus aureus*
- *Klebsiella pneumoniae*
- *Acinetobacter baumannii*
- *Pseudomonas aeruginosa*
- *Escherichia coli*

T2Candida® Panel

91.1% Sensitivity | 99.4% Specificity[2]

- *Candida albicans*
- *Candida tropicalis*
- *Candida krusei*
- *Candida glabrata*
- *Candida parapsilosis*

T2 batteri da sangue intero

Escherichia coli
Klebsiella pneumoniae
Pseudomonas aeruginosa
Acinetobacter baumannii

Batteri Gram positivi

Staphylococcus aureus
Enteroccus faecium

Sensibilità: 95,4%
Specificità: 98,0%

su batteri E.S.K.A.P.E.
Sensibilità e specificità sono calcolate tramite il criterio di vera infezione

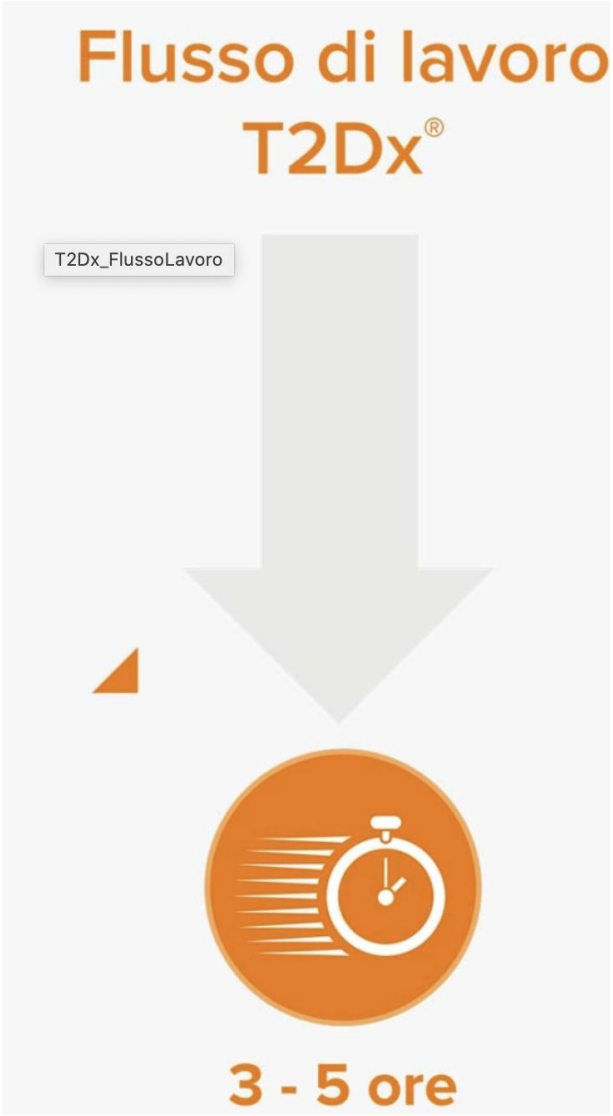
LoD compreso fra 2 – 11 CFU/mL

KPC
OXA-48
NDM / VIM / IMP
CTX-M 15/14
AmpC (CMY/DHA)
van A/B
mec A/C

Studi microbiologici di validazione hanno già dimostrato

LoD 2 CFU/mL
FDA Breakthrough Device*

CE IVD



Review

Diagnosis and management of infections caused by multidrug-resistant bacteria: guideline endorsed by the Italian Society of Infection and Tropical Diseases (SIMIT), the Italian Society of Anti-Infective Therapy (SITA), the Italian Group for Antimicrobial Stewardship (GISA), the Italian Association of Clinical Microbiologists (AMCLI) and the Italian Society of Microbiology (SIM)

International Journal of Antimicrobial Agents 60 (2022) 106611

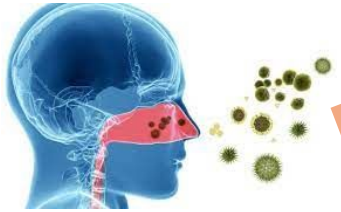
QUESTION #1: Do rapid microbiological diagnostics impact on the management and clinical outcome of critically ill/septic patients?

Recommendation 1.1:

In critically ill patients, the use of rapid diagnostic microbiological tests (RDTs) should be adopted since they have the potential to improve the timing to initiate appropriate therapy and possibly improve the patient outcome.

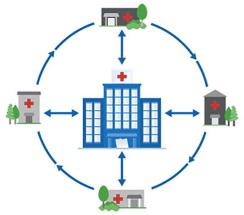
Strength of recommendations:	**STRONG**	Certainty of evidence:	**LOW**

3. Lavorare in rete



Stagionalità

Territorio



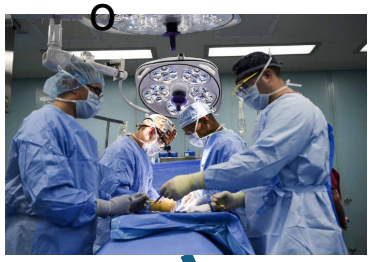
Rete Hub - Spoke

INPUT

THROUGHPUT

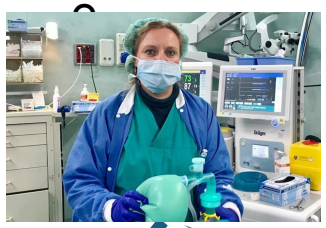
OUTPUT

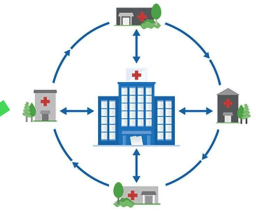
Chirurgo



Infettivologo

Rianimatore





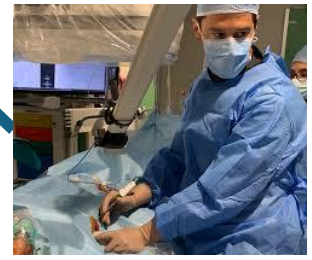
Rete Hub - Spoke

Posto letto

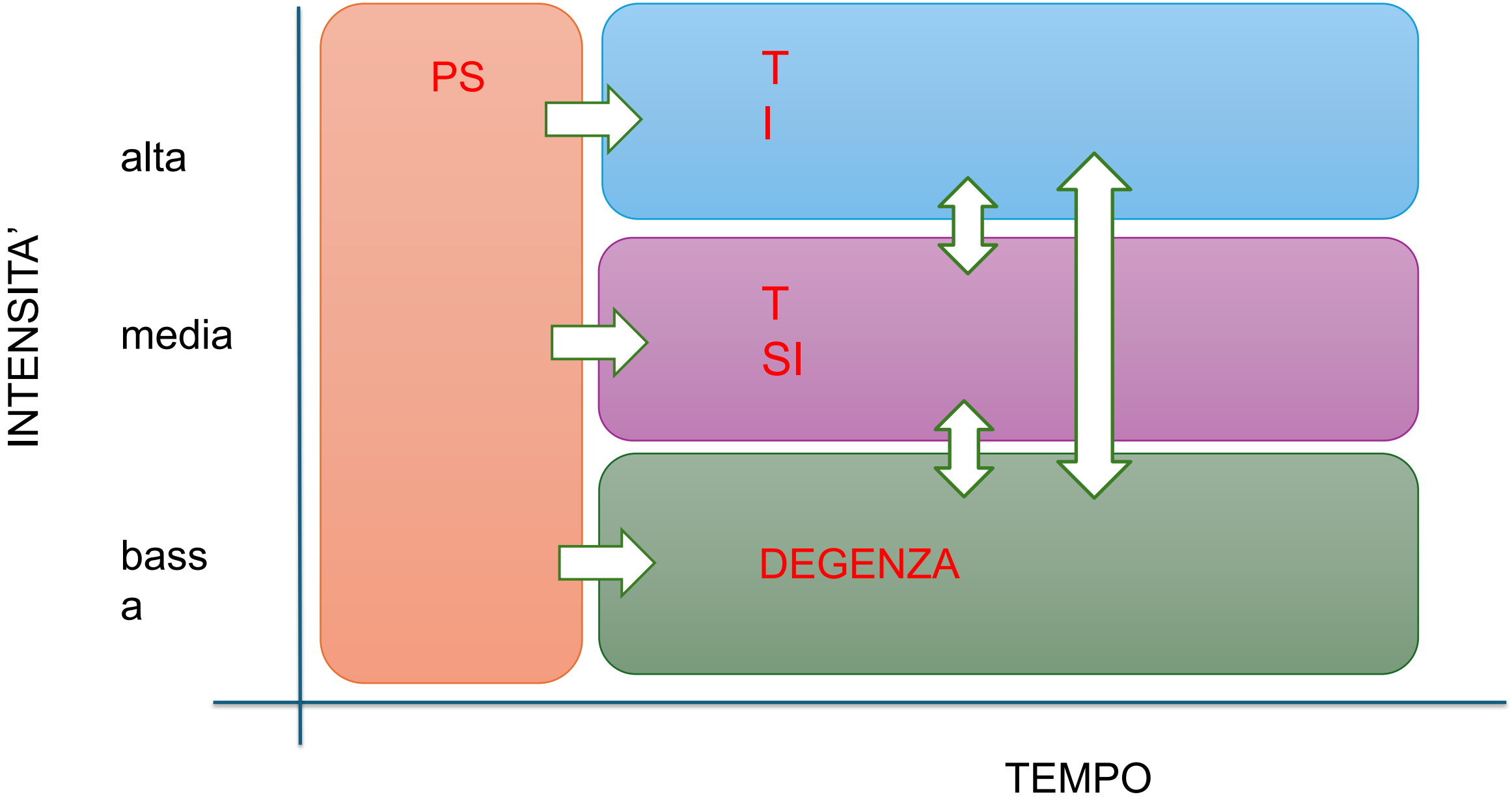
Patologo clinico

Microbiologo

Radiologo



Radiologo interventista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Grazie per l’attenzione