FOCUS

LOTTA ALLE INFEZIONI CORRELATE ALL'ASSISTENZA

MOTORE SANITÀ
Innovazione Sostenibile

La Microbiologia dalla diagnostica alla ricerca

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LA RICERCA IN PERSONA

ROMA, 23 GENNAIO 2020

First report on antibiotic-resistance

No. 3713, DEC. 28, 1940 NATURE 837

LETTERS TO THE EDITORS

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An Enzyme from Bacteria able to Destroy Penicillin

B. coli, it was not necessary to crush the organism in the bacterial mill in order to obtain the enzyme from it; the latter appeared in the culture fluid.

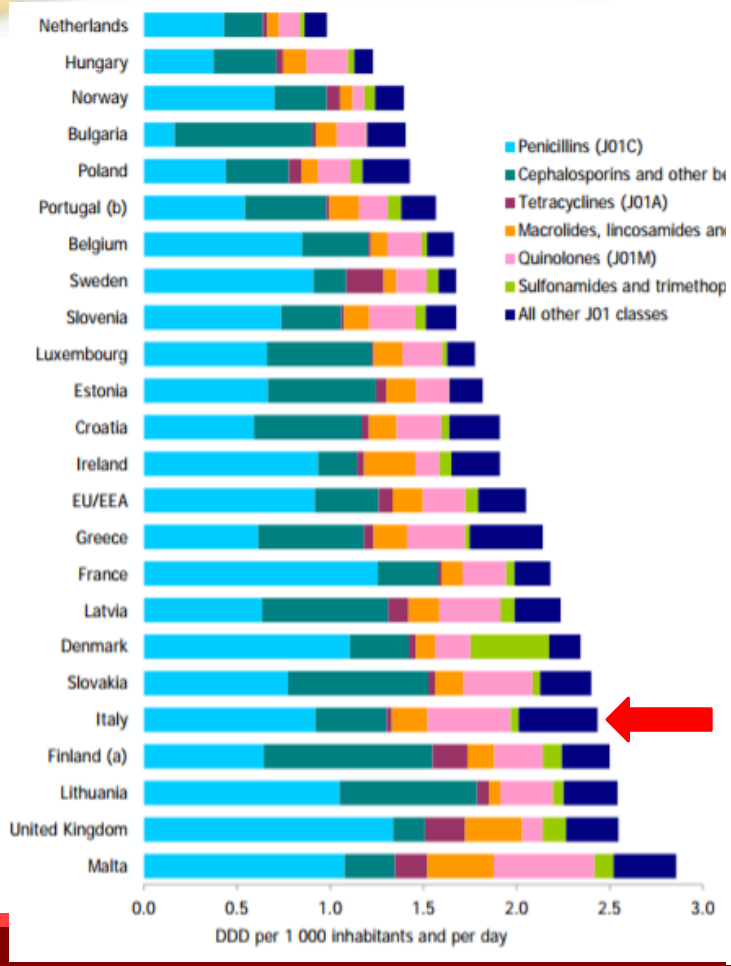
E. P. ABRAHAM.
E. CHAIN.

"There is probably no chemotherapeutic drug to which in suitable circumstances the bacteria cannot react by in some way acquiring 'fastness' [resistance]."
—Alexander Fleming, 1946

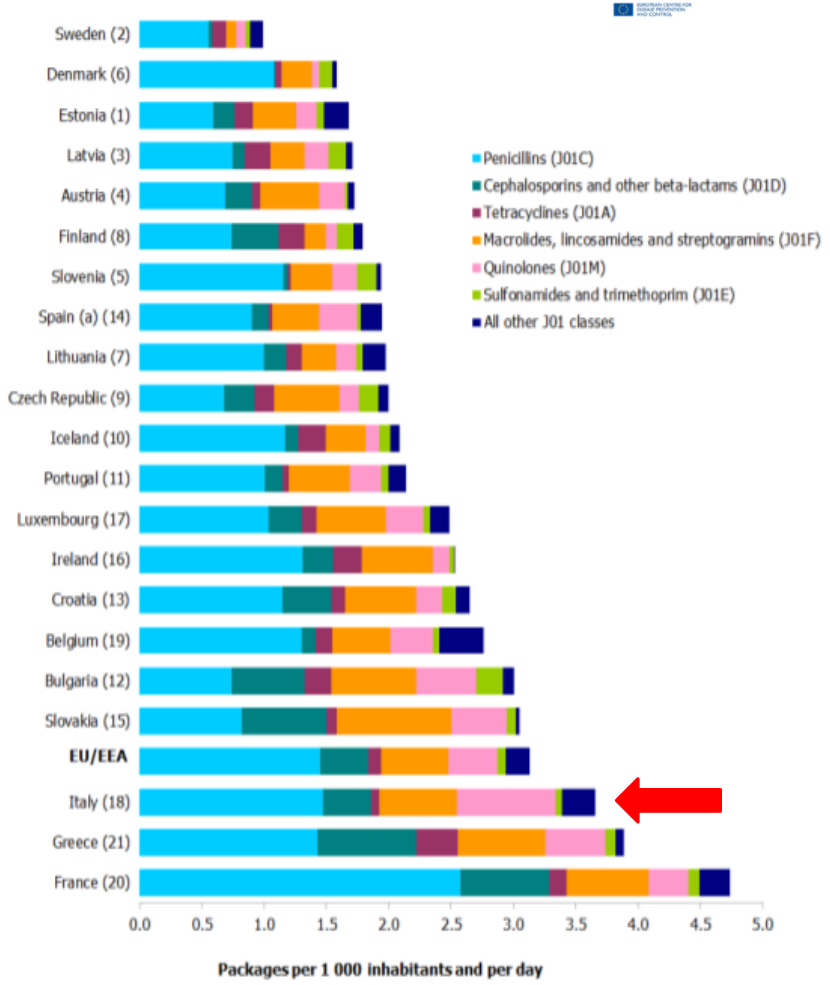

ANTIBIOTIC RESISTANCE INDENTIFIED
ANTIBIOTIC INTRODUCED
penicillin-R Staphylococcus 1940
1943 penicillin
1950 tetracycline
1953 erythromycin
tetracycline-R Shigella 1959
1960 methicillin
methicillin-R Staphylococcus 1962
penicillin-R pneumococcus 1965
erythromycin-R Streptococcus 1968
1967 gentamicin
1972 vancomycin
gentamicin-R Enterococcus 1979
1985 imipenem and ceftazidime
ceftazidime-R Enterobacteriaceae 1987
vancomycin-R Enterococcus 1988
levofloxacin-R pneumococcus 1996
1996 levofloxacin
imipenem-R Enterobacteriaceae 1998
XDR tuberculosis 2000
2000 linezolid
linezolid-R Staphylococcus 2001
vancomycin-R Staphylococcus 2002
2003 daptomycin
PDR-Acinetobacter and Pseudomonas 2004/5
ceftriaxone-R Neisseria gonorrhoeae 2009
PDR-Enterobacteriaceae
2010 ceftaroline
ceftaroline-R Staphylococcus 2011

Consumo di antibiotici

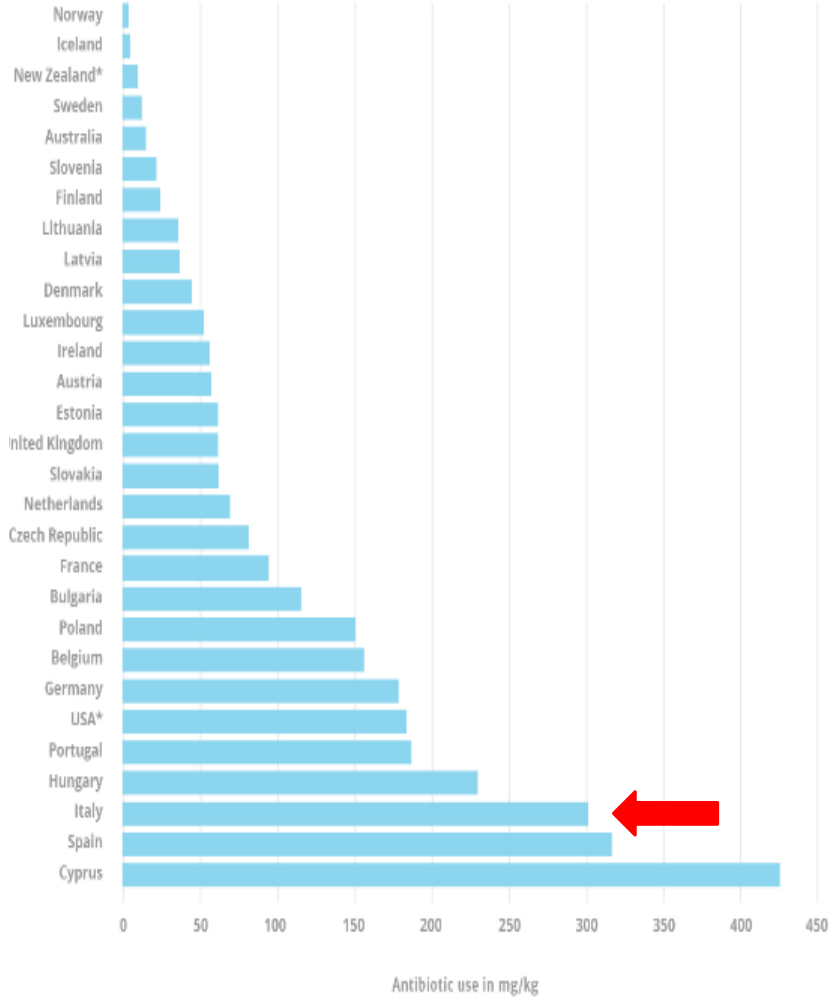
Ambiente nosocomiale



Tra la popolazione



In agricoltura



European Journal of Clinical Microbiology & Infectious Diseases
https://doi.org/10.1007/s10096-018-3292-9

ORIGINAL ARTICLE

Incidence and antimicrobial resistance trends in bloodstream infections caused by ESKAPE and *Escherichia coli* at a large teaching hospital in Rome, a 9-year analysis (2007–2015)

Giulia De Angelis[1] · Barbara Fiori[1] · Giulia Menchinelli[1] · Tiziana D'Inzeo[1] · Flora Marzia Liotti[1] · Grazia Angela Morandotti[1] · Maurizio Sanguinetti[1] · Brunella Posteraro[2] · Teresa Spanu[1]

Published online: 09 June 2018

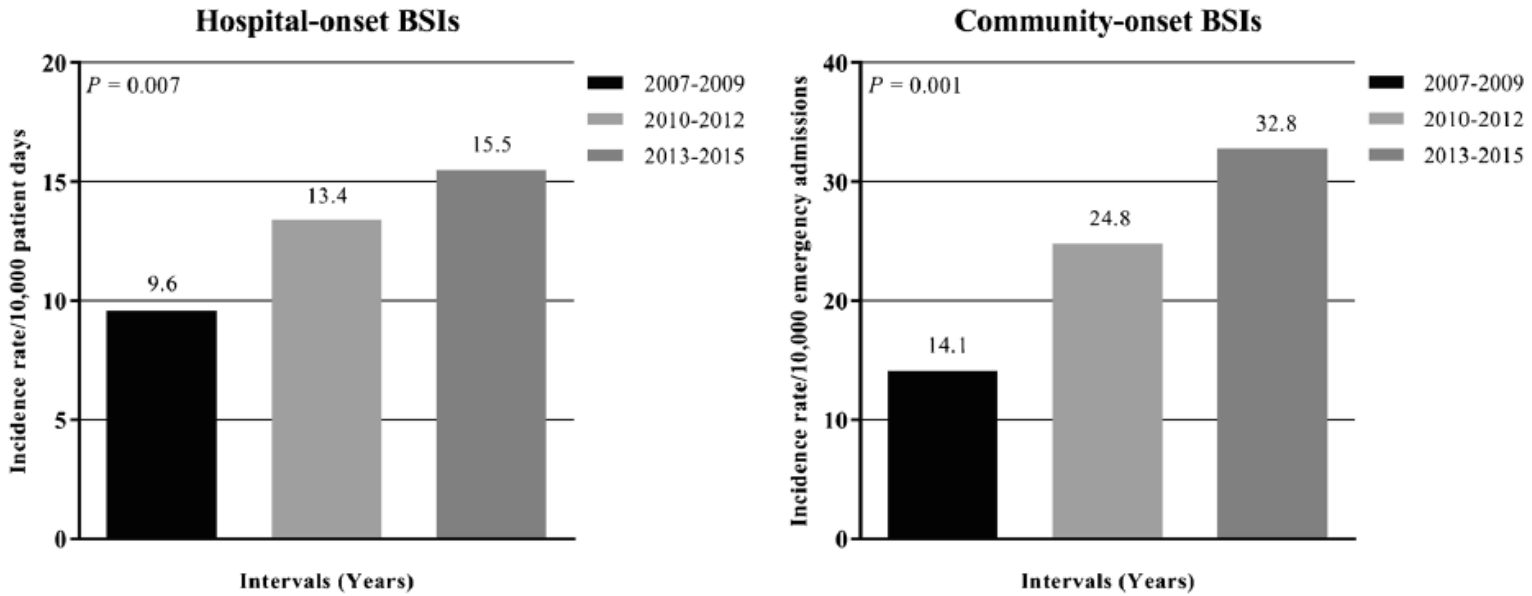
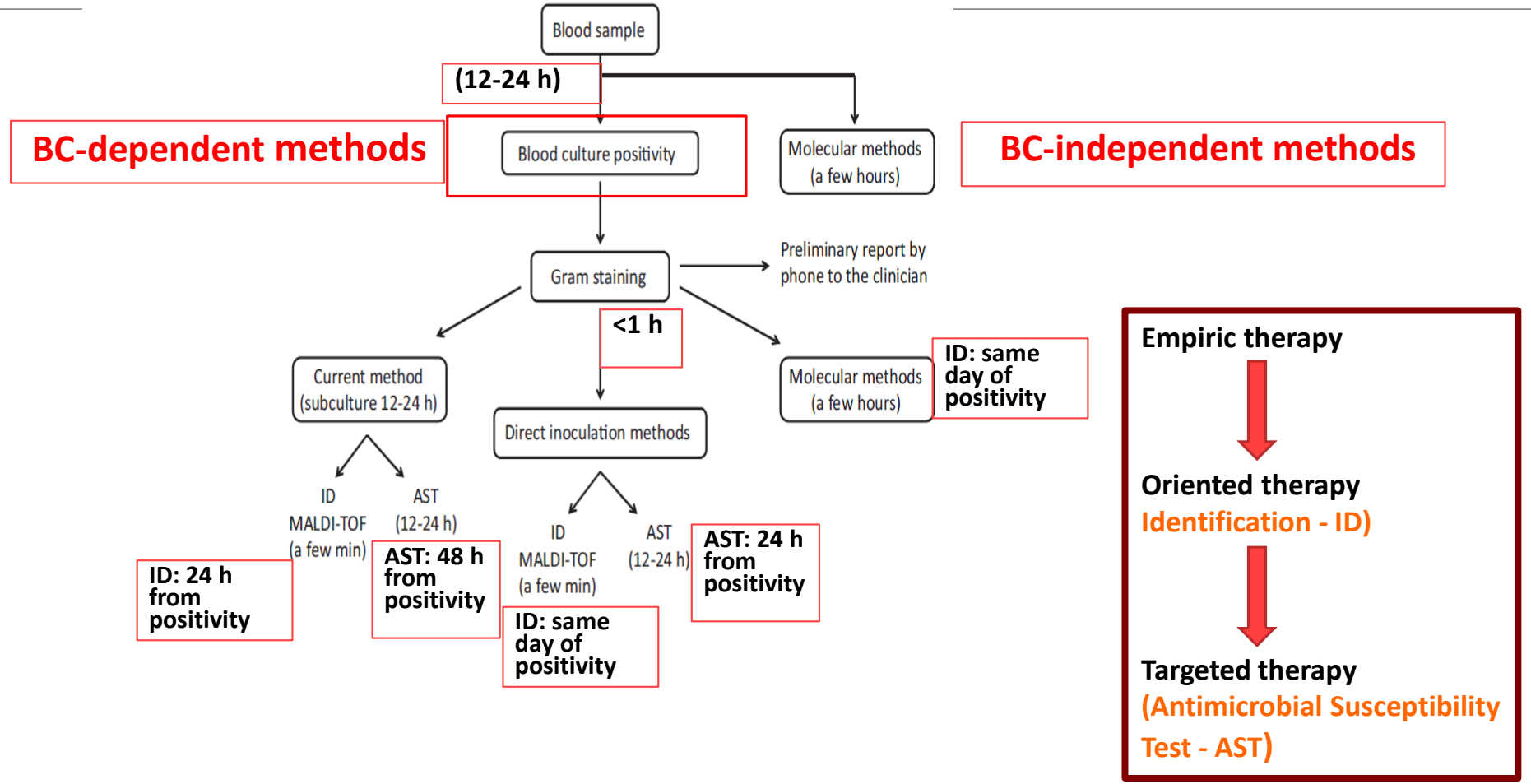


Fig. 1 Incidence rates of bloodstream infections (BSIs) in three 3-year intervals (2007 to 2015), according to the onset (hospital or community) of BSI

Standard methods and Rapid Diagnostic Tests in Sepsis



Modified from Florio W. *et al.*, Critical Reviews in Microbiology, 2017

L'innovazione tecnologica può essere efficace solo se inserita nel giusto modello organizzativo

L'accorciamento dei tempi di diagnosi, deve tener conto delle numerose variabili che rendono ogni laboratorio diverso dall'altro:

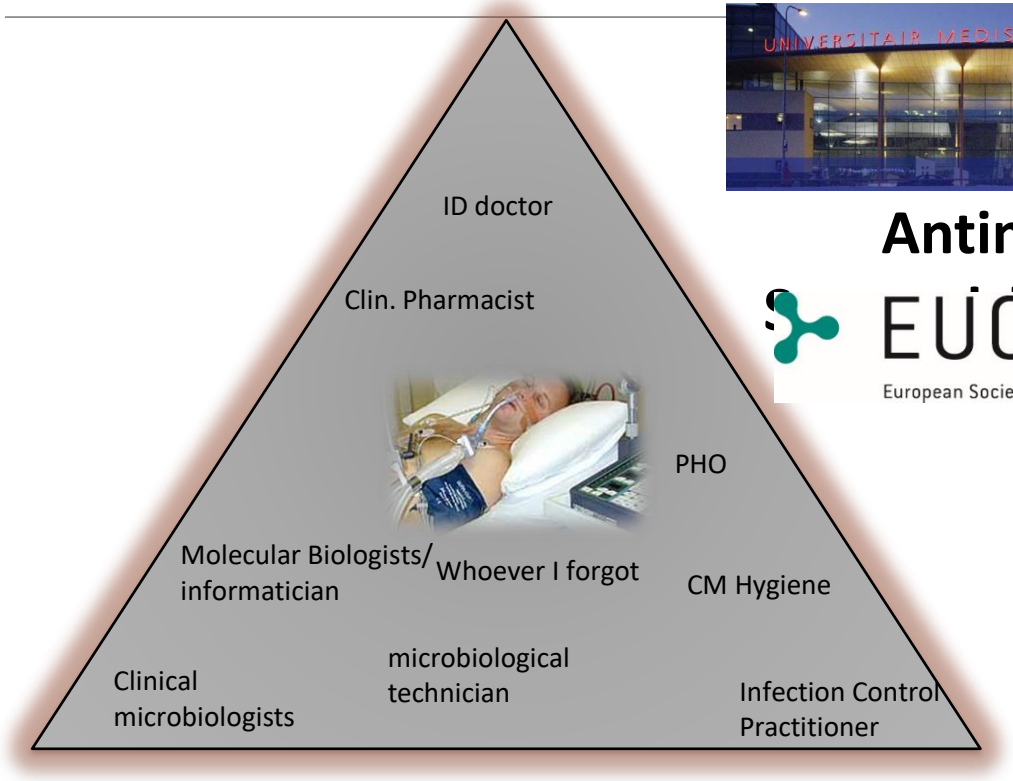
- Personale
- Turni di apertura
- Parco tecnologico e reali possibilità applicative
- Sensibilità e disponibilità del management sanitario
- Sensibilità e disponibilità del personale sanitario
- ……

Le tecniche di diagnostica rapida sono potenzialmente in grado di rivoluzionare il percorso clinico-microbiologico del paziente settico e di offrire un contributo determinante ai programmi di stewardship antimicrobica

Dal momento che si tratta di tecnologie ad alto costo, è essenziale prevedere una implementazione selezionata e razionale al fine di garantire un utilizzo sostenibile e direi equo

Il modello olandese

Medical Microbiology and Infection Prevention
University Medical Center Groningen
Netherlands



Antimicrobial

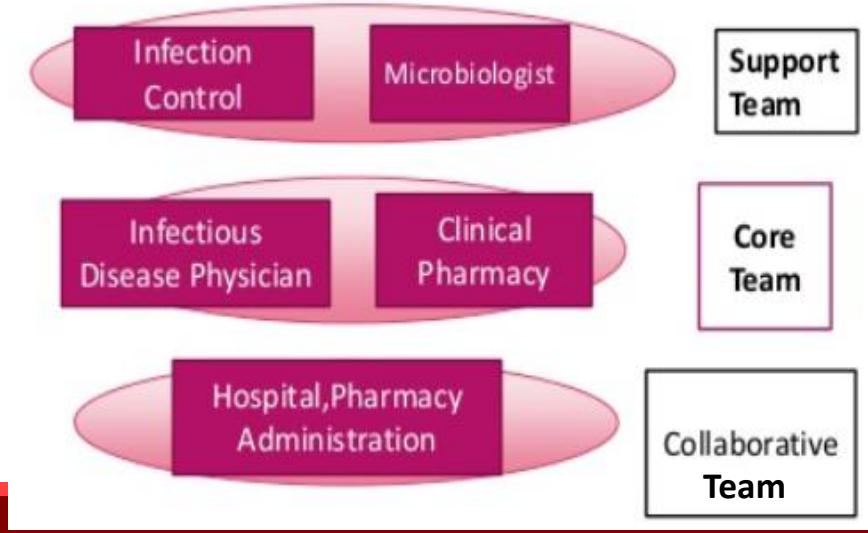
EUCIC EUROPEAN COMMITTEE ON INFECTION CONTROL

European Society of Clinical Microbiology and Infectious Diseases

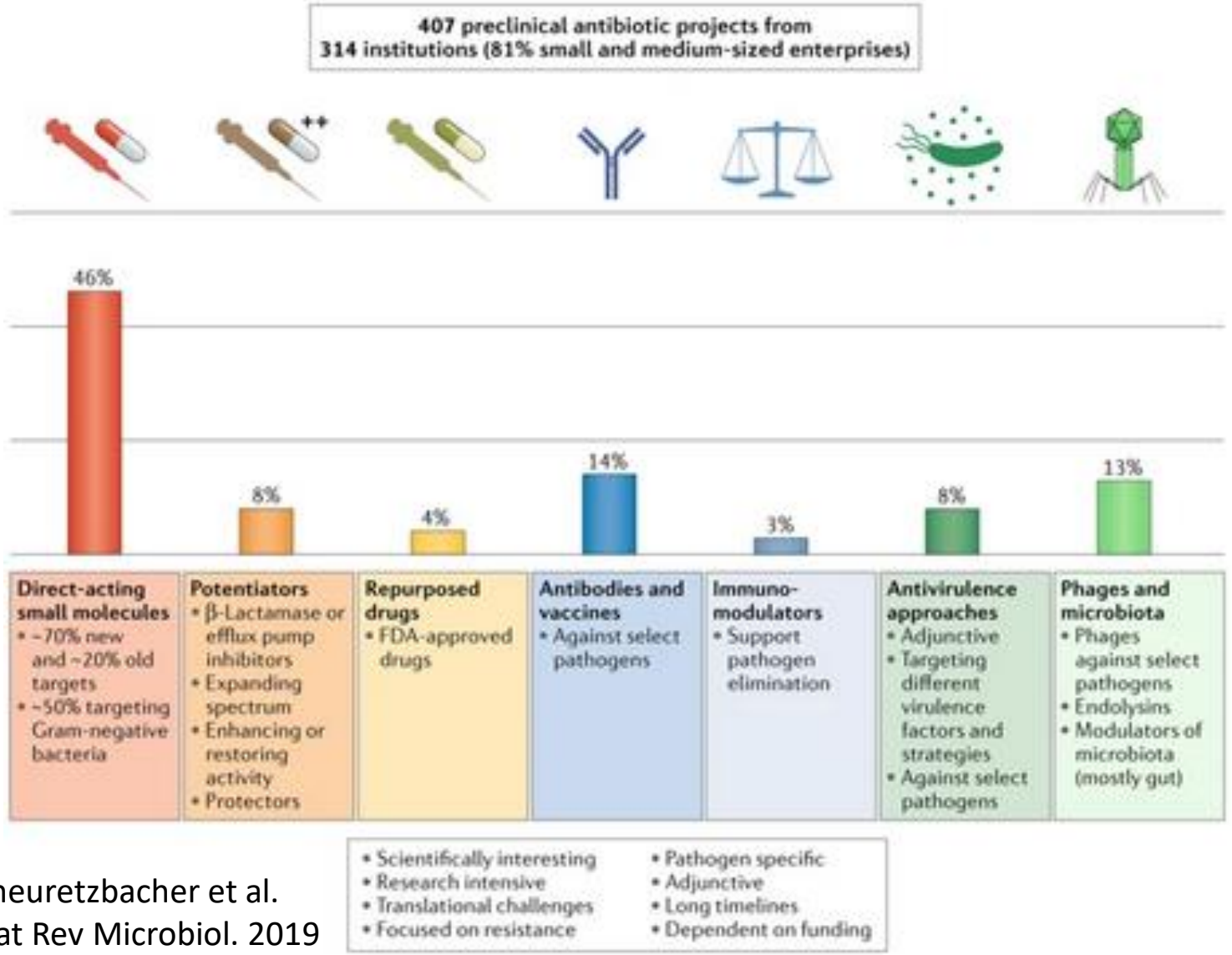
Diagnostic Stewardship

Dik et al. 2015 Future Microbiology
Zingg et al. 2015 CMI

Infection Prevention Stewardship



The global preclinical antibacterial pipeline



Theuretzbacher et al.
Nat Rev Microbiol. 2019

RESEARCH HIGHLIGHTS

ANTIMICROBIALS

New drugs for the antibacterial pipeline?

> these studies highlight the importance of investing in discovery platforms

DAROBACTIN

MAC-545496

Education

Educate the clinicians for appropriate antibiotic prescribing

About 50% of the antibiotic prescriptions, both in the community and in hospitals, can be considered inappropriate (inadequate dosing and wrong duration)

Educate patients, children (e.g., through schools and day care), the public, and other relevant healthcare professionals (e.g., primary-care staff, pharmacists, dentists and medical students) regarding prudent antibiotic prescribing and personal hygiene (e.g., handwashing)

Lee et al. Int J Environ Res Public Health. 2013

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