

Dr. Ronald Irwanto Natadidjaja, SpPD, Subsp.PTI(K), FINASIM



Formal Education

- **Universitas Indonesia**, Subspesialis / Konsultan Penyakit Tropik dan Infeksi, Lulus 2013
- **Universitas Indonesia**, Spesialis Penyakit Dalam (Internist), Lulus 2009
- **Universitas Trisakti**, Dokter Umum, Lulus 2002
- **SMP-SMA Kolese Kanisius**, Jakarta, Lulus 1994

Organization

- **Tim Covid-19**, RSPI Puri Indah, 2020 – sekarang
- **Bendahara**, Perhimpunan Ilmu Kedokteran Tropis dan Penyakit Infeksi Indonesia (PETRI) Jakarta, sejak 2016 - 2023
- **Sekretaris Jenderal (Sekjen)**, Pengurus Pusat Perhimpunan Pengendalian Infeksi Indonesia (PERDALIN), sejak 2016 - 2022
- **Tim Ahli** Pokja Pencegahan dan Pengendalian Infeksi (PPI), Kemenkes RI, sejak 2017-2024
- **Kepala Bagian** Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Trisakti, 2013-2020
- **Pendiri dan Perintis** RASPRO Indonesia Study Group, **Yayasan Pelita RASPRO Indonesia** untuk studi resistensi antimikroba dan penggunaan antimikroba bijak Indonesia
- **Ketua PPI** RSPI Bintaro Jaya
- **Internist-Konsultan**, RSPI Puri Indah, RSPI Bintaro Jaya, dan Tzu Chi Hospital – Pantai Indah Kapuk, Jakarta Utara



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Instagram

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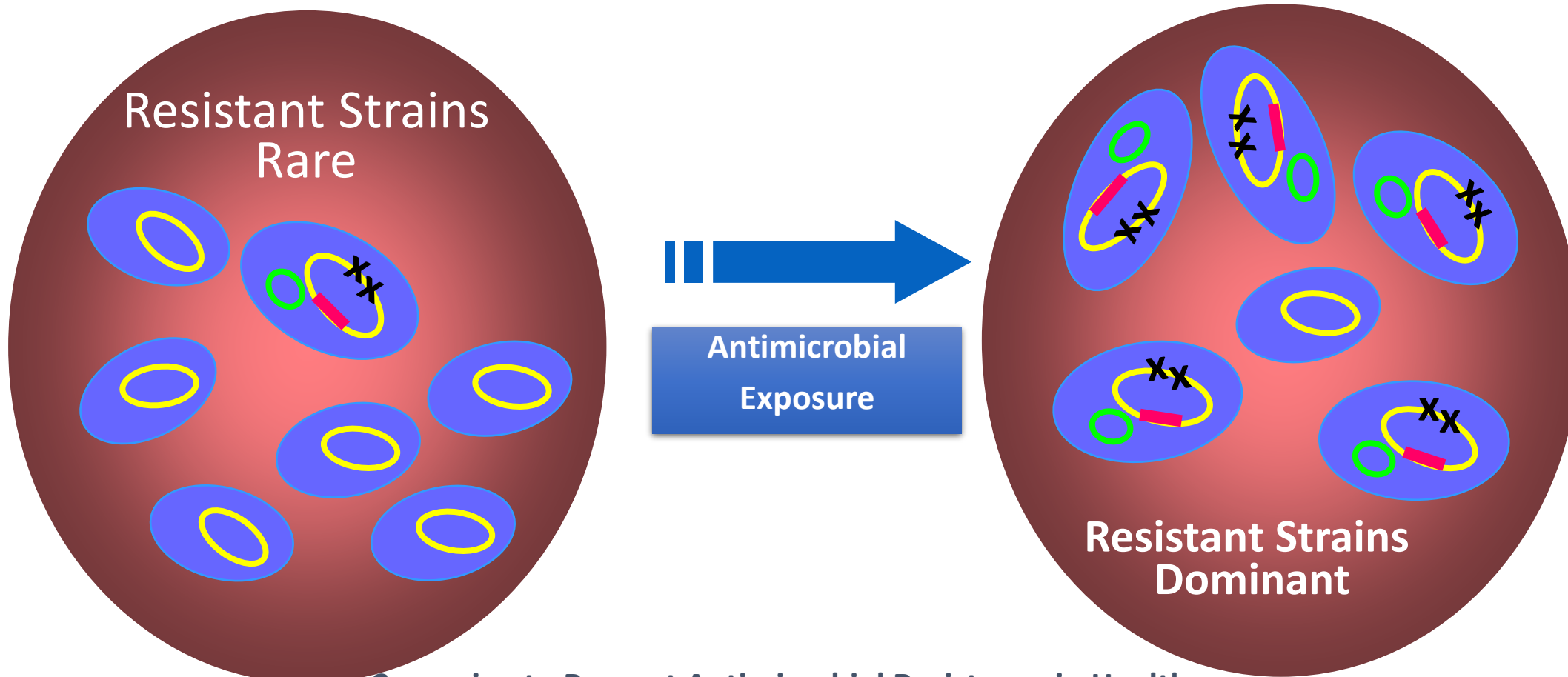


Mekanisme Tekanan Seleksi & Kebijakan PGA di Rumah Sakit

Ronald Irwanto Natadidjaja

Trisakti RASPRO Indonesia Antimicrobial Stewardship (**TRIASE**) Learning Centre

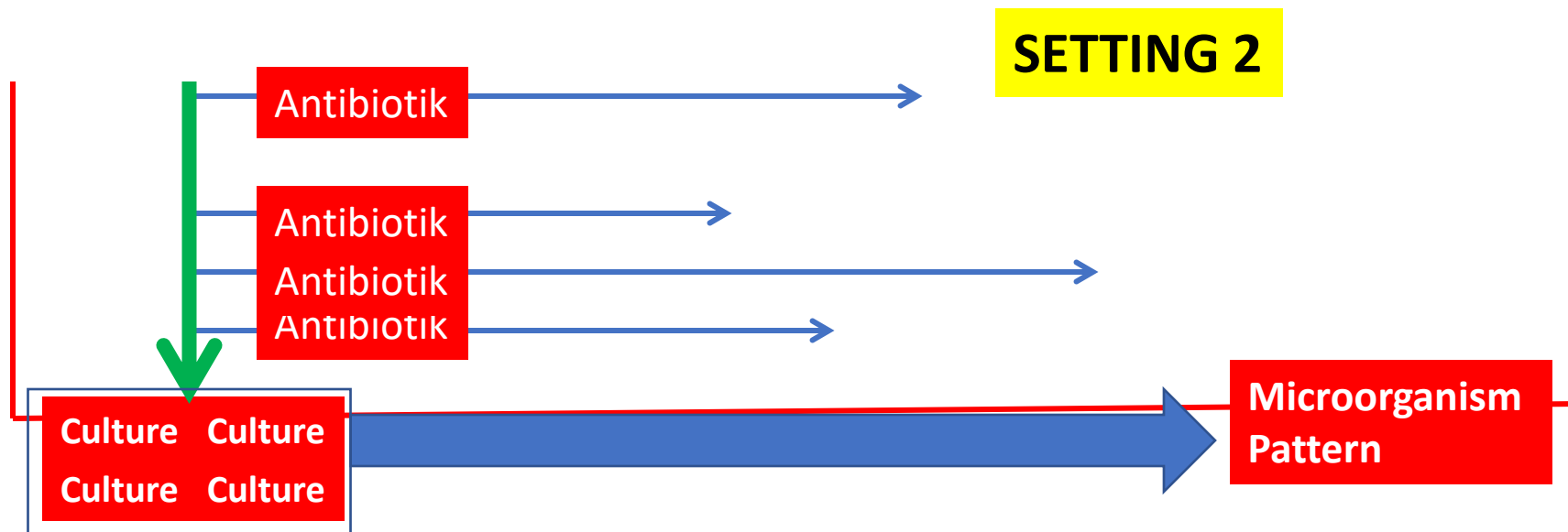
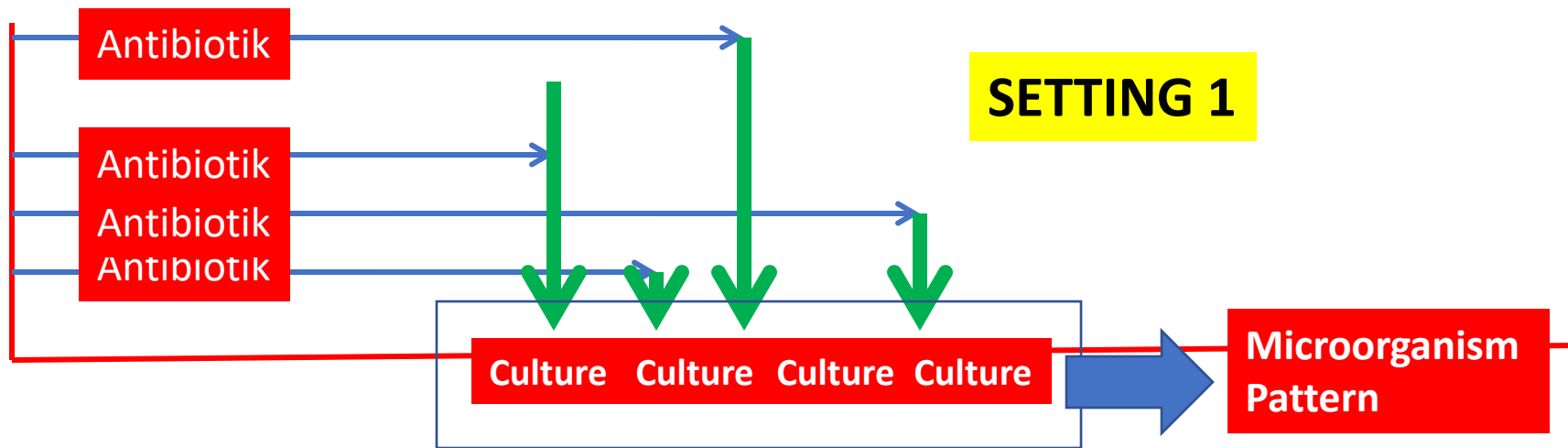
Mechanism of Antimicrobial Resistance:
“Selective Pressure” for Antimicrobial-Resistant Strains



Campaign to Prevent Antimicrobial Resistance in Healthcare
Settings, CDC 2002

Fungsi Kultur

- **Diagnosis Infeksi Individu**
- **Diagnosis Komunitas :**
 - **Surveillance**
 - **Pertimbangan pembuatan panduan antimikroba empirik**



Community

Pola Kepekaan dan Resistensi Mikroorganisme
Aerob pada
Infeksi Jaringan Lunak Komplikata dengan
Berbagai Manifestasi Klinisnya
di Tiga IGD Rumah Sakit di Jakarta

GRAM Positive

OXA Sensitive *S. aureus* : **95.5%**

GRAM NEGATIVE

Pseudomonas sp Sensitive to

MEM : **92.3%**

IMP : **92.3%**

TZP : **92.3%**

LVX : **69.2%**

AMK : **84.6%**

Ronald Irwanto ,Suhendro, Khie Chen,
Yeva Rosana, 2009

Hospital

UNIVERSA MEDICINA

January-April, 2013

Vol.32 - No.1

Culture-and nonculture-based antibiotics for complicated soft tissue infections are comparable

Ronald Irwanto^{*,**}, Suhendro^{**}, Khie Chen^{**}, and Murdani Abdullah^{***}

GRAM Positive

OXA Sensitive *S. aureus* : **84.6 %**

GRAM NEGATIVE

Pseudomonas sp Sensitive to

MEM : **68.2%**

IMP : **78.7%**

TZP : **50.0%**

LVX : **54.5%**

AMK : **68.2%**

Ronald Irwanto ,Suhendro, Khie Chen,
et al . Universa Medicina 2013



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Laporan Peningkatan Mutu

PENINGKATAN MUTU PENGGUNAAN ANTIBIOTIK BIJAK MELALUI KESESUAIAN TEMUAN HASIL KULTUR DENGAN KAJIAN RISIKO PASIEN MENURUT MODEL REGULASI ANTIMIKROBA SISTEM PROSPEKTIF (RASPRO)RONALD IRWANTO NATADIDJAJA^{1,2}, HADIANTI ADLANI², HADI SUMARSONO^{2,3}¹Departemen Ilmu Penyakit Dalam FK TRISAKTI, Jakarta²RASPRO Indonesia Study Group³Ikatan Apoteker Indonesia

Tabel 3. Kesesuaian Temuan Hasil Kultur dengan Kajian Risiko Pasien Menurut Model RASPRO

	Multisensitif		MDR				Prediksi	
			ESBL		Non ESBL		Sesuai	Tidak Sesuai
	n	%	n	%	n	%		
Gram Negatif								
Acinetobacter sp.	0	0,00	0	0,00	4	10,00	4	0
Pseudomonas sp.	0	0,00	0	0,00	7	17,50	7	0
Klebsiella pneumonia	15	26,32	2	22,22	6	15,00	21	2
Escherichia coli	18	31,58	7	77,78	6	15,00	28	3
Citrobacter koseri	0	0,00	0	0,00	1	2,50	1	0
Enterobacter sp.	1	1,75	0	0,00	1	2,50	2	0
Proteus sp.	0	0,00	0	0,00	2	5,00	2	0
Providencia stuartii	0	0,00	0	0,00	1	2,50	1	0
Pantoea agglomerans	1	1,75	0	0,00	0	0,00	1	0
Raoultella ornithinolytica	0	0,00	0	0,00	1	2,50	1	0
Serratia fonticola	1	1,75	0	0,00	0	0,00	1	0
Total	36	63,15	9	100,00	29	72,50	69	5
Gram Positif								
Staphylococcus aureus	4	7,02	0	0,00	1	2,50	5	0
Staphylococcus epidermidis	1	1,75	0	0,00	2	5,00	3	0
Enterococcus faecalis	4	7,02	0	0,00	2	5,00	5	1
Enterococcus faecium	1	1,75	0	0,00	1	2,50	1	1
Streptococcus sp.	8	14,04	0	0,00	4	10,00	12	0
Staphylococcus sp.	3	5,26	0	0,00	1	2,50	3	1
Total	21	36,84	0	0,00	11	27,50	29	3
TOTAL	57	100,00	9	100,00	40	100,00	98	8

* MRSA ** MRSE

Tabel 4. Persentase Kesesuaian Hasil Kultur dengan Kajian Risiko Infeksi Multisensitif dan MDR Model RASPRO

	Sesuai		Tidak Sesuai		Total	
	n	%	n	%	n	%
Multisensitif	54	94,74	3	5,26	57	100,00
MDR	44	89,80	5	10,20	49	100,00



The Association between Medical History-based Risks and Sepsis Events in Immunocompromised Patients according to Type III Stratification of the Indonesian Regulation on the Prospective Antimicrobial System (*Regulasi Antimikroba Sistem Prospektif / RASPRO*)



Ronald Irwanto Natadidjaja^{1*}, Armi Setia Kusuma², Gede Bangun Sudradjad³,
Lies Nugrohowati⁴

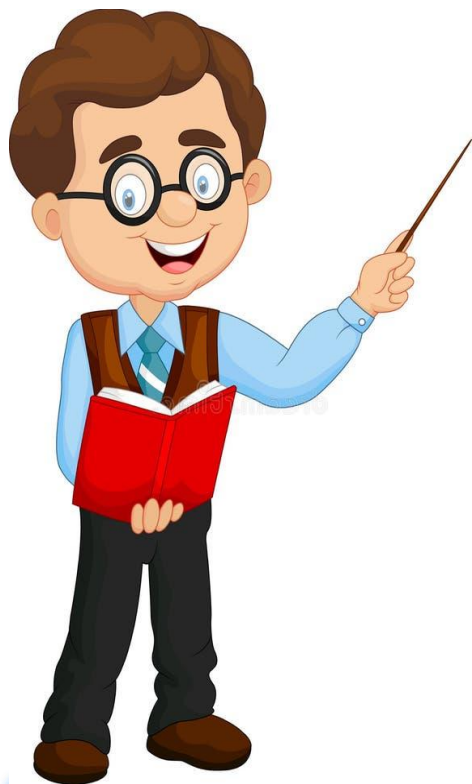
ARUC Score
Shorr et al
Alberti et al
Tumbarello for ESBL
Duke for ESBL
Gomila et al
Marchaim et al
Carmeli et al
etc

Background: The Indonesian Regulation on the Prospective Antimicrobial System (*Regulasi Antimikroba Sistem Prospektif / RASPRO*) is a novel program. Its role has been reinforced by the Indonesian Ministry of Law and Human Rights Stipulation, which may predict the risk of sepsis events. Our study aimed to evaluate whether the risk factors listed in the *RASPRO* consensus have actual effects on sepsis events.

Method: The study was a retrospective cohort using secondary data with 98 subjects. The subjects were categorized into two groups, i.e., the *RASPRO* group with type III stratification (*RASPRO* Group) and Non-type III stratification *RASPRO* group (Non-*RASPRO* Group). Subjects with infection but with conditions other than the abovementioned criteria were categorized into the Non-*RASPRO* group.

Results: We found that among subjects in the *RASPRO* group, a history of antibiotic use over the past <30 days (OR 3.42; 95%CI 1.32–8.85; p=0.011) and a history of having procedure using medical instruments within the last <30 days (OR 2.62; 95%CI 1.06–6.45; p=0.037) seemed to be greatest risk factors for sepsis events.

Conclusion: The *RASPRO* group has a higher risk for sepsis events than the non-*RASPRO* with a history of antibiotic undergoing a procedure using a medical instrument within the last <30 days possessed the greatest risk factors for sepsis events.



**Desain
Mikro**

Regulasi MAKRO

Disposisi

Regulasi MIKRO

Integrasi

SISTEM

Terkondisi

EKOSISTEM

Permenkes 8/2015

Permenkes 28/2021

Buku Panduan PGA di RS Kemenkes RI 2021

KMK No HK.01.07/MENKES/1128/2022

To KMK No. HK 01.07 / MENKES / 1596 /2024

GLOBAL - BIROKRATIF

SOP – Job Desk Infrastruktur2 Birokratif

Alur Kerja PGA

Alur Pengambilan Sampel

Alur Peresepan Antimikroba

Alur Pre-otorisasi & Audit Prospektif

dll

EKSKLUSIF - OPERASIONAL

*Integrated Guiding - Monitoring – Evaluating –
Reporting – Action Plan*

KOMITMEN - KONTINUITAS

Kondisi timbal balik yang telah terjadi antara
kebiasaan penggunaan antimikroba bijak
dengan turunnya risiko kemunculan MDR

Futuristic Fashion in Antimicrobial Used - The WHO “Kick of” in 2023

- Shifting WATCH to ≥ 60% ACCESS



RASPRO Indonesia

www.new.rasproindonesia.com

Aztrenonam
Ceftazidime Avibactam
Ceftaroline Fosamil
Ceftolozane Tazobactam

Imipenem cilastatin-
relebactam

Fosfomycin IV
Colistin
Polymixin B
Tygecycline

RESERVED

This group includes antibiotics and antibiotic classes that **should be reserved** for treatment of confirmed or suspected infections due to multi-drug-resistant organisms. Reserve group antibiotics should be treated as “last resort” options.

Quinolones
Azithromycin

2nd , 3rd & 4th Generation
of Cephalosporin

Piperacillin Tazobactam
Carbapenems

WATCH

This group includes antibiotic classes that have higher resistance potential and includes most of the highest priority agents among the Critically Important Antimicrobials for Human Medicine and/or antibiotics that are at relatively high risk of selection of bacterial resistance. These medicines should be prioritized as key targets of stewardship programs and monitoring. Selected Watch group antibiotics are recommended as essential first or second choice empiric treatment options for a limited number of specific infectious syndromes and are listed as individual medicines on the WHO Model Lists of Essential Medicines.

Ampicillin Sulbactam
Ampicillin
Amoxicillin Clavulanate
Amoxicillin

1st Generation of
Cephalosporin

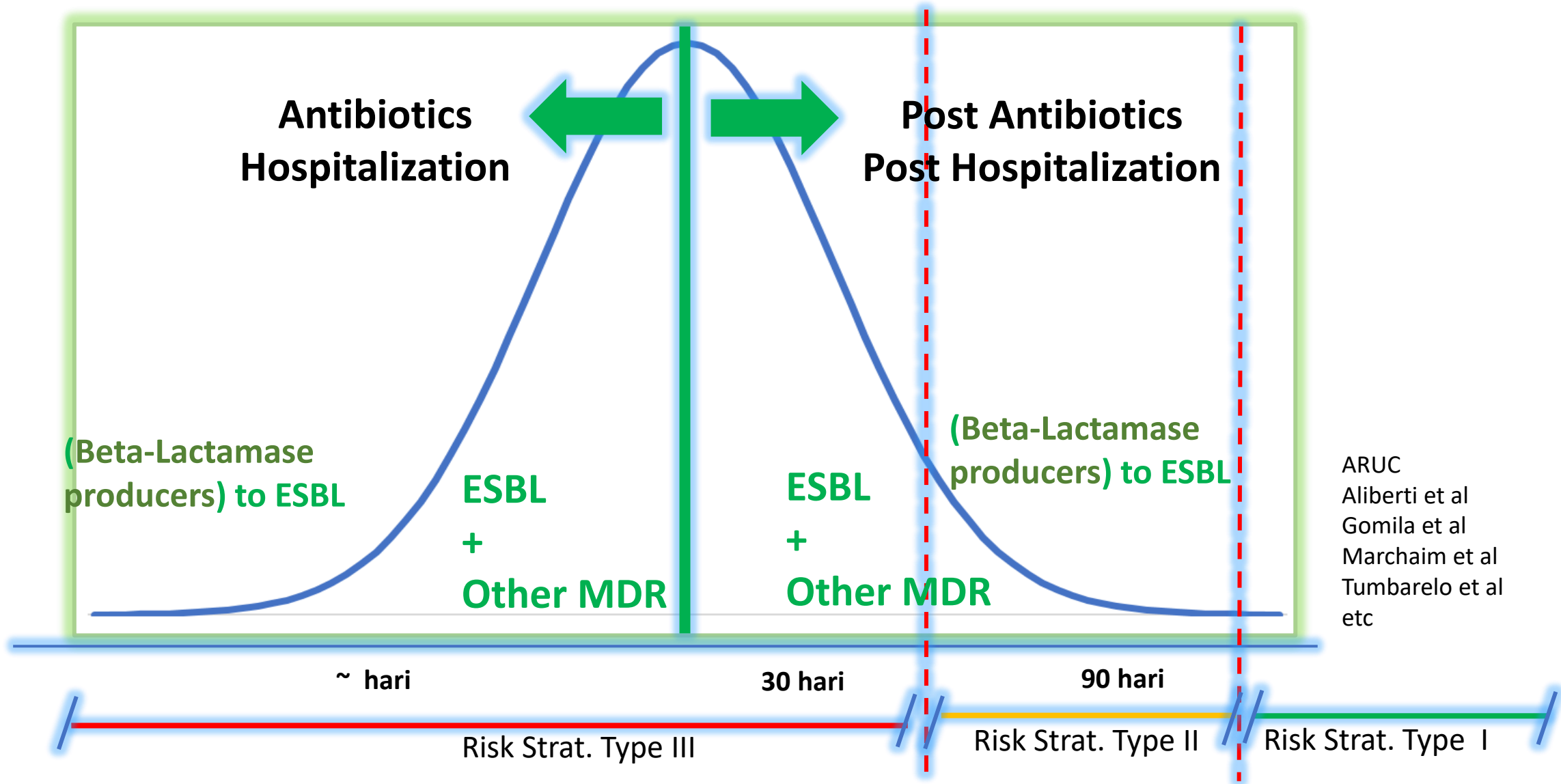
Amikacin
Gentamycin

ACCESS

This group includes antibiotics that have activity against a wide range of commonly encountered susceptible pathogens while also showing lower resistance potential than antibiotics in the other groups. Selected Access group antibiotics are recommended as essential first or second choice empiric treatment options for infectious syndromes reviewed by the EML Expert Committee and are listed as individual medicines on the Model Lists of Essential Medicines to improve access and promote appropriate use.

AWARE 2021





Risk Stratification Type 3	Risk Stratification Type 2	Risk Stratification Type 1
Severe /HAIs / Febrile Neutropenia / Threatening Organ Perforation AND / OR Immunocompromized AND / OR Uncontrolled DM : + History of antibiotic use in the last 30 days AND / OR History of ≥ 48 hours hospitalization in the last 30 days AND / OR History medical devices use in the last 30 days	Non Severe / Non Life Threatening – Non HAIs Immunocompromized AND / OR Uncontrolled DM : History of antibiotic use in the last 90 days AND / OR History of ≥ 48 hours hospitalization in the last 90 days AND / OR History medical devices use in the last 90 days	Non Risk Stratification Type 3 and / or 2  
Empiric Antibiotic for Severe Case or Suspected ESBLs or Other MDRO	Empiric Antibiotic for Suspected (Beta Lactamase Producers) to ESBLs	Empiric Antibiotic for Multi-Sensitive Organism
RESERVE RESERVE WATCH WATCH	WATCH WATCH WATCH ACCESS	ACCESS ACCESS ACCESS ACCESS ACCESS

Risk Stratification Type 3

Gomila A, Shaw E, Carratalà J, Leibovici L, Tebé C, Wiegand I, et al. Predictive factors for multidrug-resistant gram-negative bacteria among hospitalised patients with complicated urinary tract infections. *Antimicrob Resist Infect Control*. 2018;7(1):1–11. doi: 10.1186/s13756-018-0401-6

Falcone M, Russo A, Giannella M, Cangemi R, Scarpellini MG, Bertazzoni G, et al. Individualizing risk of multidrug-resistant pathogens in community-onset pneumonia. *PLoS One*. 2015;10(4):1–16. doi: 10.1371/journal.pone.0119528

Musikataworn K, Chumpengpan C, Sujinpram C. Risk factors of extended-spectrum beta-lactamase-producing Enterobacteriaceae bacteremia in Thai emergency department: A retrospective case-control study. *Asian Biomed*. 2011;5(1):129–38. doi: 10.5372/1905-7415.0501.016

Patolia S, Abate G, Patel N, Patolia S, Frey S. Risk factors and outcomes for multidrug-resistant Gram-negative bacilli bacteremia. *Ther Adv Infect Dis*. 2018;5(1):11–8. doi: 10.1177/2049936117727497%0A

Seligman R, Ramos-Lima LF, Oliveira V do A, Sanvicente C, Sartori J, Pacheco EF. Risk factors for infection with multidrug-resistant bacteria in non-ventilated patients with hospital-acquired pneumonia. *J Bras Pneumol*. 2013;39(3):339–48. doi: 10.1590/s1806-37132013000300011

Prina E, Ranzani OT, Polverino E, Cillóniz C, Ferrer M, Fernandez L, et al. Risk factors associated with potentially antibiotic-resistant pathogens in community-acquired pneumonia. *Ann Am Thorac Soc*. 2015;12(2):153–60. doi: 10.1513/AnnalsATS.2014.07.305OC

Haque M, Sartelli M, McKimm J, Abu Bakar M. Infection and Drug Resistance Dovepress Health care-associated infections-an overview. *Infect Drug Resist*. 2018;11(1):2321–33. doi: 10.2147/IDR.S177247

Revelas A. Healthcare - associated infections: A public health problem. *Niger Med J*. 2012;53–64(2):59. doi: 10.4103/0300-1652.103543

Cardoso T, Almeida M, Friedman ND, Aragao I, Costa-Pereira A, Sarmento AE, et al. Classification of healthcare-associated infection: a systematic review 10 years after the first proposal. *AJIC Am J Infect Control*. 2014;12(40):1–13. doi: 10.1186/1741-7015-12-40

World Health Organization. Report on the Burden of Endemic Health Care-Associated Infection Worldwide Clean Care is Safer Care. World Health Organization. Geneva, Switzerland; 2011. Available from: www.who.int

Natadidjaja RI, Kusuma AS, Sudradjad GB, Nugrohowati L. The Association between Medical History-based Risks and Sepsis Events in Immunocompromised Patients according to Type III Stratification of the Indonesian Regulation on the Prospective Antimicrobial System (Regulasi Antimikroba Sistem Prospektif / RASPRO). *Bali Med J*. 2021;10(3):1031–6. doi: 10.15562/bmj.v10i3.2561

Risk Stratification Type 2

Risk Stratification Type 1

Ben-Ami R, Rodríguez-Baño J, Arslan H, Pitout JDD, Quentin C, Caibo ES, et al. A multinational survey of risk factors for infection with extended-spectrum β -lactamase-producing enterobacteriaceae in nonhospitalized patients. *Clin Infect Dis*. 2009;49(5):682–90. doi: 10.1086/604713

Marchaim D, Gottesman T, Schwartz O, Korem M, Maor Y, Rahav G, et al. National multicenter study of predictors and outcomes of bacteremia upon hospital admission caused by Enterobacteriaceae producing extended-spectrum β -lactamases. *Antimicrob Agents Chemother*. 2010;54(12):5099–104. doi: 10.1128/AAC.00565-10

Hayakawa K, Gattu S, Marchaim D, Bhargava A, Palla M, Alshabani K, et al. Epidemiology and risk factors for isolation of escherichia coli producing ctx-m-type extended-spectrum-lactamase in a large U.S. Medical Center. *Antimicrob Agents Chemother*. 2013;57(8):4010–8. doi: 10.1128/AAC.02516-12

Johnson SW, Anderson DJ, May BD, Drew RH. Utility of a Clinical Risk Factor Scoring Model in Predicting Infection with Extended-Spectrum β -Lactamase-Producing Enterobacteriaceae on Hospital Admission. *Infect Control Hosp Epidemiol*. 2013;34(4):385–92. doi: 10.1086/669858

Aliberti S, Di Pasquale M, Zanaboni AM, Cosentini R, Brambilla AM, Seghezzi S, et al. Stratifying risk factors for multidrug-resistant pathogens in hospitalized patients coming from the community with pneumonia. *Clin Infect Dis*. 2012;54(4):470–8. doi: 10.1093/cid/cir840

Capsoni N, Bellone P, Aliberti S, Sotgiu G, Pavanello D, Visintin B, et al. Prevalence, risk factors and outcomes of patients coming from the community with sepsis due to multidrug resistant bacteria. *Multidiscip Respir Med*. 2019;14(23):1–11. doi: 10.1186/s40248-019-0185-4

Journal citations



Empiric Antibiotic for Severe Case or Suspected ESBLs or Other MDRO

Empiric Antibiotic for Suspected (Beta Lactamase Producers) to ESBLs

Empiric Antibiotic for Multi-Sensitive Organism

RESERVE

RESERVE

WATCH

WATCH

WATCH

WATCH

WATCH

ACCESS

ACCESS

ACCESS

ACCESS

ACCESS



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Instagram

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THANK YOU!